

SPECIAL REPORT

FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION TO LAO PEOPLE'S DEMOCRATIC REPUBLIC

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**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS,
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WORLD FOOD PROGRAMME, ROME

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Mission Highlights

- Most parts of Lao PDR experienced a prolonged dry period at the beginning of the 2010 main paddy cropping season which led to extensive re-sowing and late transplanting. Localized flooding later in the season resulted in loss of crops, especially in the south.
- At 3 million tonnes, expected national paddy production for 2010/11 (wet season of 2010 and dry season of 2010/11) will be approximately 6 percent down from 2009/10. Both paddy area and yields were lower this year than the last.
- Rice import requirements in marketing year 2011 (January/December) are estimated at 38 000 tonnes, around the level of last year, representing a small proportion of domestic consumption. Most of this requirement is anticipated to be covered by commercial imports.
- Prices of rice peaked at an unusually high level in August and September reflecting fears of low production both nationally and regionally and remained higher than expected after harvest. The price situation rises concern about access to food by low-income sections of the population.
- Vulnerability and food insecurity continue to be characterized by highly localized small scale shocks, which may have severe impacts at the community and district level. As a result of incomplete recovery following Typhoon Ketsana in late 2009 and the 2010 drought and floods, food insecurity is still concentrated in the central and southern regions of the country.
- Affected population, estimated at 111 918 people, will continue to require external support in the period before the main wet season rice harvest in October 2011. Overall food aid requirements for 2011 are estimated at over 4 000 tonnes of rice.

1. OVERVIEW

Prompted by concerns about a very weak start to the rainy season in parts of Lao PDR (and in much of the surrounding region) which was then followed by excessive rainfall and flooding in several areas later in the season, the Ministry of Agriculture and Forestry (MAF) requested a joint FAO/WFP Crop and Food Security Assessment Mission to evaluate the 2010 main paddy crop, forecast the 2011 irrigated crop and assess the overall food situation, import requirements and food aid needs, if any, for the 2010/11 marketing year (January/December). The last such mission had taken place in 2001, following serious regional flooding.

International members of the Mission arrived in Vientiane on 16 November. The next two days were spent meeting, and collecting information from the Department of Agriculture of the MAF, the National Disaster Management Organization, and FAO and WFP country offices. Team itineraries for field work were finalized, and teams were briefed on data collection in the field. In order to cover as much ground as possible, the Mission was divided into four teams, each team taking four provinces and one team also covering Vientiane Municipality. Each team included one representative from FAO, WFP and MAF. One of the four teams also included a representative of the Ministry of Labour and Social Welfare. The teams spent 12 days in the field. They were briefed by the Provincial Offices of the Ministry of Agriculture and Forestry (PAFOs) and at least two District Offices (DAFOs) in each province. These teams interviewed selected farmers and households, observed crops in the field where they had not yet been harvested, visited markets in order to check the level of food supplies and prices, and, where possible, interviewed millers for information regarding farm gate prices and the volume of paddy being brought to the mills. The teams interviewed relevant NGOs operating in the provinces for their perspective on the cropping season and food security. NGOs consulted included CARE, Vredeseilanden (VECO), German Agro-Action (GAA), Deutsche Welthungerhilfe (DWHH), Christian Relief and World Vision.

On their return to Vientiane the teams pooled their data and observations, and visited two other Government offices - the MAF's Centre for Statistics and Information and the National Centre for Statistics. De-briefing of Government and international organizations took place on 6 December 2010.

The 2010 main season paddy production in Lao PDR was affected by generally inadequate rainfall. Most areas received slightly subnormal but sufficient rains at planting time in late April-May but this was followed by an extended dry period that in many cases necessitated re-seeding and usually delayed transplanting. The severity of this dry period was, however, geographically patchy. While in some areas it represented a slight setback, in others it lasted up to August, often obliging farmers to reseed more than once. In such cases, upland farmers with access to only limited supplies of seed sometimes were forced to abandon their fields altogether. Although the south of the country suffered more generally than the north from the protracted dry conditions, the patchiness of dry conditions was also evident within relatively small geographical areas over the whole country. Some parts of the south that can normally rely on supplementary

irrigation were unable to do so this year because of low water levels in the rivers. Heavy rains later in the season, especially in parts of the centre and south, caused local flood damage with some loss of crops.

Crop pest and disease levels were mostly normal this year. Rodent damage, which was especially bad in 2008 and 2009, mostly in upland paddy in the north of the country, was reported to be less serious this year.

Nationally, both paddy harvested area and yields were lower this season than last. The 2010 wet season paddy crop is estimated by the Mission at 2.3 million tonnes, 7 percent below the level of the same season in 2009. The irrigated dry season, currently on the ground, is projected marginally higher than last year. In aggregate, production for 2010/11 (wet season of 2010 and dry season of 2010/11), is expected to reach 3 million tonnes, which is approximately 6 percent lower than in 2009/10.

Production of maize, which is mainly cultivated as a cash crop for livestock feed and mostly exported, has surged in recent years supported by contracts with traders from China and Viet Nam. The crop was less affected by dry weather than rice and production this season is estimated to have further expanded following larger plantings in response to higher prices.

Livestock numbers have increased during the last year, as have exports of buffalo and cattle, especially to China. Although livestock health is generally satisfactory, there have been some worryingly high mortality rates from swine cholera, especially in the north. Blue-ear disease of pigs also appears to be spreading. Vaccination of livestock is limited; it is likely that mortality rates of animals could be greatly reduced through the intensification of veterinary programmes.

Prices of glutinous rice, which accounts for some 85 percent of total rice consumption, peaked around August-October 2010 on concerns of reduced supplies because of the poor start to the season. The decline from that peak as harvesting began was only limited and by February 2011 rice prices remained 26 to 58 percent, higher than a year earlier depending on the market. Prices have also been supported by a sharp increase of the benchmark Thailand export price for the same type of rice. Terms of trade of rice *vis-à-vis* livestock have shifted in favour of rice during the last 12 months as rice prices have risen significantly whereas livestock prices have risen only marginally. The high prices of the main staple rice gives concern over access to food by low-income groups, particularly those that suffered crop losses this season.

Given the long borders of Lao PDR with Thailand and Viet Nam, cross-border trade in rice is active in both directions. In view of the expected reduction in paddy production this year, not only in Lao PDR but also in the surrounding areas, farmers and millers have been officially requested not to export any paddy to neighbouring countries. However, given the length of the country's border relative to its area, this may be difficult to realise.

Import requirements in 2011 required to maintain food consumption at historical levels are estimated at 38 000 tonnes, approximately the same volumes imported in 2010. Of this amount, 30 000 tonnes are expected to be covered with formal and informal commercial imports, mainly from Thailand. In general, taking into account the smaller domestic demand in Lao PDR relative to that of Thailand and Viet Nam - the first and second world rice exporters respectively - it is estimated that any deficit in the country will be covered by commercial imports, provided there is an effective demand in the country.

In terms of food insecure populations, the incomplete post-Typhoon Ketsana recovery process was exacerbated by erratic and insufficient rainfall this season, as well as of localized flooding events in Khammouan and Savannkhet provinces. With drought conditions continuing through the dry season to May 2011, vulnerability and food insecurity in central and southern Lao PDR are expected to trend upwards through the rainy season until the main wet season rice harvest of 2011. It is estimated that 111 918 people will require external food assistance in the amount of 4 029 tonnes of rice. Isolated small scale disaster events will continue to have profound impacts at the community level, and will compound food insecurity for vulnerable households in all regions.

2. ECONOMY AND AGRICULTURE

2.1 Economy

Lao PDR has recorded one of the fastest rates of economic growth in South-east Asia in the past five years, with an average annual rate of 8 percent. The economy is estimated to have increased by 8 percent also in 2010 and is expected to expand by 11 percent in 2011. This sustained growth mainly reflects higher world prices for Lao PDR's main exports copper and gold. Foreign investment has continued to flow into Lao PDR, with Chinese and Vietnamese state-owned companies channelling funds into the mining and agricultural

sector. Also, Thai investors have resumed construction of several hydropower projects that were postponed in early 2009 amid a shortage of credit, with the high profile Nam Theun 2 hydropower facility starting its operations in March 2010.

After average inflation reached a four-year high of 7.6 percent in 2008, owing to rising global commodity prices and rapid money supply growth, consumer prices are estimated to have remained flat in 2009. In April last year Lao PDR experienced deflation with consumer prices falling by 0.2 percent year on year. However, inflation has continued to strengthen since then following the continued economic growth and the expansion of the money supply in response to increased inflows of foreign investment. It estimated to have averaged 5 percent in 2010.

The national currency Kip appreciated by 2.7 percent on average against the US dollar in 2009, in line with the currency of Thailand, Lao PDR's major trading partner.

Table 1: Key Economic Indicators, 2005-2009

	2005	2006	2007	2008	2009
Population 1/			5.874	6.000	6.128
GDP (USD billion)	3.5	4.1	5.2	5.7	6.7
Real GDP growth (%)	8.7	7.8	7.2	7.6	8.0
Consumer price inflation (%)	7.2	6.8	4.5	7.6	0.0
Growth in imports (%)	--	1.9	32.0	4.0	20.0
Growth in exports (%)	--	13.9	17.5	-1.9	39.0
Exchange rates (av) LAK: USD	10 655	10 160	9 603	8 744	8 516

1/ Source: Lao PDR Department of Statistics; Economist Intelligence Unit.

2.2 Agriculture

Approximately 4 percent of Lao PDR's land is arable, and permanent crops cover about 0.35 percent. Agriculture accounts for about 30 percent of the country's GDP and 80 percent of total employment. Principal agricultural products include rice, vegetables, maize (the grain being used principally for livestock feed), roots and tubers (cassava, taro and sweet potatoes), sugarcane, bananas and watermelons. Other important cash crops include coffee, tobacco and tea. There is also a very large area of rubber trees that will begin to come into production within the next two years.

The country's staple is rice and consumption is among the highest in the world at around 206 kg/per capita. Some 85 percent of the rice grown in Lao PDR is glutinous or sticky rice. The crop is grown on more than 880 000 hectares, mainly during the wet-season but also during the dry-season as an irrigated crop.

Lao PDR has borders with five countries. Geography and lack of infrastructure mean that access to markets in Myanmar, China and Cambodia is limited, while major transit points to Viet Nam are far from both source in Lao PDR and destination in Viet Nam. However, the country has ample access to Thai markets. Although historically there has always been a significant cross-border movement of commodities, this has become more formalized in recent years with the granting of concessions to other countries, in particular China. There are now an estimated 300 000 hectares of rubber plantation, mostly planted in the last five years, under foreign ownership in one form or another (outright ownership, part ownership by the community, share-cropping, contracted community labour etc.). Other important concessions include sugarcane, eucalyptus, teak and jatropha. The area under maize, which is grown almost exclusively for livestock feed and mainly for the export market, has increased recently to more than 200 000 hectares. Attractive contracts from neighbouring countries, including provision of seed and the collection of the produce by traders, have encouraged the expansion. National average maize yields are generally between 4.5 and 5 tonnes/ha.

The Ministry of Agriculture is currently involved in discussions and negotiations with foreign governments, including those of Mongolia and some Middle Eastern countries, regarding the possible leasing of Lao PDR land to those countries for food-crop production. The foreign countries would be responsible for installing irrigation and other infrastructure and would then produce for their own requirements.

Most of the rice mills in Lao PDR are very small family-run operations and poorly maintained, with a throughput of about 300 tonnes per year of often poor-quality product. It is not unusual therefore for merchants to take paddy across the border for milling at efficient mills that are capable of turning out a high-quality product which is then imported back to Lao PDR, its country of origin.

3. PADDY PRODUCTION IN 2010/11

3.1. Paddy cropping seasons

Wet season

The rainfed (monsoon) paddy crop is planted from late April-May, with the start of the rainy season, and harvested from October to early December. Production of this season represents over 80 percent of the annual paddy output. There are two rice production systems during the wet season: lowland and upland. About 75 percent of the annual area under paddy is lowland. While supplementary irrigation is widespread in the major paddy-producing provinces, there would appear to be still a lot of scope for expansion in this area with the use of appropriate structures such as diversion weirs and pumps.

Upland paddy crop is grown on slopes using shifting cultivation. The system is based on a low input, low output technology. Yields from upland paddy are highly variable, as soil quality is highly variable in the Lao PDR uplands, and generally low at less than 2 tonnes/ha. In recent years, provincial authorities have been trying to limit shifting cultivation in the interest of forestry conservation and reduced soil erosion but results are mixed according to areas.

Dry season

Planting of the irrigated dry season paddy crop starts after the harvesting of the wet season in late November-December and the crop is harvested in April-May. Higher yielding varieties are used and yields are generally above 4.5 tonnes per hectare. Although dry-season irrigated paddy occupies only 12 percent of the country's total paddy area, it provides about 17 percent of the country's production. The Government has been encouraging increased dry-season irrigated paddy production for some time. However, the area under dry-season irrigation remains small relative to its potential due to lack of capital investment in repairing and upgrading existing irrigation. Two provinces, Savannakhet and Vientiane Municipality, account for almost half of the country's dry-season irrigated production, Savannakhet producing more than 27 percent and Vientiane Municipality more than 20 percent.

3.2 Factors affecting production in 2010/11

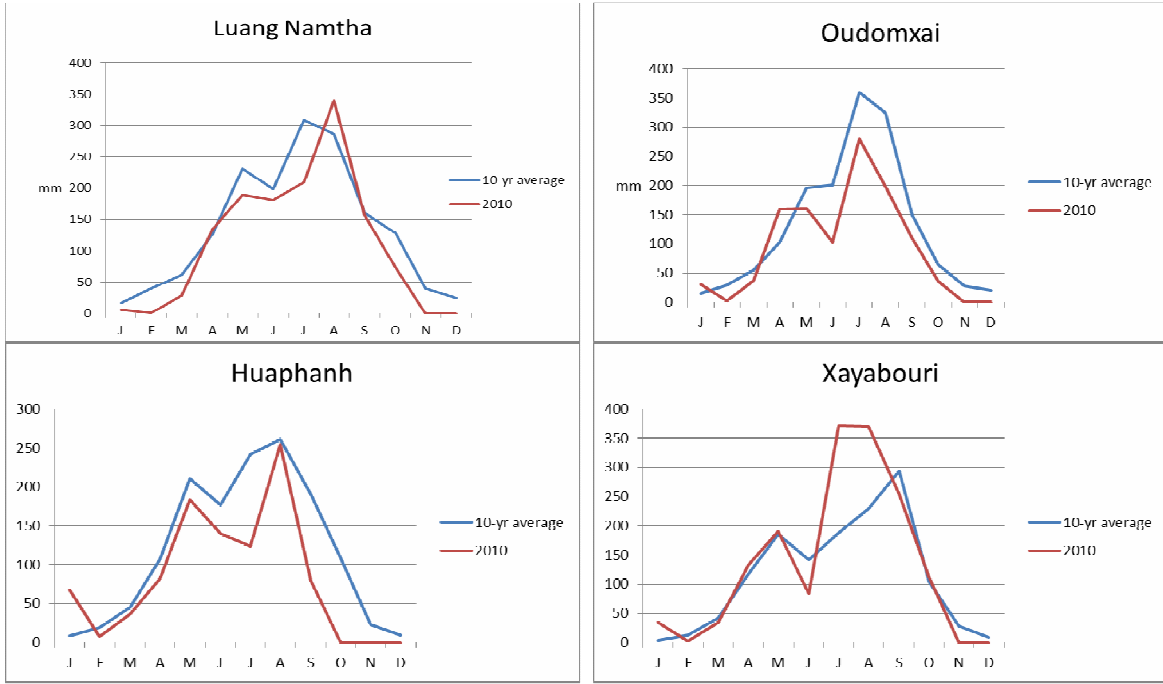
Rainfall

Rainfall was the main determinant of paddy production in 2010. After a reasonably timely start of the wet season in late April and early May, many parts of the country, especially in the south and centre, experienced a prolonged period of relatively dry conditions. For lowland paddy this resulted frequently in loss of seedlings in nurseries and delayed transplanting. Resowing of nurseries was often required, and in some extreme cases in the south, transplanting was reported to have been delayed until as late as September. Such late transplanting can be especially detrimental when farmers plant, as many do in Lao PDR, local photoperiod-sensitive varieties whose growth period, and therefore yield, is limited by diminishing day-length. Re-sowing necessitates access to seed and this was often a problem for both lowland and upland producers. It was not unusual in some parts of the uplands for farmers to run out of seed after the first or second failed re-planting and either to plant a different crop or abandon their prepared fields altogether.

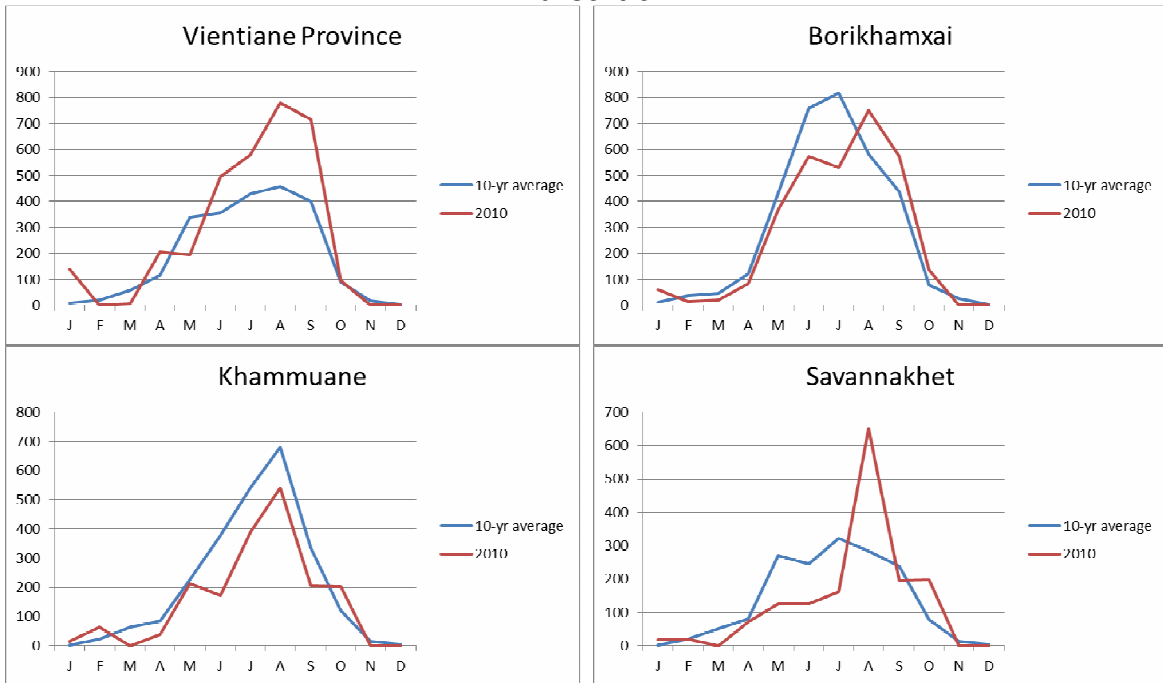
Some areas, especially in Vientiane Province and parts of the major producing province of Savannakhet, experienced unusually heavy mid-season rainfall after the dry spell. Vientiane reported more than 700 mm in both August and September, while Savannakhet reported more than 600 mm in August. In the south, although total monthly rainfall in the latter part of the season was generally low, there were instances of localised but significant flooding with some loss of crops.

The reported poor rainfall at the beginning of the season and very heavy rainfall in some provinces in August and September are clearly shown in Figure 1 with charts of rains during the 2010 wet season.

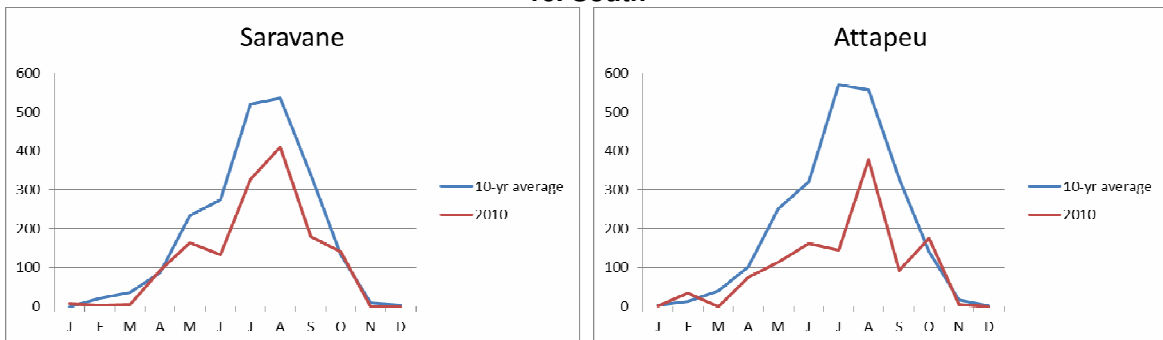
Figure 1: Provincial Monthly Rainfall (mm), 2010 and 10-Year Average
1a. North



1b. Centre



1c. South



Area

The dry conditions at the beginning of the season led to some significant areas of planted land not being harvested. However, significant areas were also lost in 2009 as a result of flooding, so comparatively speaking the 2010 national harvested paddy area is only marginally down from that of the last year. Significant changes (in terms of percentage though not in absolute terms) were seen in wet-season upland paddy areas in Vientiane Municipality and in the south. In Vientiane Municipality upland production, which accounted for 5 540 hectares in 2009, was reported to have been eliminated in 2010. On the other hand, the harvested upland area in the south increased this year by almost 50 percent from 7 600 to 11 240 hectares. Areas of harvested paddy in 2009 and 2010 are given in Table 3.

Inputs

Lao PDR farmers have, over the last 15 years, turned increasingly from buffaloes to monoaxle tractors for their land preparation. There has also been, during that time, an increase in the use of improved seed, supported by the National Agriculture and Forestry Research Institute (NAFRI). However, the use of chemical fertilizer, pesticides and herbicides remains low, as can be seen from Table 2 which shows the quantities of fertilizer imported through official channels during the ten years 2000-2009. Farmers are apparently wary of chemical inputs as well as being unconvinced as to their efficacy. Fertilizer use is mostly limited to paddy nurseries, vegetables and some cash crops. There is, however, extensive use made of farmyard manure. Very few farmers use pesticides or herbicides.

Table 2: Fertilizer Imports, 2000–2009 ('000 tonnes)

Year	Quantity
2000	4.1
2001	17.8
2002	7.0
2003	17.0
2004	1.7
2005	45.0
2006	4.0
2007	30.3
2008	51.3
2009	27.6

Pests and diseases

Levels of most paddy pests and diseases were normal this year. Rice bugs, brown planthoppers, stemborers and leaf-folders were all reported but caused only local concern; gall midge, however, would appear to have been of more universal concern this year in lowland paddy. Blast was also reported in parts of the north and centre.

Rodents (mostly mice) have been a serious problem in recent years, especially for upland crops (both paddy and maize) in the north of the country. This year, however, although the mice are still present, there appears to have been a significant reduction in their numbers and hence in the level of crop damage reported by farmers.

Paddy yields

Nationally, both lowland and upland wet-season paddy yields were lower in 2010 than in 2009, with reductions of 5 and 8 percent respectively. The overall national average yield for both wet and dry seasons is expected to be 3.46 tonnes/ha, down by 4 percent on the previous year's 3.61 tonnes/ha. Yield reduction was greatest in upland paddy in the south, with a 24 percent drop from 1.72 to 1.31 tonnes/ha. Wet-season yields in the north did not change significantly from 2009, and indeed some provinces even registered a slight increase. Similarly, yields for the dry-season irrigated crop are expected to be virtually unchanged from 2009/10 in the north and centre, while in the south, because of low water levels in many streams following the poor and erratic rainfall this year, average yields are expected to be lower than those of last year. Average provincial paddy yields for 2009/10 and 2010/11 are presented in Table 3.

3.3 Paddy production in 2010/11

National paddy production, including the forecast for the current dry season of 2010/11, is, at 3.006 million tonnes, expected to be down by 6.2 percent on the 3.205 million tonnes achieved in 2009/10. Factors contributing to this reduction include:

- the reduced wet-season upland area in the centre;
- the reduced wet-season upland yields obtained in the south, and
- the anticipated reduction in yields in the south in the current dry season.

Compensatory factors include the increase in harvested upland area in the south.

Provincial production figures for 2009/10 and 2010/11 are presented in Table 3. Table 4 gives the national paddy areas, yields and productions by type of cultivation for the last five years, and Figure 2 shows the trends of those parameters nationally over the same period.

Table 3: Paddy Area, Yield and Production by Province, 2009/10 and 2010/11^{1/}

	Wet season, lowland						Wet season, upland						Dry season, irrigated						Annual total, July-June						% change in production from 2009 to 2010
	Area '000 ha		Yield tonne/ha		Prod. '000 tonnes		Area '000 ha		Yield tonne/ha		Prod. '000 tonnes		Area '000 ha		Yield tonne/ha		Prod. '000 tonnes		Area '000 ha		Yield tonne/ha		Prod. '000 tonnes		
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009/2010	2010/2011	2009/2010	2010/2011	2009/2010	2010/2011	2009/2010	2010/2011	2009/2010	2010/2011	2009/2010	2010/2011	
Phongsali	6.5	6.3	4.43	4.13	29	26	12	12	1.82	1.60	22	18	0.4	0.4	4.51	4.51	1.6	1.6	19	18	2.75	2.53	53	46	-12.8
Luang Namtha	11	11	3.88	4.04	44	46	6.2	4.6	1.78	1.57	11	7	1.6	1.8	4.46	4.45	7.1	8.0	19	18	3.25	3.44	62	61	-2.5
Oudomxai	13	12	4.73	4.40	60	53	13	12.3	1.53	1.38	19	17	0.4	0.4	3.88	3.88	1.7	1.7	26	25	3.15	2.89	81	71	-11.9
Bokeo	14	15	4.39	4.30	63	64	7.0	10	2.73	1.80	19	18	2.7	2.7	4.64	4.64	12	12.4	24	28	3.93	3.42	95	95	-0.1
Luang Prabang	13	13	4.28	4.19	55	55	19	16.0	1.45	1.45	28	23	2.7	2.7	5.30	5.26	14	14.0	35	32	2.80	2.90	97	92	-5.2
Huaphanh	12	11	4.96	4.45	59	49	14	14	2.28	2.19	32	32	1.8	1.8	3.64	3.64	6.7	6.6	28	27	3.52	3.2	97	87	-10.4
Xayabouri	28	30	4.07	4.11	113	125	14	14	1.92	1.95	28	28	3.1	3.2	4.13	4.16	13	13.3	45	48	3.39	3.47	154	166	8.1
North	97.5	98.3	4.34	4.22	423	418	86	83	1.86	1.72	159	143	13	13	4.46	4.45	57	58	196	195	3.26	3.17	639	618	-3.3
Vientiane Municipality	54	54	4.14	3.90	225	211	5.5	0.0	1.70	0.00	9.4	0	22	22	4.73	4.80	102	103	81	76	4.13	4.16	336	314	-6.6
Xienkhuang	21	20	3.99	3.83	82	75	8.5	7.8	2.03	1.87	17	15	0.1	0.1	4.09	4.09	0.5	0	29	28	3.42	3.29	100	91	-9.2
Vientiane	52	52	4.35	3.85	227	202	9.5	7.4	1.63	1.65	15	12	8.0	8.0	4.11	4.50	33	36	70	68	3.95	3.69	275	250	-9.1
Borikhamxai	34	33	3.90	3.83	133	127	4.0	3.8	1.82	1.71	7.2	7	4.7	4.7	5.59	5.00	26	24	43	42	3.90	3.77	167	157	-5.9
Khammuane	58	56	3.13	2.75	180	154	0.7	0.3	1.80	1.68	1.3	1	9.4	9.4	5.38	5.00	50	47	68	66	3.43	3.07	232	202	-12.9
Savannakhet	160	151	3.53	3.40	566	514	0.7	1.9	1.51	1.68	1.1	3	29	29	4.34	4.80	126	139	190	182	3.65	3.61	693	656	-5.3
Centre	379	366	3.73	3.50	1 413	1 283	29	21	1.79	1.76	52	38	73	73	4.64	4.80	338	350	481	460	3.75	3.63	1 803	1 670	-7.4
Saravane	65	63	3.47	3.37	225	212	5.4	6.9	1.82	1.34	10	9.3	11	12	5.01	4.90	56	59	81	82	3.57	3.42	290	280	-3.5
Sekong	7.6	6.7	3.35	3.35	25	22	1.2	2.8	1.64	1.41	2.0	3.9	0.5	0.9	4.42	4.30	2.2	3.7	9.3	10.4	3.18	2.90	30	30	1.8
Champassak	97	91	3.68	3.36	358	305	0.0	0.0	0.00	0.00	0.0	0.0	10	10	5.39	4.00	56	41	108	101	3.85	3.43	414	347	-16.3
Attapeu	11	18	2.27	3.05	24	56	1.0	1.5	1.24	1.00	1.2	1.5	1.0	1.0	4.35	3.30	4.4	3.4	13	21	2.35	2.91	30	61	103.9
South	180.6	178.7	3.51	3.33	632	595	7.6	11	1.72	1.31	13	15	23	24	5.14	4.43	118	107	211	214	3.62	3.35	763	718	-6.0
Lao PDR	656	643	3.76	3.56	2 468	2 295	122	116	1.83	1.69	224	196	108	110	4.73	4.68	512	514	887	870	3.61	3.46	3 205	3 006	-6.2

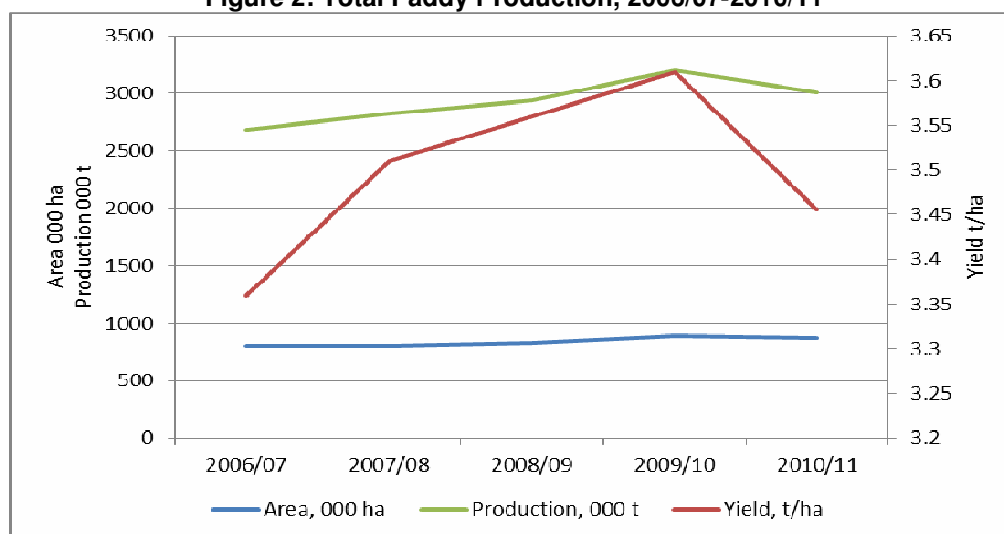
Sources: 2009, lowland and upland: Ministry of Agriculture and Forestry Crop Statistics Yearbook (published May 2010).
2009/10, dry season, irrigated: Department of Agriculture, Ministry of Agriculture and Forestry.
2010/11, dry season, irrigated: PAFO forecasts.

^{1/} Includes crops for consumption in 2011, i.e. the upland and lowland wet season harvested in late 2010 and a forecast of the 2011 dry season crop, due to be harvested in mid-2011. The previous year also follows this definition, rather than the calendar year production estimates used in the MoAF series.

Table 4: Paddy Production by Season, 2006/07-2010/11

	Wet season Lowland			Wet season Upland			Dry season Irrigated			Total, wet and dry Seasons		
	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t	Area '000 ha	Yield t/ha	Prod. '000 t
2006/07	619	3.49	2 161	109	1.76	192	71	4.61	329	799	3.36	2 683
2007/08	604	3.63	2 193	106	1.77	187	94	4.67	439	804	3.51	2 820
2008/09	620	3.67	2 277	112	1.89	211	94	4.79	452	826	3.56	2 940
2009/10	656	3.76	2 469	122	1.83	224	108	4.73	512	887	3.61	3 205
2010/11	644	3.56	2 295	116	1.69	196	110	4.68	514	870	3.46	3 006

Figure 2: Total Paddy Production, 2006/07-2010/11



4. OTHER CROPS

Maize

Lao PDR currently produces about 1 million tonnes of maize grain per year on an area of more than 200 000 hectares. Average maize yields are very satisfactory, approaching 5 tonnes/ha. The crop is grown principally as a cash crop for livestock feed, and virtually all of it is exported. With attractive prices production has grown in recent years. A further 80 000 tonnes or so of sweet corn are produced for human consumption. However, apart from sweet corn, maize appears to be not generally regarded as an acceptable food. Because maize is mostly exported for feedstuff and there is no domestic market, growers are dependent on market conditions in Viet Nam, Thailand and China. Changes to subregional poultry, pork or beef markets therefore have implications for Lao PDR maize growers; Thailand has recently blocked imports of maize to support sales of domestic surplus, causing a problem for Lao PDR producers.

Roots and tubers

Lao PDR produces about 400 000 tonnes (fresh-weight) of roots and tubers per year, consisting primarily of, in order of importance, cassava, taro and sweet potato. Anecdotal evidence suggests that, a few decades ago, rural communities used to grow much more roots and tubers for their own consumption and as a food that they could fall back on when paddy production was poor. Recently, communities have become used to an increasingly rice-based diet, often to the exclusion of roots and tubers. This trend may have been exacerbated by the Government's policy of equating increased food security solely with increased paddy production. Roots and tubers are now regarded principally as cash crops, to the extent that if there appears to be no market for

them they may not be grown. Given the high productivity and relative moisture-stress tolerance of roots and tubers, food security could be greatly enhanced by their increased production for human consumption.

Rubber

The area under rubber, currently about 300 000 hectares, appears, at least for the time being, to be fairly static. Mostly plantations were started in or shortly after 2005, so should be coming into production from 2012 onwards. Most plantations are on sloping land, often above other cropped land, at about 800-1 000 meters above sea level. The trees usually planted either on previously uncultivated land or on land that had been used for shifting cultivation, protect vulnerable soils from erosion with their canopy and root system. However, they sometimes also limit the area available for livestock grazing.

Vegetables

The area under vegetables has increased rapidly over the last few years, from less than 50 000 hectares in 2007 to more than 100 000 hectares in 2010. Much of the increase in production is from the commercial sector either foreign-owned or foreign-managed, with contracted farmers being provided with seed, fertilizer, plastic sheeting and other necessary inputs and often being assisted with irrigation. At the community and household levels, smallholder production is a key source of vegetables with a positive impact on the diversification of the diet. Market trade of vegetables is also a key source of incomes, especially for women.

Non-timber forest products

Non-timber forest products (NTFP) remain an important source of both cash income and consumption at the household level. Fishing, mushroom and bamboo collecting are among the most common practices. Upland farmers are more often engaged in gathering of non-timber forest products than farmers in the lowland.

LIVESTOCK

Numbers of buffaloes and cattle are increasing in Lao PDR, as shown in Table 6, despite a concurrent increase in the numbers exported to neighbouring countries, principally China and Thailand. Pig numbers are also increasing steadily (Table 5), as are those of poultry. Provincial and district authorities also report an increase in the area allocated to fish ponds, the produce from which appears to be mostly for domestic consumption.

During the last years of the twentieth century many farmers started trading in their buffaloes, and often their cattle too, for monoaxle tractors. This can be seen clearly in Figure 3, which shows a dip in the buffalo population and a static cattle population around the year 2000. Now that the market for monoaxle tractors has largely been satisfied, numbers have started to increase once more. Now, however, the buffaloes are bred predominantly for export and meat rather than for work.

Several livestock diseases are prevalent in Lao PDR but most are kept at a tolerable level with the support of the veterinary service. This year, in poultry, there were reports of Newcastle disease, fowl cholera and avian flu. In cattle and buffaloes some cases of foot-and-mouth disease (FMD) were reported. However, there were also reports of possibly avoidable mortality from problems whose symptoms sounded like those of bloat and acidosis, conditions that should be easily prevented or cured by better husbandry. Amongst pigs the mortality rate this year was alarmingly high, especially in parts of the north. The incidence of swine cholera appears to have increased, with high mortality often resulting. Swine flu is also present, and there have been outbreaks of blue-ear disease (porcine reproductive and respiratory syndrome, PRRS) around Vientiane and possibly elsewhere.

There appears to be limited vaccine coverage. This is the result of poor diagnostic facilities so that diseases presented may not be accurately identified, uneven supplies of vaccine, restricted access for population living far from district centres and cost considerations on the part of farmers. There is therefore an urgent need for intensification of vaccination programmes to reduce the rate of animal mortality.

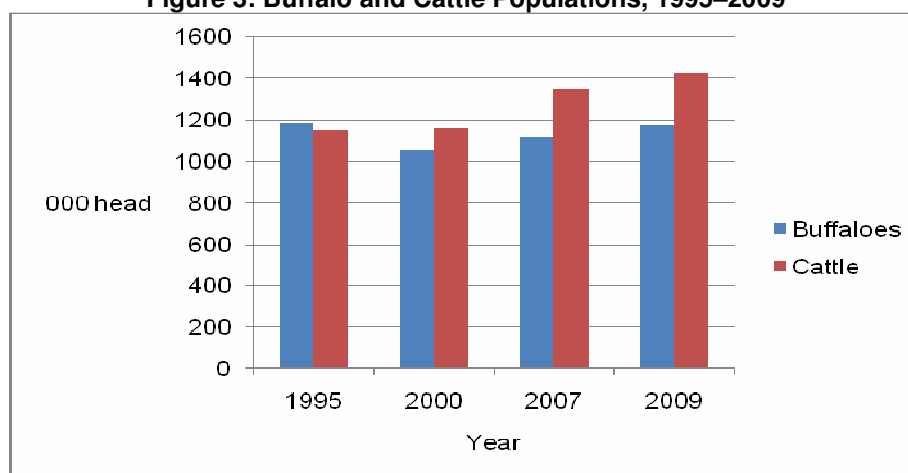
Some communities that informed their DAFO about serious livestock problems reported that the response was very slow and that further livestock losses resulted. There would seem also to be plenty of room for improvement in the response time of the veterinary service.

Table 5: Livestock Numbers ('000 head) by Province, 2007-2009

	Buffaloes			Cattle			Pigs		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Phongsali	36	37	39	38	38	39	169	176	181
Luang Namtha	23	23	22	26	27	27	66	70	75
Oudomxai	37	36	39	34	36	39	103	105	123
Bokeo	23	24	28	30	30	33	50	55	69
Luang Prabang	58	58	60	55	57	59	162	179	198
Huaphanh	66	67	69	53	54	55	301	357	392
Xayabouri	53	53	55	68	70	71	138	166	185
North	296	298	312	304	312	323	989	1 108	1 223
Vientiane Municipality	16	18	19	71	83	84	52	55	62
Xienkhuang	46	53	51	71	73	76	76	79	82
Vientiane	69	72	71	122	133	133	94	97	100
Borikhamxai	44	44	45	54	55	56	58	60	62
Khammuane	74	75	73	65	66	69	61	62	69
Savannakhet	285	285	285	391	391	392	244	249	256
Centre	534	547	544	774	801	810	585	602	631
Saravane	99	112	121	112	120	123	328	347	367
Sekong	28	28	30	23	25	27	123	129	135
Champassak	119	123	124	120	125	129	137	148	170
Attapeu	47	47	47	14	15	17	24	26	29
South	293	310	322	269	285	296	612	650	701
Lao PDR	1 123	1 155	1 178	1 347	1 398	1 429	2 186	2 360	2 555

Source: MAF Agricultural Statistics Yearbook 2009.

Figure 3: Buffalo and Cattle Populations, 1995–2009



Source: MAF Agricultural Statistics Yearbook 2009.

Fishing

The area of fish ponds is increasing in several parts of the country, providing both cash income and high-quality protein to the diets of the households. The principal species are catfish and tilapia, and yields are said to be in the region of 5 tonnes/ha per year. Wild fish catching is an important source of livelihood for the rural households and it has been estimated in the order of 26 000 tonnes per year (2007).

Further details of agricultural situation by province are provided in Appendix I.

6. FOOD SUPPLY AND DEMAND SITUATION

6.1 Rice prices

Prices of the most consumed rice, the glutinous variety, started to increase in June 2010 following dry spells and concerns for the 2010 recently planted main “wet-season” crop. In order to stabilize prices, the Government released some rice reserves in July but the impact on the market was very limited. By August-September, quotations of glutinous rice surged to record highs. Prices were also supported by a sharp increase of the benchmark Thailand export price for the same type of rice. Prices declined with the arrival of the new harvest in October/November, however, at the time of the Mission in November they were still high and well above their levels of a year earlier. For example, in Champasack market in the South, they had doubled their levels of November 2009 and in the capital Vientiane they were up by 40 percent. By February 2011, prices of rice stabilized at levels 26 to 58 percent higher than at the same time last year (Figure 4). In general, the soaring glutinous rice prices reflect the lower production at both the domestic and regional levels. Prices in Lao PDR have shown the same trend as the Thai export prices that declined in December with the new harvest, but by February 2011 remained 33 percent above their levels of a year before (Figure 5).

The high prices of rice give concerns about access to food of low-income groups of population, particularly those that suffered crop losses this season. The food security situation of these people needs to be closely monitored and supported.

Figure 4: Retail Prices of Glutinous Rice (2nd Quality)

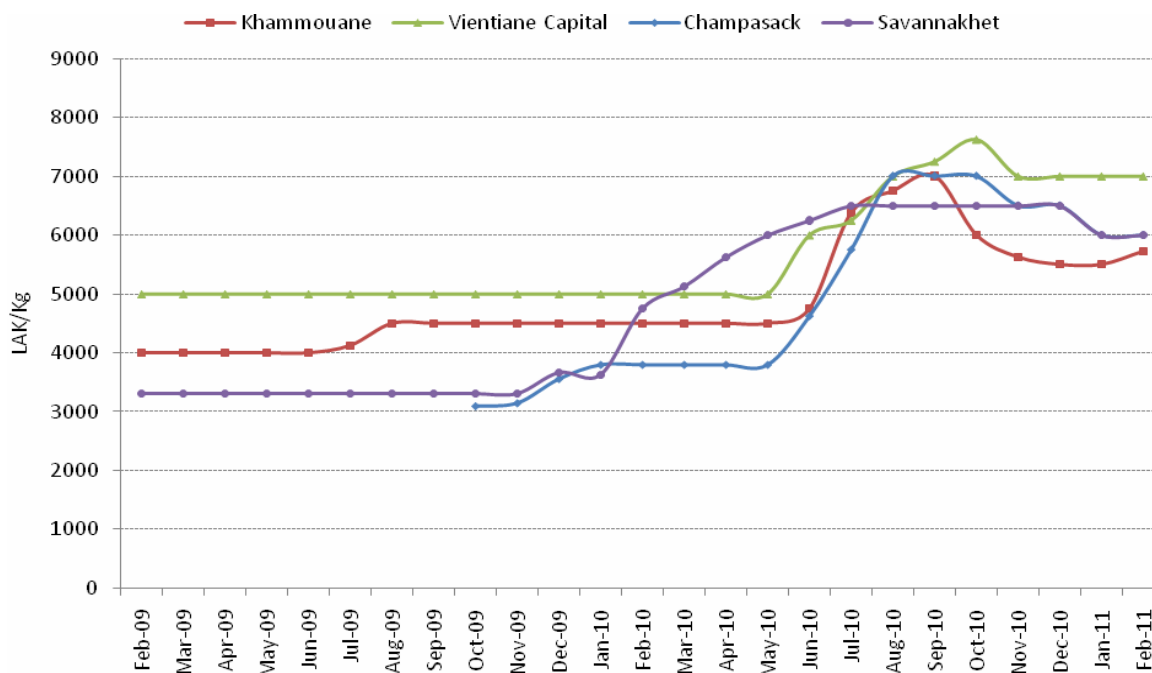
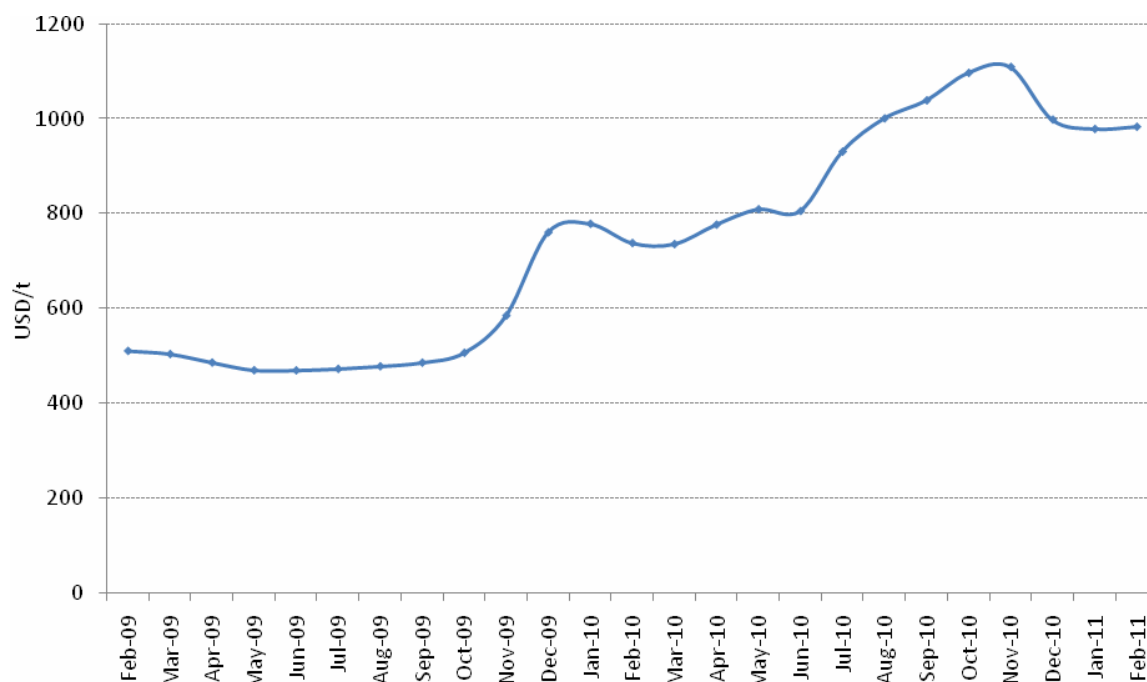


Figure 5: Export Price of Glutinous Rice (10 percent) f.o.b. Bangkok



6.2 Rice supply and demand balance for marketing year 2011 (January/December)

- **Population:** A mid-year 2011 population of 6.393 million persons has been used for deriving the rice balance, based on 2009 figures from the Department of Statistics (Agriculture Statistics Yearbook, May 2010) projected with the official growth rate of 2.1 percent.
- **Production:** The Mission production estimates for the 2010 main wet season and projections for the 2010/11 dry season are taken. Because of small and poor maintained milling infrastructure, the conversion rates of paddy into milled rice are highly variable and can be as low as 55 percent. An average milling rate of 60 percent used by the Government has been adopted for the balance.
- **Stocks:** Given the lack of reliable information on stocks held by farmers, traders and Government, no change in stocks has been assumed in marketing year 2011 (January/December).
- **Human consumption:** Rice is the main staple in the country and per capita consumption of rice is among the highest in the world. The rice consumption norm of 206 kg of milled rice per capita/year used by the Ministry of Agriculture and Forestry, Centre for Statistic and Information (DOS) is adopted in the preparation of the balance. This norm is consistent with information from the Lao PDR Expenditure and Consumption Survey of 2009 (LECS 4) that indicates an average daily intake of 569 grams of rice, equivalent to 207.7 kg per caput/year, as well as with information gathered by the Mission during its extensive field trips. Quantities of white maize consumed have not been incorporated into the balance as they represent negligible quantities.
- **Feed use:** Given the predominance of rice cultivation, it is estimated by the Ministry of Agriculture DOS that some limited amounts of rice are used for animal feeding. A total of 35 000 tonnes, representing less than 2 percent of total production is to be fed to livestock.
- **Industrial use:** Some 250 000 tonnes of rice are anticipated to be employed by the brewing industry. The variety used for brewing is CR302, dry season non glutinous rice which is not used for human consumption.
- **Seed requirements:** Official seeding rates of 80 kg per hectare in lowland areas and of 60 kg in upland areas, coupled with the average areas planted in the past three years, are applied in the preparation of the balance.
- **Post-harvest losses:** The rate of 10 percent of production, including handling and storage losses, utilized by Ministry of Agriculture DOS is used.

- **Import requirements:** Given the large and porous borders of Lao PDR with neighbouring countries, particularly Thailand and Viet Nam, there is active cross border trade of rice in both directions. However, accurate information on informal imports and exports is not available despite its recognized significance. In view of better milling facilities in neighbouring countries, it is not unusual that rice is exported in paddy form and imported back as milled rice. Trade is also supported by the fact that glutinous rice is a preferred variety in north-eastern parts of Thailand bordering Lao PDR and that in Viet Nam there is a niche market for glutinous rice to meet demand during festivities. Thai non-glutinous rice was widely observed by the Mission in the markets visited and traders reported imports from Viet Nam in border markets. In general, taking into account the smaller population and domestic demand in Lao PDR relative to Thailand and Viet Nam - the first and second world rice exporters respectively - it is estimated that any deficit in the country will be covered by formal and informal imports, provided there is an effective demand in the country.

Imports of rice required to maintain food consumption at historical levels in marketing year 2011 (January/December) are estimated at 38 000 tonnes, around the volumes imported in 2010. Of this amount, 30 000 tonnes are expected to be covered with formal and informal commercial imports by private traders. Last year, nearly 26 700 tonnes were formally imported from Thailand. Food aid for all assistance programmes (including school feeding) is expected at 10 000 tonnes of rice, of which 2 000 tonnes are to be purchased locally. Emergency food aid to meet consumption needs of vulnerable groups in areas affected by a reduced production in 2010 is estimated at 4 029 tonnes of rice.

- **Exports:** Following the 2010 reduction in production and measures taken by the Government aiming to discourage exports, no formal exports are anticipated in marketing year 2011.

Table 6: Rice Balance Sheet, 2011(January/December) Marketing Year ('000 tonnes)

	Rice (milled)
DOMESTIC AVAILABILITY	1 804
Production	1 804
Stock variation	0
TOTAL UTILIZATION	1 842
Food use	1 317
Feed use	35
Other uses	490
- Feed	35
- Seed	60
- Industrial	250
- Losses	180
IMPORT REQUIREMENTS	38
Anticipated commercial imports	30
Planned food aid	8

6.3 Overall food situation

Although food supply (particularly of rice) at the overall level remains broadly in line with national requirement as discussed above, there are substantial variations at provincial level. The regional analysis in Annex 1 shows that there are some provinces able to produce surplus, while others are in a deficit situation. The mountainous geography of the country and poor transport infrastructure result in high marketing costs and do not facilitate inter-provincial trade from surplus to deficit areas. Moreover, although the availability of rice is generally satisfactory, accessibility is highly contingent on income levels and geography, with large differences at the district and community levels. The same disparity in availability and accessibility is observed for protein sources (specifically meat and fish). Low levels of oil and fat consumption impede uptake of micronutrients.

7. **HOUSEHOLD FOOD SECURITY**

This section highlights the findings from household data collection conducted as part of the CFSAM. Data is primarily qualitative throughout, and is based on responses from individual households in all provinces of Lao PDR. Food insecurity, vulnerability and poverty are multifaceted phenomena, and are experienced by communities, households and individuals in a wide range of ways. In Lao PDR, food insecurity has both temporary and chronic aspects.

The Mission found that food insecurity is currently concentrated in central and southern Lao PDR due to the shocks of late rains/drought and localized flooding. Mission findings corroborate reports of drought across central and southern Lao PDR and flooding in Khammouane and Savannakhet that were received by WFP throughout June-November 2010. In southern Lao PDR, where the recovery following Typhoon Ketsana has not yet been completed, these new shocks impacted already vulnerable households. The findings of the 2010 CFSAM are consistent with trends identified in earlier surveys. A short summary of the key findings from previous surveys has been provided in Section 7.4 to situate the 2010 CFSAM findings within the context of past assessments. The implications of these findings and response options are discussed in the recommendations section.

7.1 **Number of people affected**

The Mission estimates that there are 111 918 people in need of food assistance, including: 33 316 in Saravane; 29 067 in Attapeu; 24 607 in Savannakhet; 22 660 in Khammouane; and 2 268 in Sekong¹.

Table 7: Number of People in Need of Food Assistance, by Province

Province	People in need of food assistance
Attapeu	29 067
Khammouane	22 660
Saravane	33 316
Savannakhet	24 607
Sekong	2 268
TOTAL	111 918

7.2 **Emergency food assistance needs**

To assist the affected population, 4 029 tonnes of rice is needed. This amount only relates to the overall rice gap and does not include support for the treatment of acute malnutrition. The Mission estimates that 1 600 tonnes of rice (40 percent of the total requirement) can be purchased locally, the rest will be imported.

Table 8: Food Assistance Needs in 2011

	General Food Distribution (mt)
April	1 343
May	1 343
June	1 343
Total	4 029

7.3 **Other food assistance programmes**

WFP School Feeding

WFP supports school feeding in Attapeu, Luangnamtha, Oudomxai, Phongsali, Saravan and Sekong provinces. Participating primary schools provide children with a fortified corn-soya blend snack to alleviate short-term

¹ This data is based on the results of the CFSAM and the supplementary fieldwork undertaken to confirm and add more precision to the findings, in line with the recommendations at the end of this report. The data of the follow-up survey is available in a separate document.

hunger and improve concentration at school. The snack also addresses micro-nutrient deficiencies that are common in rural areas. In addition, students receive take-home family rations as an incentive for parents to send them to school. Children who live too far away from school to walk there every day are provided with bedding and extra food rations to encourage them to study and attend school. In 2010, some 157 800 students in 1 565 schools, and 478 000 students and their families participate in this programme.

7.4 CFSAM 2010 assessment findings

Food insecurity in 2011 is strongly concentrated in central and southern Lao PDR, according to data collected on shocks and the prevalence and frequency of coping strategies of households in response to those shocks. The findings corroborate reports received by WFP throughout June-November 2010 about drought across central and southern Lao PDR; flooding in Khammouan and Savannakhet; and the incomplete recovery following Typhoon Ketsana. The implications of these findings are discussed in the recommendations section.

Methodology

The Mission conducted interviews with household and heads of villages in districts throughout Lao PDR. The responses have been compared to findings of previous food security assessments, including: Rapid assessments; Emergency Food Security Assessments (EFSA); the Comprehensive Food Security and Vulnerability Assessment (CFSVA) of 2006, and national household sample surveys such as LECS4.

Based on initial meetings with provincial and district level authorities from the Agriculture and Forestry Office, mission teams selected villages in each province using two criteria 1) the degree to which they had been affected by or were vulnerable to shocks and 2) road accessibility. Households in a village were selected on the basis of availability of the farmers to be interviewed. In total, 109 households were interviewed.

Assessment limitations

In the 2010 CFSAM, remote villages were not visited. Attempting to visit remote villages would have reduced the total number of locations visited by the teams within the allotted time. This is a limitation, as previous surveys have found that vulnerability in Lao PDR is related to remoteness and isolation, with more vulnerable people living in more difficult to reach areas.

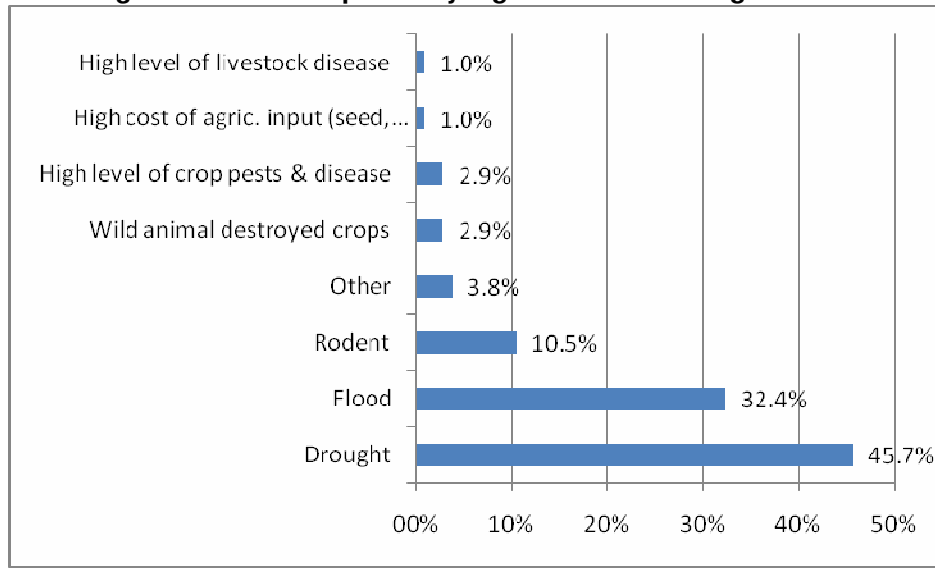
Shocks

Shocks in Lao PDR can be severe and yet highly localized. Lao PDR is characterized by wide variations in terrain, climate, social, economics, and culture. As a result, the impacts of shocks can be inconsistent from one location to the next, even within the context of the same shock².

Households were asked to identify shocks which they experienced in the last 12 months which resulted in major damage to crops, assets or household members themselves. They were asked to rank these shocks in terms of impact on the household. Drought and flooding were the most frequently reported. Drought was identified as a shock by 80 percent of the households interviewed. Drought was ranked first by 46 percent of respondents. The term "drought" included instances of erratic rainfall or a prolonged break in the monsoon rains. Floods were ranked first in importance by 32 percent. Floods tend to have a more severe short-term impact on communities than erratic rainfall. The impacts of flooding are multi-sectoral, resulting in damage to dwellings, field crops, livestock, assets and infrastructure. Drought compromises agricultural livelihoods in the short and medium term, requiring several seasons to achieve full recovery. Damage due to a flood can be exacerbated if drought conditions exist. Many respondents reported they were affected by both drought and flood.

² See the WFP Post Ketsana Rapid Assessment (March 2010) for discussion of this as it applied to southern Lao PDR in the months after the typhoon.

Figure 6: Shocks Reported by Significance of Damage Caused



Affected households in areas that experienced flooding in 2010 are facing rice shortfalls, either because they lost their whole production or because they have already consumed the production not damaged by floods. The Southern provinces of Saravan, Sekong and Attapeu, which experienced widespread and significant losses in 2009 as a result of Ketsana, deserve attention approaching the 2011 lean season (May-October). Areas affected by the 2010 floods in Khammouane and Savannakhet are also cause for concern, although the impact was more localized.

The impact of other shocks includes:

- **Typhoon Ketsana:** 186 000 people were affected when Typhoon Ketsana hit southern Lao PDR in late September 2009, causing extensive damage to property and infrastructure. The typhoon resulted in windstorms and flash flooding in the upland mountainous areas and severe flooding in riverine areas along the Sekong and Mekong Rivers. Attapeu, Saravan, Savannakhet and Sekong provinces bore the brunt of the typhoon, experiencing major flooding and windstorms which resulted in significant losses and damages in every major sector, according to The Joint Assessment of Impact and Needs arising from the September 2009 Ketsana Typhoon (Government of Lao, IASC). Ketsana had a double impact on the household food security of its victims, destroying their available food stocks and damaging their main rice crop just prior to harvest.
- In response 7 890 tonnes of food assistance was provided to 136 000 people for three months by WFP, in cooperation with NGO partners (CARE, Concern Worldwide, Health Unlimited, Oxfam, RLIP, Village Focus International, and World Vision). At the end of these three months, the Post Typhoon Ketsana Rapid Assessment (WFP, March 2010) found that the recovery from Ketsana was delayed.
- The Nutritional Assessment in 2008/09 Flood and Typhoon Ketsana Provinces of Lao PDR, June 2010, Ministry of Health, and UNICEF found an “alarming” rate of acute malnutrition in Attapeu province and a serious rate in Saravan and Savannakhet provinces. The findings resulted in a decision to extend food assistance mid 2010 by UNICEF, WFP and WHO.
- **Flash floods:** The Central provinces of Bolikhamxai, Khammouan, and Savannakhet experienced severe localized flooding in 2010. The most severe events occurred in Khammouane and Savannakhet province in central Lao PDR, resulting in substantial damage in areas along the Xe Bangfai and Xe Banghiang rivers. The National Disaster Management Office has reported that the floods affected 14 057 households (75 248 persons) in 280 villages of 18 districts in Khammouan and Savannakhet provinces. A total of 13 250 hectares of land was damaged. High water level due to heavy rains, caused rice production losses and livestock losses, affecting all households in the affected communities regardless of their food security status and livelihood strategies. However, households depending on agricultural crop production or livestock

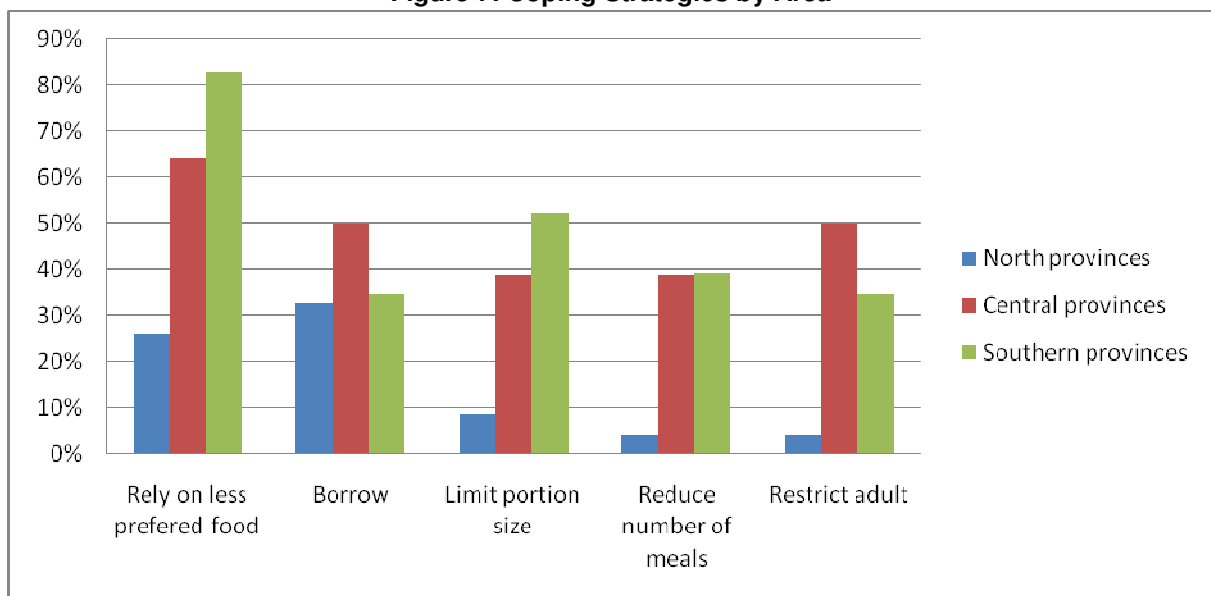
production are more severely affected. Infrastructures such as roads, bridges, schools, water wells, and medical facilities were also damaged.

- **Erratic rainfall:** This topic has been discussed in detail in section 3.2 above.
- **Increased rice prices:** This issue is discussed in fuller detail at the national level in section 6.1. Within households surveyed, vulnerability to price increase depends on market reliance and the proportion of their budget spent on rice. Households interviewed indicated an increase of rice price that put pressure on households who have already consumed their own production.
- **Landslides and erosion:** These were reported in the North in Oudomxay province. The fields affected by landslide were still not cleared, affecting this year's rice production.
- **UXO:** Unexploded ordnance (UXO) remains a factor in food insecurity. Some 300 casualties and fatalities are attributed to UXO every year. Farmers from eastern provinces in all regions have reported that they fear expanding agricultural land because of UXO. Despite renewed government efforts and political commitments highlighted by the November 2010 announcement of a Lao-specific MDG 9 to address UXO, UXO continues to represent a risk factor for poor communities in contaminated areas.

Coping strategies

The Mission collected data on the frequency and composition of meals consumed by households, as well as coping strategies applied when dietary intake was inadequate for any reason. Based on data collected in previous assessments, emphasis was on short term, consumption easing coping mechanisms, as these tend to be more widespread and common than distress mechanisms.

Figure 7: Coping Strategies by Area



Coping mechanisms are being applied with greater frequency and on a more widespread basis across central and southern provinces, suggesting that food insecurity is of greater concern for those regions. In the Lao PDR context, borrowing may take the form of reciprocal arrangements (with and without interest) involving cash, labour, rice, or assets. Depending on the terms of credit, borrowing for consumption smoothing may commit households to debts which take extended periods to pay off, and may contribute to increased vulnerability for households with limited livelihood options.

The Mission noted that coping strategies are being employed immediately post-harvest, traditionally a time of the year where food is more plentiful. This should be used as a benchmark measure for additional assessments conducted in early 2011 (see recommendations section).

Figure 8: Coping Strategies

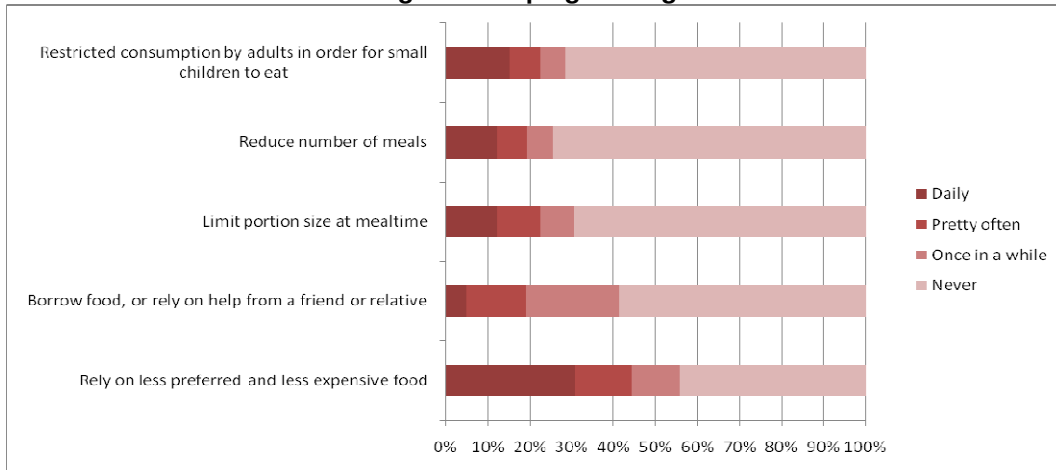
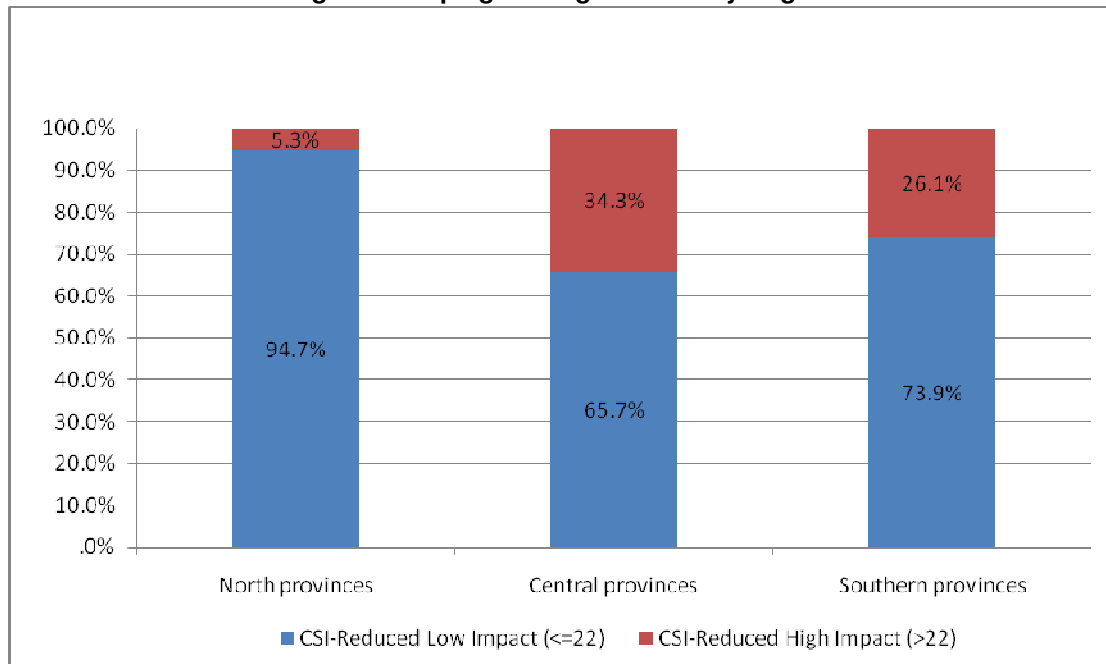


Figure 6 indicates that more than 50 percent of all households are consuming less preferred food stuffs on a weekly basis at least, indicating the fragility of household food intake. In southern provinces, this increases to 82 percent prevalence.

Coping strategies index

The CSI is calculated using score assigned to the frequency of use of the different options listed in Figure 7. Daily usage of a particular coping mechanism results in a score of 7, frequent (4-5 times a week) usages is scored 4.5, occasional use has a score of 1.5, and never is 0 (Zero). Weighting is applied to the different options to indicate severity: reduction of consumption by adults attracts a score of 3 points; borrowing food carries a score of 2 points, while the rest (relying on less preferred food, reducing number of meals and limiting size of meal) are each assigned a weight of 1.

Figure 9: Coping Strategies Index by Region



Source: Crop and Food Security Assessment Mission 2010.

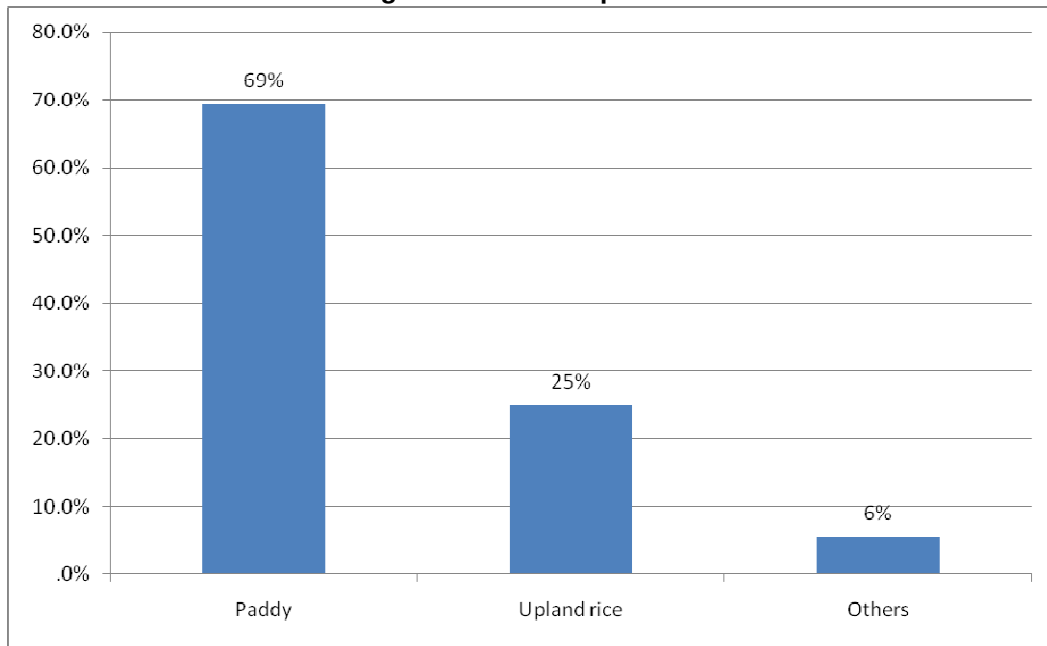
According to the finding, the index indicates the high impact in the central and southern provinces at 34.3 percent and 26.1 percent respectively. This is consistent with the assumption that drought and flood affected areas are more likely to be food insecure.

Livelihoods

Subsistence agriculture and own production remain a primary livelihood strategy throughout the country, especially in rural areas. Rice production is the prevailing agricultural livelihood. Diverse alternative livelihoods are used to supplement rice production.

Among households interviewed by the mission, nearly 70 percent reported lowland rice as their main crop grown. Twenty-five percent reported upland rice as their main crop (Figure 8). Only 5 percent reported cultivating a crop other than lowland rice or upland rice.

Figure 10: Main Crop Grown



Secondary crops are an important source of both cash income and food for consumption. The types of crops cultivated by lowland rice farmers and upland farmers are illustrated in Figures 9 and 10 respectively.

Maize was reported as cultivated by both lowland farmers (27 percent) and upland rice farmers (23 percent). Households reported cultivating rice by more than one method, with upland farmers reporting that they cultivated paddy rice, i.e. using transplanting (23 percent) and paddy farmers cultivating upland rice, i.e. without transplanting (12 percent).

With the exception of maize and rice, secondary crops grown by lowland rice farmers differed from those grown by upland farmers. Lowland rice farmers reported cultivating vegetables (37 percent) and long beans (7 percent). Upland rice farmers reported cultivating cassava (15 percent) and job's tears (11 percent).

Figure 11: Second Crop Grown by Paddy Farmers

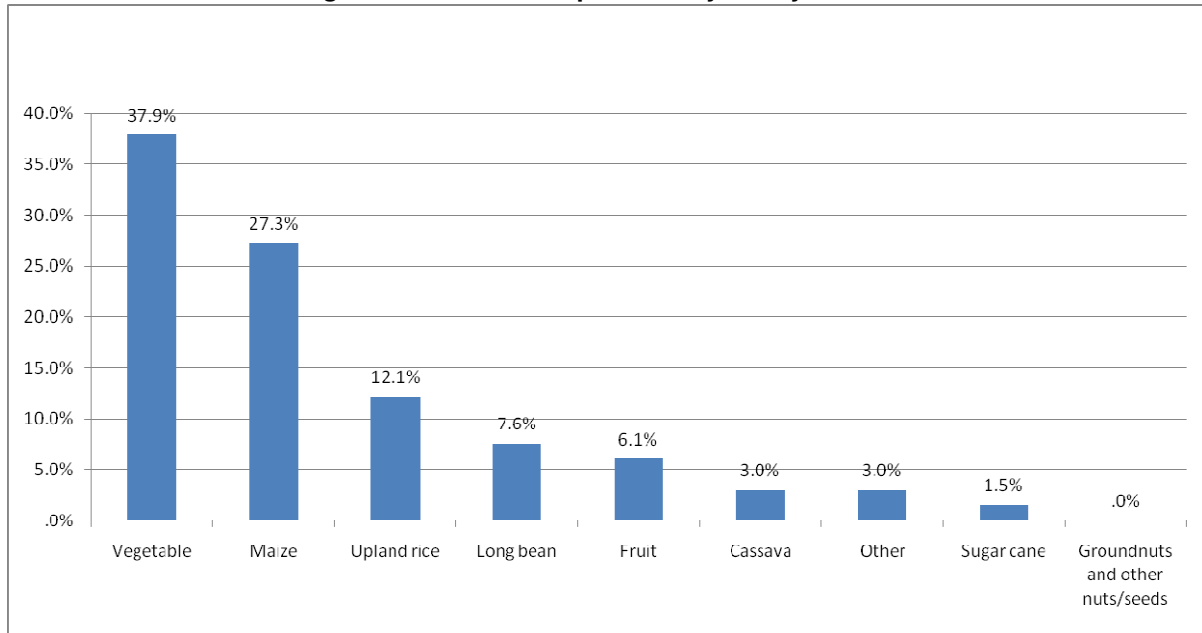
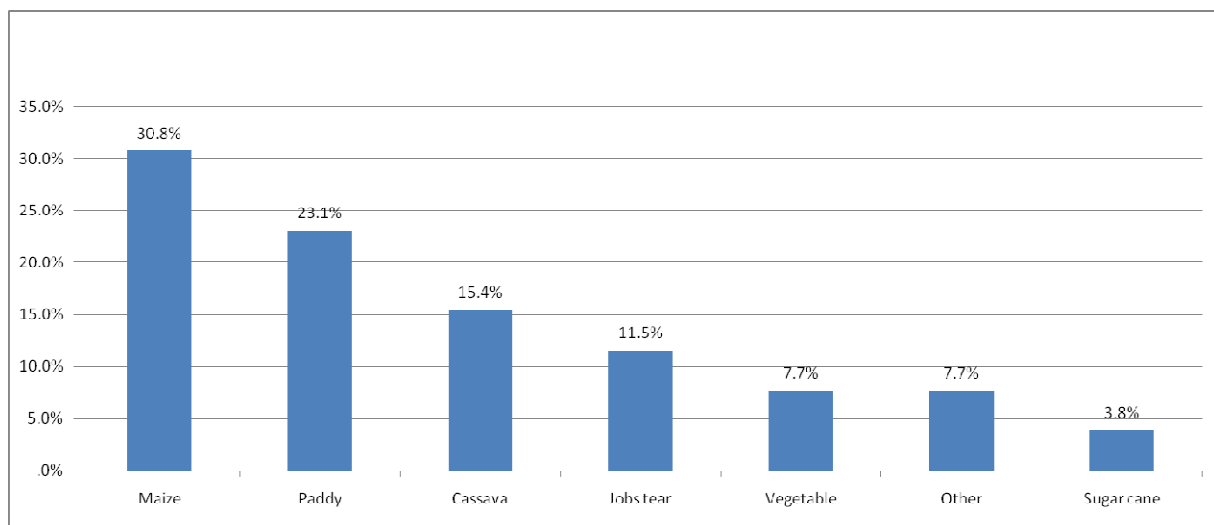


Figure 12: Second Crop Grown by Upland Farmers



The types of secondary crops cultivated had an impact on the dietary diversity of the household. Among lowland rice farmers the Mission observed that households cultivating vegetables were more likely to consume vegetables on a daily basis, whereas those households not cultivating vegetables had much lower frequency of consumption.

Non-timber forest products (NTFP) remain an important source of both cash income and consumption with fishing, mushroom and bamboo collecting cited as the most common practices. Among households interviewed, upland rice farmers were more often engaged in gathering of non-timber forest products than were paddy farmers. The mission observed that households gathering mushrooms and/or bamboo shoots from the forest were more likely to consume these items with higher frequency which had a positive impact on their dietary diversity.

Dietary diversity

Figure 13: Average Consumption of Food Types

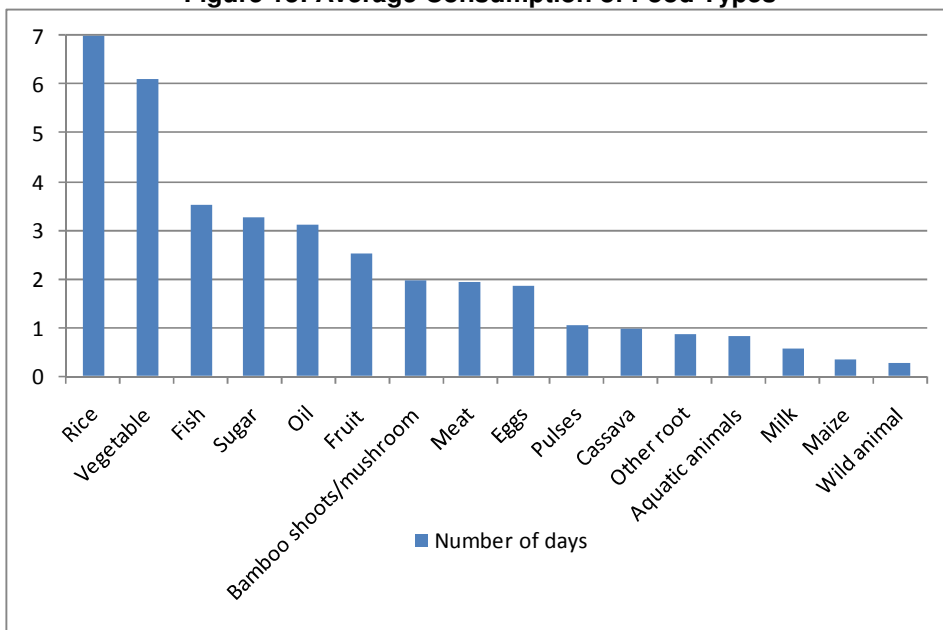
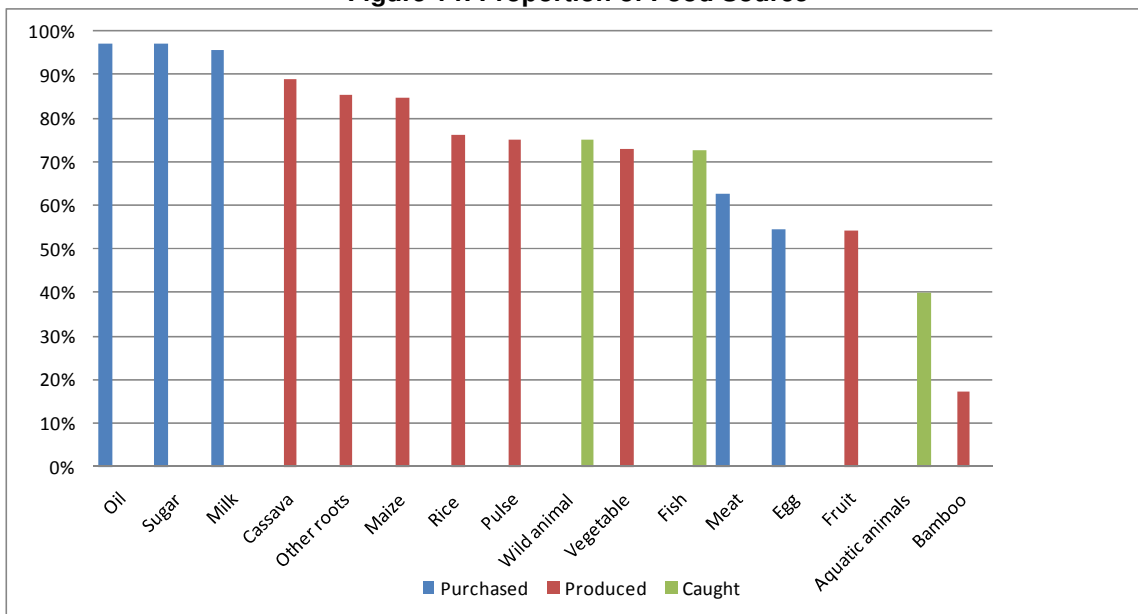


Figure 14: Proportion of Food Source



The basic components of the Lao PDR diet are sourced from the household itself, including: own production; hunting; and gathering. The exceptions are meat, eggs, and oil (Figure 12).

Nearly all oil consumed is sourced from the market. In households experiencing limited cash resources this may result in reduced consumption of oil, and thus poor micronutrient absorption. The traditional reliance upon own production and/or gathering to source food commodities may be related to the relatively high prevalence of micronutrient deficiencies in Lao PDR.

To measure dietary diversity, food frequency, and relative nutritional importance of different food groups, the Food Consumption Score methodology was applied. FCS is widely applied as proxy for food consumption, and

therefore food security at the individual level³. Basic FCS methodology requires households to recall foods and quantities consumed over the last seven days. Each item is given a compound score, derived from its nutritional weighting and the number of days on which it was consumed. An overall food consumption score was calculated for each household by multiplying the frequency of consumption by weight for each food group. The household score is then compared with thresholds that indicate the status of the household's food consumption: Poor (25.5 or less); Borderline (25.5 to 36.5) and Acceptable (greater than 36.5)⁴.

The Mission found that poor FCS amounted to 5.5 percent of all households sampled, with 10.1 percent classified as borderline and 84 percent as acceptable or better. These findings are consistent with the CFSVA 2006, which report 87.2 percent of the population as acceptable, 10.6 percent as borderline and 2.1 as poor. Increases in the number of households classified as poor may be a result of the timing of the assessments, in fact both assessments have been conducted at the time of harvest and not in the lean season for instance, thus the FCS does not show an important level of vulnerability. However, what is of more general interest is the fact that the proportions of food insecurity across the sample are consistent with that recorded in 2006.

7.5 Summary of previous studies

Lao PDR Expenditure and Consumption Survey 3, 2002-03

Based on data collected during LECS 3 (2002-2003), 25 percent of the population of Lao PDR had inadequate food consumption in terms of meal composition and quality. Undernourishment was more prevalent in rural areas than in urban areas (Table 1). Food insecurity was most prevalent among households with the lowest income overall.

Table 9: Undernourished Populations, 2002-03

Percentage of	Undernourished (percent)
Urban population	15
Rural population	29
Population with lowest income	53

Source: LECS 3, 2002-2003.

At national level, 31 percent of the population did not have adequate income to purchase the food necessary to reach the minimum energy requirement of 2 050 kilocalories per day (a level classified as critical food poverty).

Lao PDR Expenditure and Consumption Survey 3, 2007-08

In LECS 4 (2009), the average national household income from crops (predominantly rice) was 8 million LAK (1 000 USD)⁵ per year per household. The next largest agricultural income sources were sales of meat, vegetables and fruits. Among the provinces, Sayabouli province had the highest revenue from crops, followed by Phongsali province and Vientiane. Nationwide, 38 percent of crop production is for own-consumption and 61 percent is for sale.

Multiple Indicator Cluster Survey, 2006

Despite steady GDP growth over the last decade, the overall nutritional status of Lao PDR has remained stagnant. Progress towards attaining MDG 1 has been reported by the Government of Lao PDR and the United Nations as being Seriously Off-Track⁶. The *Multiple Indicator Cluster Survey* conducted by the Lao PDR Department of Statistics and UNICEF in 2006 emphasizes that chronic malnutrition remains consistently high. Some 37.1 percent of Lao PDR children under age five are moderately or severely underweight (9 percent

³ *Food Consumption Score Kit – Lao PDR: How to apply the FCS in the Lao context* (2009). WFP: Vientiane

⁴ The FCS Kit for Lao PDR recommends adjusting the WFP standard thresholds applied by the CFSVA, as the overall dietary intake in Lao PDR is likely to be less than 2100 Kcal. This is explained in full detail in the FCS Kit document. Whatever threshold is applied, the total number of households identified as borderline or poor is constant at 15.6 percent.

⁵ 8000 LAK= 1 USD (January 2011 exchange rates)

⁶ Government of Lao PDR/United Nations (2010) *Accelerating Progress Towards the MDGs*. Vientiane: GoL/UN.

classified as severely underweight). Some 40 percent of children are stunted or too short for their age. Children in the south region are more likely to be underweight than children elsewhere.

WFP Comprehensive Food Security and Vulnerability Assessment, 2008

The CFSVA conducted by WFP and partners represents the fullest attempt to conduct a national assessment of food security to date, and remains a key reference document for programming in the food security sector⁷. The CFSVA indicated that 13 percent of rural households had poor food consumption at the most food insecure time of year just prior to harvest. It identified some 84 000 food-insecure households at the time of the survey (2006).

The CFSVA analysis showed that only one-third of the rural population in Lao PDR can be considered food secure (that is, having acceptable food consumption throughout the year), and a substantial proportion of rural households continue to experience chronic as well as transitory food insecurity. Two-thirds of the rural households have a livelihood portfolio that put them at risk of becoming food insecure should one or more shocks occur in a year. The major livelihood strategy in rural Lao PDR is subsistence agriculture, agriculture for own-production activities, waged agricultural labour, or a combination of both (depending on labour availability, access and seasonality).

Food insecure households are typically farmers with low engagement in fishing and hunting or unskilled labourers. They practice upland farming on small plots of land in fragile areas with high sloping and often do not possess kitchen gardens. They tend to be asset poor, with low attainment in formal education, illiterate and from non-Lao PDR Thai ethnic groups.

A variety of factors contribute to household food insecurity, including: limited access to land for cultivation (due to concessions and UXO); loan repayment obligations, food prices and high vulnerability to natural disasters. Poor road conditions are the main reason for the lack of physical access to markets. In general, access to market is reduced in the wet season (between May and November).

Village resettlement can change livelihood opportunities, sometimes resulting in households' diminished availability of food, or increased travel time to the fields. Equally, as commercial agriculture expands, some households have made a complete transition to waged labour. This is an important development in the rural context, and requires a fuller review than the 2010 CFSAM assessment affords.

Finally, Lao PDR is the most heavily bombed country in the world per capita (Indochina war). UXO contamination still affects 15 of the provinces and is still an issue for populations living in affected areas, as it prevents them from expanding their cultivation area.

8. RECOMMENDATIONS FOR FOLLOW-UP ACTIONS

8.1 Recommendations related to agriculture

Crop-production data collection

The Mission came across several instances of contradictory data regarding cropped and harvested areas. The system of reporting involves the passing of information from units within communities to the DAFO and from there via the PAFO to national MAF. However, figures for recent years at MAF level are not always consistent with those at DAFO level. There is an opportunity for improvement in this area. An agricultural census is currently being prepared, which is to be welcomed, but uniform procedures should be put in place to keep the census updated every six months or so rather than waiting for another five years before the next census.

⁷ It is recognized that the Lao Census of Agriculture 2010-2011 launched on 23/12/2010 is a major step forward in terms of upgrading the data available on agriculture in Lao PDR, and it is anticipated that this will be a vital resource for food security policymakers and practitioners when it becomes available.

Crop diversification for food security

It is generally accepted that, perhaps 20 or 30 years ago, communities used to grow a wider range of food crops for household consumption than they do now. With the Government's narrow focus, in recent years, on increased paddy production as the way in which to increase food security, this diversity has, to a certain extent, been lost. The potential for diverse crop production in Lao PDR is great. Advantage should be taken of it to ensure that other acceptable food crops are available when supplies of rice are low.

Dry-season irrigation

The Government's attempts to increase dry-season irrigated paddy production would appear to be hampered by financial constraints. Assistance with wells, pumps, diversion weirs and small dams would undoubtedly show beneficial results.

Grain storage

Although very little quantification of post-harvest losses has been carried out, it is known that grain losses in village granaries can be quite high. Although many granaries have anti-vermin devices to stop rats climbing in, a surprising number do not. There would seem to be room for an instructional programme for farmers in the general area of grain storage.

Veterinary surveillance and care

Villagers in more remote areas frequently complain of a poor or slow response to their reporting of livestock problems. With high livestock mortality in some localities this is an area in which there is scope for improvement through further training and better equipping of veterinary officers.

8.2 Recommendations related to household food security

8.2.1 Short- and medium-term

- *Central and Southern Lao PDR*

Based on the findings of the CFSAM and supported by previous assessments carried out in 2010, there are clear indications that food insecurity continues to be geographically concentrated in central and southern Lao PDR. This is in keeping with expectations, such that the findings of the present assessment are consistent with previous assessments, and from regular reports received from WFP sub-offices.

Communities made vulnerable by Typhoon Ketsana are in the process of recovery, but as the high levels of malnutrition identified in Attapeu and elsewhere indicate, there are still ongoing humanitarian concerns. To varying degrees, these are likely to prevail through to harvest 2011.

Although post Ketsana FFR distributions have been completed, the possibility remains that additional shocks will have additional adverse impacts on food security in the south. WFP will need to maintain focus on the south and central regions over the next six months, as the traditional lean season progresses. Consideration of additional emerging needs should inform any possible further extension of PRRO 10566.0. Monitoring and recommendations from WFP sub-offices in Saravan and Attapeu will be critical in this regard. WFP's ongoing school feeding and nutrition programming should be continued as a critical support for vulnerable and marginalized children, with additional response mechanisms devised as necessary.

- *Renewed need for emergency food security assessment*

In support of the findings above, and based on the assumption that drought conditions in central and southern Lao PDR are likely to continue between now and the onset of the rainy season (approximately May 2011), it is recommended that a follow-up Food Security Assessment (EFSA) to these regions be fielded with immediate effect, with the objective of evaluating the extent to which drought conditions have compounded existing vulnerabilities, and caused marginalized populations to become newly vulnerable. More specifically, this Emergency Food Security Assessment should quantify the total number of affected populations, their locations

and the overall profile of assistance required. In its recommendations the EFSA should fully explore the full range of response options available to WFP including FFR, FFW and cash distributions.

- *Small-scale shocks and localized emergencies*

Consistent with the various shocks listed in section 5.2 (rodents, drought, delayed post-Ketsana recovery, floods), localized shocks and disasters are likely to be a constant feature of the Lao PDR context across all provinces in 2011. This will compound existing vulnerabilities in the central and southern regions, and for isolated populations in difficult-to-reach locations. Although major WFP programming attention should continue to be focused on the south, monitoring and assessment of all reports of localized emergencies should be conducted.

Assessment and response to localized emergency events should be jointly conducted by the Food Security Cluster, Government at the national, provincial and district level, and NGOs with response capability. Response to needs should be developed on a case by case basis, with priority given to rapid onset, unanticipated events, for which vulnerable populations may have less time to deploy coping mechanisms. Supporting improved capacity in disaster risk reduction and disaster management planning should feed into the recommendation on capacity development listed below.

8.2.2 Long term

- *Capacity Development*

WFP has important strengths and institutional knowledge which can support capacity development in a wide range of sectors and operating contexts. WFP should work with key partners at every level to develop a set of priority capacity development requirements and options, and explore options for expanding capacity development throughout 2011.

- *Options for Purchase for Progress*

Although beyond the explicit scope of this assessment, it is worth noting that some provinces of Lao PDR are surplus production areas for a number of staple crops. Supporting better redistribution of available resources domestically would appear to be a viable strategy towards better food security for the country. WFP is in the process of operationalizing an initiative to support this, namely the Purchase for Progress (P4P) initiative. However, P4P's role in assisting disaster response has yet to be fully explored; this could be a subject of further review in future.

- *Agriculture Census*

Finally, the 2011 Agricultural Census represents a key step forward in developing the existing data on agriculture and food security in Lao PDR. WFP should make every appropriate effort to support this process.

ANNEX 1

Agricultural Situation by Province

NORTH

Phongsali

Phongsali is the most northerly province of Lao PDR. Upland paddy accounts for approximately 63 percent of the total paddy area and lowland approximately 35 percent; the area under dry-season irrigated accounts for only about 400 hectares. This year the start of the rains in late April was followed by a long period of poor rainfall lasting until about mid-August. May was an especially dry month. This resulted in re-seeding of nurseries, delayed transplanting and some reduction in paddy area, especially in the uplands. For lowland paddy about 6 800 hectares were prepared for transplanting, but only 95 percent (6 500 ha) of this was achieved. Of that 95 percent 10 percent was transplanted late. The result of these setbacks was reduced paddy production in both lowland and upland compared with 2009. The rodent problem that has plagued upland rice production during the last three years was less serious this year, but damage by larger wild animals was worse than usual, with animals foraging amongst crops because of the generally dry conditions. The area under maize has been increasing recently. From 2009 to 2010 it increased 25 percent from 3 350 to 4 200 ha; average yields were about 4.5 tonnes/ha. There has also been a rapid increase in the area under vegetables during the dry season, mostly for export to China; 16 000 tonnes are expected to be produced this year. The province has approximately 15 000 hectares under rubber and 2 400 hectares of tea; both areas appear to be static for the time being. Some paddy has been grown amongst the young rubber trees since plantation began in 2005; paddy yields, however, have now declined to about 1.2 tonnes/ha with the increasing maturity of the rubber trees.

Luang Namtha

Luang Namtha is a rice-surplus province that normally exports part of its production to China. This year, however, with the poor start of the wet season and fears of a national rice shortage, a temporary moratorium has been placed on exports until March 2011. The proportion of lowland paddy area (now more than half of the province's total) is increasing while that of upland paddy (much of it under shifting cultivation) is declining. Upland paddy areas this year declined more rapidly than usual as a result of the poor rains at the beginning of the wet season and a general shortage of seed for re-sowing. About 12 percent of the province's paddy production comes from dry-season irrigated land. Wet-season lowland production this year was little affected by the late rains and yields are expected to exceed those of 2009. Upland paddy, on the other hand, showed a slight reduction in average yield and, because of the reduced harvestable area, a significant overall drop in production compared with last year. Reflecting this situation it appears that most lowland communities have adequate stores of rice whereas most upland communities do not. The rodent problem that has plagued upland rice production during the last three years was less serious this year, but damage by larger wild animals was worse than usual, with animals foraging amongst crops because of the generally dry conditions. Levels of other pests were normal, apart from an increase in gall midge infestation. The province has 28 000 hectares under rubber and a substantial area under sugarcane for export to China.

Oudomxai

The wet season started with adequate rains in April and May, but this was followed by a long period of poor rainfall that was generally insufficient for transplanting which therefore had to be delayed. However, the overall situation was deemed less serious than it had been in the 2003/04 production year. Both harvested area and yield of paddy were down compared with 2009, the former the result largely of a shortage of seed for re-sowing. The rodent problem that has plagued upland rice production during the last three years was less serious this year, but damage by larger wild animals was worse than usual, with animals foraging amongst crops because of the generally dry conditions. Green rice bug, leaf-folder and stemborer damage was reported to be worse than usual, especially on improved paddy varieties. The province's overall paddy production for 2010/11 is expected to be about 12 percent down on that of the previous year. The province produces a very substantial and rapidly increasing amount of maize for fodder for both the domestic and the export market (the total area, at more than 30 000 hectares, now exceeds that of paddy). It also has about 17 000 hectares of rubber trees; upland communities report that rubber plantations often have a negative impact on access to grazing for their livestock.

High rates of mortality amongst farmed pigs were reported, especially in Houn District; the cause may have been either blue-ear disease or swine cholera.

Bokeo

The planting rains this year started in May and early June and were followed by a long spell of poor rainfall that was generally insufficient for transplanting, which therefore had to be delayed. The levels of infestation by green rice bug and gall midge were said to be worse than usual this year, especially in lowland paddy. Notwithstanding, harvested lowland paddy area was slightly higher than in 2009, leading to increased production. Yields of upland paddy, however, were significantly down on last year. There are about 2 700 hectares of dry-season irrigated paddy which typically yields more than 4.5 tonnes/ha. Overall, Bokeo is expected to see similar levels of paddy production to those of 2009. The province produces a substantial and increasing amount of maize. Much of this is grown in the broad valley of the Mekong where the misty conditions generated by the river allow double-cropping without irrigation. The province has 22 000 hectares of rubber. Locally high mortality rates among farmed pigs (up to 100 percent of some herds) have been reported, probably due to swine cholera (but possibly to blue-ear disease).

Luang Prabang

The rains started as normal in April but shortly thereafter dry conditions prevailed until mid-July. The prolonged dry period necessitated extensive reseeded, and in many cases prompted upland farms to switch from paddy to sesame and Job's tears. Rodent damage this year was generally less severe this year than in 2008 and 2009, but farmers in Luang Prabang District reported higher levels of insect-pest infestation. Overall provincial paddy production is expected to be about 5 percent down on 2009, largely because of a reduction in the harvested upland area. From August to October the rains were generally good, favouring later-planted short-season maize. Provincial livestock were said to have increased in 2010 and livestock health was reported as good.

Huaphanh

The first planting rains fell as usual in April, but this was followed by a long period of dry conditions until mid-July which delayed transplanting on fields where no supplementary irrigation was available. August rainfall was satisfactory, but September amounts were again below average. Despite the fact that a large proportion of lowland farms have access to supplementary irrigation, 2010 lowland production was lower than that of 2009. The provincial authorities have been promoting livestock production for export; livestock health was said to be good.

Xayabouri

Xayabouri is the largest paddy producer of the six Northern provinces. The effective rains this year started in April and May. June was slightly drier than normal, but not to the extent of having serious implications for crop production. There was some localised flooding in August and September which affected parts of Xianghon, Nguen and Thonmixay Districts. In general, however, yields of both lowland and upland paddy were slightly higher than last year giving an approximately 8 percent increase in overall provincial paddy production. The area of maize in Xayabouri exceeds that of paddy; with higher prices this year it expanded by about 10 percent to more than 56 000 hectares, resulting, with average yields of 5 tonnes/ha, in production of about 280 000 tonnes. The province's pig population is reported to have increased this year, and livestock health in general is good.

CENTRE

Vientiane Municipality

There was a relatively timely start to the rains at the end of April. A protracted dry spell occurred in July, and in October, shortly before the rains stopped, there were heavy downpours and localised flooding. The harvested area of lowland paddy during the wet season was similar to that of 2009. However, with late flooding and a variety of pests and diseases including stemborer, leaf-hopper, gall midge and blast, lowland rainfed paddy yields were down on last year. The area of upland paddy was reported to have been almost completely eliminated in the interest of environmental conservation. Vientiane Municipality has, at 22 000 hectares, a larger area under dry-season irrigated paddy than any province apart from Savannakhet. On past records, dry-season

paddy yields are expected to be as high as 4.8 tonnes/ha. With their proximity to the capital, farmers tend to use more purchased inputs (seed, urea, 26-10-0 and some herbicides) than in most provinces, and the use of tractors for land preparation is universal. Yields of maize (wet season) were good at 5 tonnes/ha. Pig and poultry numbers increased in response to favourable prices; there were, however, cases of foot-and-mouth disease (FMD), swine fever and avian flu.

Xienkhuang

Effective planting rains started as normal in April but were followed by a dry spell from May to mid-July which, in some areas, necessitated several reseedings. The rains then stopped earlier than usual at the beginning of October. As a result, both lowland and upland yields are down on last year and overall provincial paddy production for 2010/11 is expected to be almost 10 percent lower than that of 2009/10. In response to higher prices the area under maize increased this year by more than 15 percent, much of this expansion being onto sloping land that is vulnerable to erosion. Most of the maize is destined for the Vietnamese market, and production is assisted by the provision of seed and the collection of produce by Vietnamese traders. Livestock numbers have increased, with Government encouragement and as a result increased availability of grazing land resulting from the restrictions placed on shifting cultivation; livestock health is good.

Vientiane

The rainfall in 2010 in Vientiane Province was generally good; an exception was Sanakham District which suffered a loss of about 200 hectares to excessively dry conditions. With their proximity to the capital, farmers use more purchased inputs (urea, 26-10-0 and some herbicides) than in most other provinces (though probably less than in Vientiane Municipality). The use of tractors for land preparation is estimated to be about 90 percent and the use of improved paddy varieties 60 percent. Total paddy production for 2010/11 is expected to be about 9 percent down on 2009/10. Cattle, pig and poultry numbers have increased; however, various livestock diseases were reported, including foot-and-mouth disease (FMD), scours and Newcastle disease. The area allocated to fish ponds in the province is relatively small.

Borikhamxai

The 2010 rains in Borikhamxai started on time in late April, but a long dry spell occurred in July. Then in October, shortly before the end of the wet season excessively heavy rains caused flooding which adversely affected some areas of lowland crops. Both lowland and upland wet-season production was therefore slightly down on 2009. Overall provincial paddy production from both wet and dry seasons is expected to be about 6 percent less than that of 2009. About 50 percent of farmers in the province are said to use commercial fertilizer, and most use manure. There was an increase in the number of cattle, buffaloes, pigs and goats; however, the number of poultry remained fairly static as commercial producers responded to the rising price of poultry feed. Some cases of foot-and-mouth disease (FMD) were reported in the cattle population. The area allocated to fish ponds in the province is relatively small.

Khammuane

Khammuane's wet season paddy production is predominantly lowland with less than 2 percent upland. It also has a significant area (9 400 ha) of dry-season irrigated production. This year the rains came on time in May, but July was dry. Towards the end of the season, in October, very heavy rains caused flooding, particularly in river valleys; Boualapha District was especially badly affected. Mainly because of the October flooding there was a slight reduction in the province's total area of lowland paddy harvested this year compared with last, and average yields were down from more than 3.1 tonne/ha in 2009 to 2.75 tonne/ha this year. Overall production for 2010/11 is expected to be almost 13 percent lower than that of 2009. Contrary to the experience of most other provinces, livestock numbers were said to be decreasing because of limited pasture availability and the high price of animal feed. Cases of foot-and-mouth disease (FMD) and Newcastle disease were reported.

Savannakhet

Savannakhet is Lao PDR's principal paddy province, producing, this year, about 21 percent of the country's wet-season crop, 27 percent of the country's dry-season irrigated crop, and 22 percent of the country's total paddy crop. Upland paddy, at only 1 500 hectares compared with a total paddy area of 182 000, is of relatively minor

importance. The rains this year started in May, but there was a dry spell in June and this was followed, towards the end of the season by heavy rains in the middle of October which caused flooding; Xepon and Vilabouli Districts were both badly affected by the flooding. Levels of crop pests and diseases (rice bug, gall midge and leaf-folder) were normal. Because of the dry spell in June and the floods in October, wet-season production was down on last year despite an increase in upland area. Among livestock, foot-and-mouth disease (FMD), brucellosis, Newcastle disease and fowl cholera were reported. Unexploded ordnance still poses a threat to farmers in Xepon, Vilabouli, Nong and Phin Districts.

SOUTH

Saravane

The rains arrived late this year in Saravane. They are normally expected in April or May, but this year they came in June. There was then a long dry period in July before normal rainfall resumed in August. About 25 percent of nurseries and upland paddy fields had to be re-seeded. Total annual rainfall was reported to be significantly below average; one station with a long-term average of about 2 260 mm recorded only 1 460 mm this year. With yield reductions in both the lowland and the upland crop, the province's total paddy production this year (2010/11) is expected to be 3.5 percent below that of 2009/10. Saravane has more than 22 000 hectares dedicated to vegetable production. This year, however, more than 10 percent of this area was non-productive because of the dry conditions. The province also has about 21 700 hectares of coffee (0.7 tonne/ha), 5 500 hectares of bananas (12 tonnes/ha) and more than 5 000 hectares of rubber. Unexploded ordnance still poses a threat to farmers in Laongam, Saravame, Ta Oy and Sam Oy Districts.

Sekong

The mountainous province of Sekong was particularly badly hit by typhoon Ketsana in 2009 which left communities short not only of food but also of seed for the wet season of 2010. They subsequently received considerable assistance for rehabilitation from both the Government and international organizations. This year, however, the rains started poorly and there was a particularly dry spell in August. Rice bug and leaf-folder affected some paddy crops, but at relatively normal levels. The harvested area of lowland paddy was down this year compared with last. However, this was offset by an increase in area under upland paddy, and total paddy production for 2010/11 is expected to be similar to that of 2009/10 (+1.8 percent). Livestock numbers have increased, perhaps partly because of the perceived greater reliability of livestock as a means of livelihood support than crops following the Ketsana experience. Unexploded ordnance still poses a threat to farmers in Kaleum, Dakcheung and Thateng Districts.

Champassak

Champassak Province benefits from extensive lowland in the Mekong valley and substantial coffee production on the Bolaven Plateau. This year, however, the effective planting rains started about two months late in August with the result that much of the paddy was not transplanted until September. By the beginning of December about 60 percent of the crop still remained to be harvested. Not only were the rains late, but their total quantity was unusually low; one location which has a long-term average annual rainfall of about 2 000 mm had recorded only 1 000 mm by the end of November. Rice bug was common this year. Yields of wet-season lowland paddy (there is virtually no upland paddy) are down slightly on last year. Dry-season yields are also expected to be lower this year because of the overall dry conditions and low water levels in the rivers. Total provincial paddy production for 2010/11 is therefore forecast at less than 85 percent of that of 2009/10. The province is a very significant vegetable producer, with much of the produce destined for the neighbouring Thai market. This year, however, the poor rains resulted in less than 20 000 of its usual 29 000 hectares being productive. Livestock health was generally good although some possible cases of Foot-and-Mouth Disease (FMD) were reported.

Attapeu

Attapeu, in the extreme south-east of the country, suffered heavy losses of both cropped land and livestock in 2009 as a result of typhoon Ketsana. Considerable assistance for rehabilitation from both the Government and international organizations was subsequently received. The province's agriculture is less sophisticated than elsewhere in the country with about 70 percent of farmers still using buffaloes for land preparation, and most farmers have limited market access. This year, a poor start to the wet season at the end of May was followed by

particularly dry weather during July and August which led to crop losses estimated at more than 1 000 hectares in each of Phouvong and Sanxay Districts. Total annual rainfall is reported to be about half of the long-term average. Because of the poor rains, most transplanting was delayed (some as late as September), and by the beginning of December only 60 percent of the paddy crop had been harvested. Despite this year's setbacks, the province's wet-season paddy production (both lowland and upland) is expected to be better than last year's with significant increases in both harvested area and yield. Because of low water levels in the rivers, dry-season irrigated production (to be harvested in the first quarter of 2011) is also expected to be lower. However, since wet-season lowland paddy accounts for more than 85 percent of the province's paddy area, overall paddy production is expected to be very significantly better than the extremely poor production of 2009. Livestock health this year is generally good. Following last year's livestock losses, many farmers were provided with loans from Nayobay Bank for re-stocking.