

# **SPECIAL REPORT**

## **FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION TO SOUTHERN SUDAN**

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



**WORLD FOOD PROGRAMME, ROME**

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### **Mission Highlights**

- With generally favourable rains and relatively few outbreaks of pests and diseases, cereal production, in the traditional sector, in 2010, is estimated at 695 000 tonnes, about 28.5 percent above the revised post-harvest estimates in 2009, when crops were severely affected by dry weather conditions.
- Localised dry spells last May and June as well as floods in August and September have affected yields in some areas
- Animal body conditions are satisfactory due to improved availability of pasture and water; fishery is expected to yield above average catches this year.
- Cereal prices have generally declined in the third quarter of 2010, while livestock prices were on the rise, signifying that the terms of trade are now more favourable to pastoralists.
- Prices of staples have started to increase slowly in some areas, following uncertainties related to the referendum for self determination in Southern Sudan; the expected returnee population is also likely to add pressure on local food markets.
- With a 2011 projected population of 9.16 million, an overall cereal deficit of about 291 000 tonnes is estimated until next harvest towards the end of 2011.
- The estimated cereal deficit might increase to about 339 000 tonnes, with the 400 000 people, expected to return to Southern Sudan to participate in the referendum.
- The overall food security situation has improved markedly in 2010 compared to the previous year. However, food security prospects are highly dependent on events related to the referendum and post-referendum period. Recent gains, especially in the States bordering Northern Sudan, could be reversed due to increasing food prices and escalation of localized conflicts.
- Currently an estimated 890 000 people are severely food insecure and an additional 2.4 million people are moderately food insecure.
- In the best-case scenario, food assistance requirements are estimated at 86 000 tonnes of food (including 66 000 tonnes of cereals) to assist a monthly average of 816 000 beneficiaries. In the event of disruptions, food assistance requirements may increase to 132 000 tonnes (including 102 000 tonnes of cereals) to assist a monthly average of 1.14 million beneficiaries. Assistance will be provided to severely food insecure rural households, vulnerable children, IDPs, refugees and returnees.
- The number of beneficiaries is expected to rise gradually during the year, reaching around 1.4 million in the best scenario case or 2.7 million beneficiaries during the peak of the malnutrition and beginning of the lean season.

## **1. OVERVIEW**

An FAO/WFP Crop and Food Security Assessment Mission (CFSAM) visited Southern Sudan from 18 October to 12 November 2010 to estimate cereal production and assess the overall food-security situation. The Mission included representatives from the Government of Southern Sudan (GoSS), the Ministry of Agriculture and Forestry (MoAF), the Southern Sudan Relief and Rehabilitation Commission (SSRRC), the Southern Sudan Centre for Census, Statistics and Evaluation (SSCCSE) FEWS/NET, EC/JRC, FAO and WFP. The Mission held meetings with officials of various ministries including the MoAF, the Ministry of Animal Resources and Fisheries (MARF), SSRRC, SSCCSE as well as UN and other international agencies. Location-specific information was obtained from relevant state and local authorities such as the SSRRC, the state Ministries of Agriculture (SMoA) and NGOs. The Mission benefited from the findings of the mid-season Rapid Crop Assessment (RCA) by GoSS, MoAF, SSRRC, SSCCSE, FAO and WFP, the 2009 and 2010 Annual Needs and Livelihood Assessments (ANLA), the 2009 National Household Budget Survey and the Situation Analysis of Nutrition in Southern Sudan.

The Mission, comprising five teams, visited 35 counties in all ten states of Southern Sudan (see Annex I). Information obtained from State MoAF, farmers, herder, fishers, traders, NGOs and international agencies was triangulated with field observations during visits to rural communities and individual farms. Rainfall estimates and NDVI provided by EC/JRC for 2010 were compared with local rain-gauge data and accounts of rainfall provided by farmers and other informants. The Mission carried out direct market observations in the main centres and also had access to WFP's database of market prices. The Mission received invaluable support (both technical and logistical) from the Sudan Institutional Capacity Programme Food Security for Action (SIFSIA) project, the FAO Emergency and Rehabilitation Coordination Unit (ERCU) in Juba and the WFP's Vulnerability Analysis and Mapping (VAM) Unit.

In accordance with the approach adopted in previous years, the Mission's calculation of cereal production was based on estimates of three variables: (1) estimates of the numbers of farm households in each county; (2) standard estimates of the average area per farm household under cereals for each county, adjusted according to Mission observations made during field visits; and (3) estimates of average cereal yield for each county. The product of these three factors gives a cereal production figure for each county. These county figures are then added to provide cereal production figures for each of the ten states and for Southern Sudan as a whole.

Although some progress has been made in data availability, especially through the FAO SIFSIA project, the weakness of some of the data used means that the final production figures should not be regarded as necessarily exact but rather as best estimates under the prevailing circumstances. The Mission stresses the need to conduct a rigorous agricultural survey to establish a solid baseline on crop production.

Crop growing conditions were generally good in 2010. Rainfall started on time in April/May in most locations and rainfall levels were normal to above normal and generally well distributed in most parts of Southern Sudan. Localised dry spells ranging from 2 to 4 weeks were experienced in Upper Nile, Unity, Warrap and Jonglei States. In August and September, localized floods affected crops and settlements in Unity, Upper Nile, Jonglei, Warrap and Lakes States.

Insecurity remains among the key factors that negatively affected crop production in 2010. The general elections conducted in April 2010 and the preparations for January 9, 2011 referendum on self-determination have not raised major security concerns. However, continued rebel activities, tribal armed conflicts and sustained tensions over borders affected farming and husbandry activities.

The estimated area harvested from cereals has increased by 8 percent as compared to last year. An estimated 921 000 hectares were harvested in 2010 compared to about 852 000 hectares in 2009. Average cereal yield is estimated at 0.95 tonne/ha, representing a 16 percent increase as compared to 0.82 tonne/ha in 2009. Net cereal production, after deduction of post-harvest losses and seed use, is estimated to have increased by 28.5 percent as compared to last year's post-harvest revised figure, from 541 000 tonnes in 2009 to 695 000 tonnes in 2010.

With uncertainties pertaining to the forthcoming referendum, supply of grains mainly from Northern Sudan, but also to a lesser extent from Uganda and Kenya, is expected to decline substantially. Grain stocks are already declining in some border areas and reduced supplies will result in increased prices. In addition, a large number of returnees to Southern Sudan are anticipated with the referendum. Approximately 400 000 people have already registered to return from Northern Sudan. Returnees are expected to further increase the pressure on local food market supplies.

With a 2011 projected population of 9.16 million people, an overall cereal deficit of about 291 000 tonnes is estimated in 2011. However, with a forecast of 400 000 people returning mainly from Northern Sudan to vote in the South Sudan self-determination referendum and considering a need of about 12 000 tonnes of cereals for every 100 000 returnees, the estimated deficit is expected to increase to 339 000 tonnes.

The current food security situation has improved markedly compared to the previous year. However, an estimated 890 000 people (9.7 percent of total population) are currently severely food insecure and an additional 2.4 million people (26 percent) are moderately food insecure. Last year, in comparison, 21 percent were severely food insecure and 32 percent moderately food insecure. Main causes of food insecurity this year include floods, civil insecurity and high food prices. The five states worst off are Eastern Equatoria, Warrap, Northern Bahr el Ghazal, Lakes and Jonglei.

The general positive trend is reflected in improved food consumption, increased reliance on own production as food source, reduced share on food expenditure, increased reliance on reliable and sustainable income sources and reduced use of negative coping strategies such as reducing number of meals and distress sales of livestock. However, despite this positive trend, nearly every second household continues to have a diet that lacks dietary diversity and energy.

Future prospects highly depend on how the referendum and post-referendum periods evolve. Recent gains could easily be reversed due to the following risk factors: increasing food prices due to reduced trade flows and increased demand from returnees, a potential escalation of localized conflicts in the border areas, and potential increases of ethnic and intertribal tensions. Most vulnerable are the states bordering Northern Sudan.

In the best-case scenario, the Mission estimated food assistance requirements at 86 000 tonnes of food (including 66 000 tonnes of cereals) to assist a monthly average of 816 000 beneficiaries. In the contingency scenario, food assistance requirements are estimated at 132 000 tonnes of food (including 102 000 tonnes of cereals) to assist a monthly average of 1.14 million beneficiaries. The number of beneficiaries is expected to rise gradually during the year and peak in April/May at the beginning of the lean season, reaching around 1.4 million beneficiaries in the best-case scenario or 2.7 million beneficiaries in the contingency scenario. Assistance will be provided in particular to severely food insecure rural households, vulnerable children, IDPs, refugees and returnees. In the contingency scenario also moderately food insecure households in states bordering Northern Sudan will be targeted.

## **2. SOCIO-ECONOMIC CONTEXT**

### **2.1 General**

Southern Sudan has an area of approximately 640 000 square km. The waters of the White Nile and its tributaries flow down from the highlands of Uganda, Congo, the Central African Republic and Ethiopia into the low clay basin that constitutes much of southern Sudan, forming the world's largest contiguous swamp. According to the results of the 2008 Population and Housing Census of Sudan, Southern Sudan has a total population of 8.27 million. Population density is one of the lowest in sub-tropical countries, with on average only 13.5 inhabitants per square km.

Southern Sudan shares the Sudanese pound with the rest of the country since its adoption as the national currency in 2007. This common currency and the fact that Southern Sudan's budget is almost entirely dependent on the share of oil revenue it receives from the central Government imply that Southern Sudan's macroeconomic situation should be viewed through that of the country as a whole.

Economic growth in Sudan weakened in 2009 as a result of the global economic crisis. Overall real GDP growth is estimated to have decelerated to 4.5 percent compared to 6.8 percent in 2008. The economic downturn was broad-based, with the exception of a small increase in oil production. In 2010, GDP growth is early forecasted at 5.5 percent essentially due to higher international oil prices. Oil revenues account for over 90 percent of foreign exchange earnings and 60 percent of central Government revenues. In the case of Southern Sudan, it represents about 98 percent of revenues.<sup>1</sup>

The account deficit reached 11.5 percent of GDP in 2009 as the decline in import bill was not sufficient to compensate for the fall in oil receipts. In addition, weaker than-expected remittances and foreign direct investment as well as the continued liquidity support by the central bank contributed to keep country's finances under pressure. Foreign exchange reserves dropped from average USD 1.4 billion in both 2007 and 2008 to low USD 900 million in 2009, worth only one month of next year's import coverage.<sup>2</sup>

The Sudanese pound (SDG) depreciated sharply in mid-2010, particularly on the black market, mainly as a consequence of scarcity of foreign exchange and political uncertainty due to the forthcoming referendum on southern independence. In September 2010, the official exchange rate was about SDG 2.48 for USD 1, while in the black-market rate in Southern Sudan was SDG 3.15 for USD 1.

Overall inflation averaged 11.2 percent in 2009 and is forecast to stay high at about 10 percent for 2010 as the depreciating Sudanese pound increases imported inflation. In Southern Sudan, according to the annual survey conducted by the Southern Sudan Centre for Census, Statistics and Evaluation (SSCCSE), the Juba consumer price index increased by 6.5 percent between October 2009 and October 2010 and by 13.6 percent in the case of food and non alcoholic beverages.<sup>3</sup>

In Southern Sudan, total expenditure for 2010 is estimated at about SDG 6.3 billion, including SDG 4.5 billion by the approved GoSS budget and about SDG 1.8 billion by donor organizations' funding.<sup>4</sup> The Security and Infrastructure (mainly roads) sectors are expected to receive the greatest amount of funding, while the Natural Resources sector (that includes Agriculture & Forestry, Animal Resources & Fisheries, Cooperatives & Rural Development, Wildlife Conservation & Tourism, and land Commission) will account to 6.7 percent of total. However, if analysing the breakdown of the 2010 GoSS budget for Natural Resources, not considering donors' projects, only about SDG 72 million are earmarked for agriculture, forestry, animal resources and

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<sup>1</sup> EIU, Sudan Country Report, October 2010.

<sup>2</sup> IMF, Country Report No. 10/256, June 2010.

<sup>3</sup> SSCCSE, Press Release, Consumer Price Index for October 2010.

<sup>4</sup> GoSS, Ministry of Finance & Economic Planning, Approved Budget 2010.

fishery which represents a share of only 1.6 percent of GoSS own expenditure. In addition, as in past years, about 65 percent of this limited budget is expected to be spent on salaries and operating costs, leaving only 35 percent for capital expenditures.

**Table 1 – Southern Sudan 2010 expenditure by funding sources and by sectors (million SDG)**

Sector	GoSS budget	Donors' funds	Total	%
Accountability	157.5	52.2	209.6	3.4
Economic functions	164.5	60.4	224.9	3.6
Education	323.5	126.3	449.9	7.2
Health	189.4	406.3	595.7	9.5
Infrastructure	601.9	374.1	976.0	15.6
Natural resources	217.0	200.9	417.9	6.7
Public administration	571.6	112.3	683.8	10.9
Rule of law	487.9	76.5	564.4	9.0
Security	1 145.8	304.9	1 450.8	23.2
Social & humanitarian	99.0	58.6	157.5	2.5
Transfers to States	524.7		524.7	8.4
<b>TOTAL</b>	<b>4 482.8</b>	<b>1 772.4</b>	<b>6 255.3</b>	<b>100.0</b>

## 2.2 Agriculture

Southern Sudan experiences unimodal and bimodal rainfall regimes, the bimodal areas covering much of Greater Equatoria (Western, Central and Eastern Equatoria) while the unimodal areas characterize the rest of the country. This results in a range of growing seasons from 280-300 days in the southern parts of Southern Sudan to 130-150 days per annum in the northern parts. Agricultural performance consequently varies considerably from place to place and from year to year, ranging from the possibility of two harvests per annum in Greater Equatoria between Tambura and Kejo-Keji, to one harvest in the unimodal areas further north.

With over 95 percent of agricultural production being rain-fed, weather variability is a major factor in determining crops performance. In lowland areas, flood is normal occurrence but variability of the water levels affect harvested area and yields. Agriculture is for the most part based on small, hand-cultivated units often farmed by women-headed households. Despite land availability for farming, manual land preparation limits the area households can cultivate. Making use of animal traction would allow household to cultivate larger plots and plant in line to ease weeding. The GoSS, FAO and NGO-based extension agents make efforts to promote animal traction on a small-scale in Central Equatoria, Western Equatoria, Lakes, Warrap and Bahr el Ghazal States. In addition to social and cultural barriers, lack of spare parts and skills to maintain mould-board ploughs and adaptability of ploughs model to local soil conditions are the main constraints. Mechanized farming is practiced mainly in the Upper Nile counties of Renk, Melut and Wadakona and to a limited extent in Malakal and Bentiu in Unity State. The GoSS purchased various models of tractors and distributed to each of the ten states with the objective of encouraging the mechanization of land preparation and other field operations. The tractors are, in principle, availed for hire by farmers, farmer groups and cooperatives, at a cost ranging from 50 to 240 SDG/feddan for land preparation. Over 400 tractors have been distributed to the states since 2005. Given the limited infrastructures on the ground, there are concerns regarding the capacity to maintain these tractors operational locally.

Sorghum is the main crop cultivated in Southern Sudan with a wide range of local landraces. It is the main staple food in all States, except for the three Equatorias where local diet is also based on maize flour (largely imported from Uganda) and cassava (mainly in the Green Belt). In Northern and Western Bahr el Ghazal, Warrap and Lakes, sorghum is often intercropped with sesame and millet. Maize is normally cultivated in limited areas, close to homesteads and often used for green consumption. In some locations where *Quelea quelea* birds pressure are particularly high such as in Upper Nile, maize is cultivated in larger plots, instead of sorghum, provided soil is suitable. Minor cereal crops such as bulrush millet, finger millet and upland rice are also cultivated in certain locations. Groundnut is cultivated on sandy soils in most locations and makes an important contribution to household diet and is the main cash crop which contributes to farming household income at certain period of the year. In parts of Central and Western Equatoria, sweet potato, yam, coffee, mango and papaya are commonly grown. Okra, cowpea, green-gram, pumpkin and tobacco are also widely grown around homesteads. Vegetables such as onions or tomatoes are not commonly grown in rural areas, but are increasingly cultivated near cities to supply urban markets.

### **3. CEREAL PRODUCTION IN 2010**

In the absence of a permanent agriculture statistical system, cereal production has been assessed using estimates of the following three variables: (1) estimates of the numbers of farm households in each county; (2) standard estimates of the average area per farm household under cereals for each county, adjusted according to Mission observations made during field visits; and (3) estimates of average cereal yield for each county. The product of these three factors gives a cereal production figure for each county. These county figures are then added to provide cereal production figures for each of the ten states and for Southern Sudan as a whole. The possible weakness of some of these estimated data means that the final production figures should not be regarded as necessarily exact, but rather as best estimates under the prevailing circumstances.

It is important to highlight that some progress has been recently achieved in developing baseline data required to undertake rigorous agriculture statistical surveys. In particular, the new Land Cover Database has been provided by the FAO SIFSIA project and it has been used by the Mission to triangulate earlier estimates. The recently published 2009 National Baseline Household Survey (NBHS) has provided new and more accurate data on per capita food consumption rates.

Using information gathered during the field work on post-harvest 2009 yields and comparing them with current yields, the Mission revised 2009 cereal production that was put at about 541 000 tonnes, about 18 percent lower than previous estimates. At the same time, the Mission recalculated consumption using the new higher NBHS consumption rates. Result of the new figures was a revised cereal deficit for marketing year 2010, with a volume of about 410 000 tonnes compared to previous estimate of 334 000 tonnes. Food aid imports in 2010 (from January to September) have been 136 000 tonnes, out of which approximately three quarters are cereals.

#### **3.1 Cereal harvested area estimates**

The number of farming households in each county are estimated primarily from the 2008 census data, which include numbers of households (both rural and urban) per county. Census figures have been adjusted for mid-2010 on the assumption of a population growth rate of 2.052 percent per annum. Numbers of returnees (IDPs and refugees) per state have been updated from last year figures based on information provided by the International Organization for Migration (IOM) and SSRRC. The figures used for the proportion of farming households in each county have been developed over the past several years by FAO, WFP and others on the basis of extensive observations and interviews. Likewise, the average harvested area under cereals per farming household in each county has been developed over several years and is adjusted each year on the basis of information gathered through field observations, measurements and interviews.

The Mission estimates total cereal area in 2010 at 920 798 hectares, about 8 percent above last year's figure. Table 2 presents the breakdown of area cultivated by States and counties. This year, beside some dry spells areas, above average and generally well distributed rainfall have been the main drivers to increased area under crop cultivation. In some areas, early rainfall allowed farmers to start planting earlier than normal which resulted in more land cultivated than last year. Increased utilisation of tractors in all States and progresses made in the use of animal traction/ox-plough is positively influencing area cultivated. Improved security as compared to last year also contributed to increased area under crop cultivation, although insecurity remains a major concern in some areas.



**Table 2 – Estimated settled population, farming households and cereal harvested area in 2010**

STATE/COUNTY	Population mid-2010	Households mid 2010	Percentage of farming households	Farming households mid-2010	Average cereal area (ha/hh)	Total cereal area (ha)
<b>Central Equatoria</b>	<b>1 199 805</b>	<b>194 883</b>	<b>66</b>	<b>1 281 47</b>	<b>0.99</b>	<b>126 706</b>
Returnees	45 543	7 591	50	3 795	0.50	1 898
Juba	389 512	61 122	50	30 561	0.85	25 977
Kajo Keji	205 440	34 047	90	30 642	1.10	33 706
Lainya	93 416	14 626	60	8 776	1.05	9 214
Morobo	108 360	16 430	60	9 858	1.05	10 351
Terekeka	146 842	26 247	90	23 622	1.00	23 622
Yei	210 692	34 821	60	20 892	1.05	21 937
<b>Eastern Equatoria</b>	<b>965 819</b>	<b>163 930</b>	<b>74</b>	<b>121 252</b>	<b>0.85</b>	<b>103 362</b>
Returnees	18 089	3 015	77	2 321	0.60	1 393
Budi	103 754	17 543	90	15 789	0.80	12 631
Ikotos	88 536	17 280	90	15 552	0.95	14 774
Kapoeta East	171 527	30 793	50	15 396	0.95	14 627
Kapoeta North	107 817	16 707	50	8 354	0.95	7 936
Kapoeta South	83 119	12 393	50	6 197	0.95	5 887
Lafon	111 035	17 987	85	15 289	0.80	12 231
Magwi	177 623	27 480	90	24 732	0.80	19 786
Torit	104 319	20 732	85	17 622	0.80	14 098
<b>Jonglei</b>	<b>1 448 158</b>	<b>205 788</b>	<b>82</b>	<b>168 928</b>	<b>0.84</b>	<b>142 705</b>
Returnees	27 178	4 530	78	3 533	0.60	2 120
Akobo	142 464	18 526	80	14 821	0.85	12 598
Ayod	145 677	17 661	90	15 895	0.85	13 511
Bor South	231 258	32 794	80	26 235	0.85	22 300
Duk	68 599	10 712	90	9 641	0.85	8 195
Fangak	115 186	15 241	90	13 717	0.85	11 659
Khorflus/Pigi	103 617	12 512	90	11 261	0.85	9 572
Nyiröl	113 664	15 971	90	14 374	0.85	12 218
Pibor	155 292	23 785	50	11 893	0.85	10 109
Pochalla	69 241	10 925	80	8 740	0.85	7 429
Twic East	89 268	15 036	90	13 532	0.85	11 503
Uror	186 715	28 095	90	25 286	0.85	21 493
<b>Lakes</b>	<b>790 972</b>	<b>107 112</b>	<b>87</b>	<b>92 902</b>	<b>0.82</b>	<b>76 402</b>
Returnees	63 299	10 550	82	8 651	0.50	4 325
Awerial	49 201	7 824	90	7 042	0.70	4 929
Cueibet	123 162	18 077	95	17 173	0.75	12 880
Rumbek Centre	160 600	17 589	80	14 071	1.00	14 071
Rumbek East	128 472	16 226	80	12 981	1.00	12 981
Rumbek North	45 403	5 180	80	4 144	1.00	4 144
Wulu	42 412	6 816	95	6 475	0.80	5 180
Yirol East	70 497	9 384	90	8 446	0.80	6 756
Yirol West	107 928	15 465	90	13 918	0.80	11 135
<b>N Bahr el Ghazal</b>	<b>831 014</b>	<b>152 531</b>	<b>86</b>	<b>131 777</b>	<b>0.60</b>	<b>79 355</b>
Returnees	77 017	12 836	58	7 445	0.50	3 722
Aweil Centre	43 747	9 498	30	2 849	0.55	1 567
Aweil East	324 151	59 488	95	56 514	0.60	33 908
Aweil North	135 056	26 035	95	24 733	0.60	14 840
Aweil South	77 195	14 697	80	11 758	0.70	8 230
Aweil West	173 849	29 977	95	28 478	0.60	17 087
<b>Unity</b>	<b>650 715</b>	<b>80 666</b>	<b>77</b>	<b>61 760</b>	<b>0.64</b>	<b>39 702</b>
Returnees	38 018	6 336	65	4 119	0.60	2 471
Abiemnhom	17 793	1 889	80	1 511	0.55	831
Guit	34 519	3 380	80	2 704	0.75	2 028
Koch	78 300	8 320	90	7 488	0.50	3 744
Leer	55 456	7 367	80	5 894	0.60	3 536
Mayendit	56 252	6 911	90	6 220	0.75	4 665
Mayom	126 257	15 915	80	12 732	0.70	8 912
Panyijar	53 052	9 074	90	8 167	0.50	4 083
Pariang	86 228	10 941	70	7 659	0.75	5 744
Rubkona	104 838	10 531	50	5 266	0.70	3 686
<b>Upper Nile</b>	<b>1 015 392</b>	<b>150 105</b>	<b>67</b>	<b>100 560</b>	<b>0.77</b>	<b>77 790</b>
Returnees	6 763	1 127	60	676	0.50	338
Baliet	50 214	7 591	80	6 073	0.65	3 947
Fashoda	38 195	6 168	90	5 551	0.80	4 441
Longochuk	66 066	8 658	80	6 926	0.60	4 156

STATE/COUNTY	Population mid-2010	Households mid 2010	Percentage of farming households	Farming households mid-2010	Average cereal area (ha/hh)	Total cereal area (ha)
Luakpiny/Nasir	219 644	30 363	80	24 290	0.55	13 360
Maban	47 315	10 280	80	8 224	0.60	4 935
Maiwut	83 110	10 958	80	8 766	0.60	5 260
Malakal	132 290	17 668	50	8 834	0.50	4 417
Manyo	39 755	6 682	90	6 014	0.84	5 052
Melut	51 503	7 434	38	2 825	2.00	5 650
Panyikang	47 513	7 602	50	3 801	0.55	2 090
Renk	144 076	23 524	38	8 939	2.00	17 878
Ulang	88 949	12 050	80	9 640	0.65	6 266
<b>W Bahr el Ghazal</b>	<b>360 145</b>	<b>63 289</b>	<b>79</b>	<b>49 879</b>	<b>0.75</b>	<b>37 495</b>
Returnees	11 108	1 851	68	1 258	0.50	629
Jur River	133 751	21 742	60	13 045	0.75	9 784
Raga	56 883	10 676	75	8 007	0.80	6 406
Wau	158 402	29 019	95	27 569	0.75	20 676
<b>Warrap</b>	<b>1 049 891</b>	<b>182 676</b>	<b>89</b>	<b>161 702</b>	<b>0.78</b>	<b>125 612</b>
Returnees	31 426	5 238	83	4 347	0.45	1 956
Abyei	55 358	8 266	80	6 612	0.65	4 298
Gogrial East	108 117	19 385	80	15 508	0.85	13 182
Gogrial West	255 337	47 093	80	37 674	0.85	32 023
Tonj East	121 557	20 676	95	19 643	0.80	15 714
Tonj North	172 955	31 078	95	29 524	0.75	22 143
Tonj South	90 645	15 221	95	14 460	0.75	10 845
Twic	214 495	35 721	95	33 935	0.75	25 451
<b>Western Equatoria</b>	<b>661 696</b>	<b>124 063</b>	<b>88</b>	<b>108 922</b>	<b>1.03</b>	<b>111 669</b>
Returnees	13 694	2 282	50	1 141	0.45	514
Ezo	84 646	19 053	90	17 148	1.05	18 005
Ibba	43 829	10 968	90	9 872	1.05	10 365
Maridi	86 320	13 732	90	12 359	1.00	12 359
Mundri East	50 579	7 140	80	5 712	1.05	5 998
Mundri West	35 565	4 215	80	3 372	1.05	3 541
Mvolo	50 387	6 866	80	5 493	1.05	5 767
Nagero	10 549	2 244	90	2 020	1.05	2 121
Nzara	68 788	17 083	90	15 375	1.00	15 375
Tambura	57 956	13 939	90	12 545	1.00	12 545
Yambio	159 383	26 540	90	23 886	1.05	25 080
<b>SOUTH SUDAN</b>	<b>8 973 607</b>	<b>1 425 044</b>	<b>79</b>	<b>1 125 829</b>	<b>0.82</b>	<b>920 798</b>

## 3.2 Factors affecting yields

### 3.2.1 Rainfall

Rainfall generally started on time in April/May in most locations this year (see Annex II). Rainfall level has been normal to above normal and mostly well distributed, resulting in good crop conditions. Normal to above normal NDVIs were recorded along the agricultural season in most locations (see Annex II). In some locations of Lakes, Warrap and Western Bahr el Ghazal, rainfall started earlier than normal with above normal rains in March. Also in the Northern part of Upper Nile State, rainfall started slightly earlier than normal in April/May and rainfall levels reduced earlier as well in August, resulting in above average NDVI in July and below NDVI in September.

Between May and June, a two-to-four weeks dry spell period affected some locations in Upper Nile state (Panyikang, eastern part of Malakal and Renk counties), Unity state (Pariang, Mayom and eastern part of Leer counties), Warrap state (Kuajok and Gogrial east counties) and Jonglei state (Akobo, Waat, Pangak and Atar/Piji counties).

The NDVI map for July 2010 indicates the locations of the dry spell affected areas (see Annex II). Farmers in some of the most affected locations had to replant their crops or fill plant gaps when rainfall resumed. Rainfall was above normal at the end of July and August in most locations and generally favourable to crop growing conditions. In some locations, particularly in Eastern Equatoria, excess rainfall during that period was detrimental to cereal crops.

With rainfall above normal toward the end of July and August in Southern Sudan, but also in neighbouring Uganda, Democratic Republic of Congo and Ethiopia, the water levels of the Nile and its tributaries rose and caused significant flooding in Unity, Upper Nile, Jonglei, Warrap and Lakes States. These floods are normal

occurrences in years with average to above average rainfall and generally they favour crop yields, pasture conditions, water availability and improve fishing opportunities. However, in certain locations, flood waters rose well above normal levels in August and September and affected both crops – mainly at flowering/grain filling stages – and settlements, causing temporary displacements.

In Northern Bahr el Ghazal, some floods occurred later in September due to raising water levels from local rivers taking their sources in Central African Republic. These floods occurred while sorghum and maize were at harvesting or just after harvesting and therefore did not significantly affected these crops. However, floods damaged rice cultivation at vegetative stage as well as settlements and households could not adequately trash and store harvested grains.

### 3.2.2 Inputs in the traditional sector

In general, local seeds of sorghum and maize crops in traditional areas of production were considered available during the current agricultural season. However, seed access by most vulnerable people such as IDP and returnees was considered difficult and, considering the expected flow of new returnees before referendum, it may be an issue that deserve further investigation.

In the areas visited, the Mission found that about 40-45 percent of sorghum and maize seeds used by small-scale farmers come from the previous harvest, while about 30-35 percent of seeds was purchased or bartered from local markets. Lacking a specialized seed market, farmers often buy grains to be used as seed and their quality is questionable. The rest of the seeds were provided by other sources such as friends/neighbours, Government, NGOs and UN agencies. In particular, as in previous years, a limited amount of emergency seeds and tools were provided by FAO, GoSS and some NGOs to returnees, IDPs and most vulnerable farming households.

In general farmers prefer to use local varieties, while modern high-yield varieties get into the system almost exclusively through emergency seed distributions and from imports in border areas. In Eastern Equatoria, the Mission noted important seed flows from hills and mountains areas to the dryer plains which experienced crop failures last year, mainly through informal exchanges, taking advantage of the variations in rainfall patterns between the two ecologies. On the border with Uganda, the Mission also noted that some quantities of seeds were imported and sold on local markets. However, as the Mission travelled mainly along major roads and nearby markets and its observations may be limited, the comprehensive FAO Seed System Security Assessment, carried out subsequently, is expected to shed more light, especially on the issue of farmers' access to seeds and planting material.

Fertilizers are rarely applied in Southern Sudan and soil fertility is maintained by applying manure or leaving land fallow for some years. Manure is an important factor of productivity in Northern Bahr el Ghazal, Warrap and Lakes States. In these areas, after the harvest, wealthier farming households pay livestock owners to camp their livestock at night on their agricultural land in order to improve soil fertility. Slash and burn cultivation is also practiced in counties with lower population density.

### 3.2.3 Pests, diseases and weeds

There were no large scale outbreaks of pests or diseases this year, beside unusual birds and aphids attack on sorghum in Eastern Equatoria and army worms in some locations of Jonglei (Pochalla and Twic). Birds attacked grain as usual and remained one of the major factors affecting sorghum production. The incidence of army worms, grasshoppers, stem borers and sorghum midge were slightly above normal. Termites are, as usual, troublesome in many areas, as are monkeys and other wild animals. Rosette and leaf spot of groundnut continue to be widespread, and cassava mosaic is ubiquitous. Sorghum smut is found in several fields, but usually at low levels.

In years with above average rainfall, weeds grow faster and their control becomes more challenging. In particular, the level of striga infestation has increased compared to last year, causing significant losses especially in sorghum fields.

### 3.3 Agricultural production in 2010

#### 3.3.1 Cereal production

##### A. *Traditional sector*

Estimates for 2010 cereal production data disaggregated by states and counties are provided in Table 3. Net cereal production (after deducting post harvest losses and seed use) is estimated by the Mission at about 695 000 tonnes. This good result is about 28.5 percent more than last year's (revised) drought-affected output of 541 000 tonnes and it is mainly attributed to an expansion in planted area and better yields due to good rainfall and improved security. Post-harvest losses have been estimated at 20 percent in all counties as in previous years, except in four flood-affected counties in Northern Bahr El Ghazal state where losses were estimated at 25 percent.

Cereal yields have been estimated on the basis of information gathered during field observations, measurements and interviews with key informants and the analysis of the main factors affecting yields (rainfall, input use, pests and diseases, security conditions). Yields were appreciated visually in the fields, using the Pictorial Evaluation Tool (PET) as a support. For those crops that had recently been harvested, observation of the farmstead granaries combined with measurements of the harvested area have often provided a credible indication of yield. Average cereal yield is estimated at 0.95 tonne/hectare, about 16 percent higher than last year's estimates. However, the yield figures mask a range included in the calculations from 0.6 tonne/ha in Tonj East County in Warrap State to 1.35 tonne/ha in Ibba, Nzara and Yambio Counties in Western Equatoria State.

**Table 3 - Estimated cereal harvested area, yield, production, consumption and balance (traditional sector) in 2011**

STATE/COUNTY	Total cereal area (ha)	2010 yield (t/ha)	2010 gross cereal production (tonnes)	2010 net cereal production (tonnes)	Population mid-2011	2011 consumption (t/year)	2011 surplus/deficit (tonnes)
<b>Central Equatoria</b>	<b>126 706</b>	<b>0.92</b>	<b>115 969</b>	<b>92 775</b>	<b>1 224 425</b>	<b>156 653</b>	<b>-63 878</b>
Returnees	1 898	0.90	1 708	1 366	46 478	6 275	-4 908
Juba	25 977	0.90	23 379	18 703	397 504	55 651	-36 947
Kajo Keji	33 706	0.90	30 335	24 268	209 656	25 159	-890
Lainya	9 214	1.00	9 214	7 372	95 333	11 440	-4 068
Morobo	10 351	0.90	9 316	7 453	110 583	13 270	-5 817
Terekeka	23 622	0.85	20 079	16 063	149 855	17 983	-1 919
Yei	21 937	1.00	21 937	17 550	215 015	26 877	-9 327
<b>Eastern Equatoria</b>	<b>103 362</b>	<b>0.96</b>	<b>99 227</b>	<b>79 381</b>	<b>985 637</b>	<b>122 159</b>	<b>-42 777</b>
Returnees	1 393	0.80	1 114	891	18 461	2 308	-1 416
Budi	12 631	0.85	10 736	8 589	105 883	12 706	-4 117
Ikotos	14 774	1.00	14 774	11 819	90 352	11 294	525
Kapoeta East	14 627	0.85	12 433	9 946	175 046	21 881	-11 935
Kapoeta North	7 936	0.85	6 746	5 396	110 029	13 754	-8 357
Kapoeta South	5 887	0.85	5 004	4 003	84 824	11 027	-7 024
Lafon	12 231	1.05	12 842	10 274	113 314	13 598	-3 324
Magwi	19 786	1.05	20 775	16 620	181 268	21 752	-5 132
Torit	14 098	1.05	14 803	11 842	106 460	13 840	-1 998
<b>Jonglei</b>	<b>142 705</b>	<b>0.73</b>	<b>104 841</b>	<b>83 873</b>	<b>1 477 874</b>	<b>158 132</b>	<b>-74 259</b>
Returnees	2 120	0.60	1 272	1 018	27 736	3051	-2 033
Akobo	12 598	0.75	9 448	7 559	145 387	15 993	-8 434
Ayod	13 511	0.70	9 458	7 566	148 666	15 610	-8 044
Bor South	22 300	0.75	16 725	13 380	236 003	27 140	-13 761
Duk	8 195	0.75	6 146	4 917	70 007	7351	-2 434
Fangak	11 659	0.70	8 162	6 529	117 550	12 343	-5 813
Khorflus/Pigi	9 572	0.75	7 179	5 743	105 743	11 103	-5 360
Nyirol	12 218	0.70	8 553	6 842	115 996	12 760	-5 918
Pibor	10 109	0.75	7 582	6 065	158 479	16 640	-10 575
Pochalla	7 429	0.75	5 572	4 457	70 661	7 066	-2 609
Twic East	11 503	0.75	8 627	6 902	91 099	10 021	-3 119
Uror	21 493	0.75	16 120	12 896	190 547	19 055	-6 159
<b>Lakes</b>	<b>76 402</b>	<b>1.08</b>	<b>82 843</b>	<b>66 275</b>	<b>807 203</b>	<b>84 180</b>	<b>-17 905</b>

STATE/COUNTY	Total cereal area (ha)	2010 yield (t/ha)	2010 gross cereal production (tonnes)	2010 net cereal production (tonnes)	Population mid-2011	2011 consumption (t/year)	2011 surplus/deficit (tonnes)
Returnees	4 325	1.05	4 542	3 633	64 598	6 460	-2 826
Awerial	4 929	0.90	4 436	3 549	50 210	5 021	-1 472
Cueibet	12 880	1.05	13 523	10 819	125 689	12 569	-1 750
Rumbek Centre	14 071	1.05	14 775	11 820	163 896	18 029	-6 209
Rumbek East	12 981	1.15	14 928	11 943	131 108	13 111	-1 168
Rumbek North	4 144	0.90	3 730	2 984	46 335	4 633	-1 650
Wulu	5 180	1.05	5 439	4 351	43 282	4 328	23
Yirol East	6 756	1.20	8 108	6 486	71 943	7 914	-1 428
Yirol West	11 135	1.20	13 362	10 689	110 142	12 116	-1 426
<b>N Bahr el Ghazal</b>	<b>79 355</b>	<b>1.01</b>	<b>80 257</b>	<b>60 379</b>	<b>848 066</b>	<b>87 377</b>	<b>-26 998</b>
Returnees	3 722	1.00	3 722	2 978	78 597	8 646	-5 668
Aweil Centre	1 567	1.05	1 646	1 234	44 645	4 911	-3 677
Aweil East	33 908	1.00	33 908	25 431	330 802	36 388	-10 957
Aweil North	14 840	1.00	14 840	11 130	137 827	13 094	-1 964
Aweil South	8 230	1.10	9 053	6 790	78 779	7 484	-694
Aweil West	17 087	1.00	17 087	12 815	177 416	16 855	-4 039
<b>Unity</b>	<b>39 702</b>	<b>0.75</b>	<b>29 647</b>	<b>23 717</b>	<b>664 068</b>	<b>57 710</b>	<b>-33 992</b>
Returnees	2 471	0.60	1 483	1 186	38 798	3 492	-2 306
Abiemnhom	831	0.80	665	532	18 158	1 543	-1 012
Guit	2 028	0.90	1 825	1 460	35 228	2 994	-1 534
Koch	3 744	0.70	2 621	2 097	79 907	6 792	-4 695
Leer	3 536	0.70	2 475	1 980	56 594	4 811	-2 830
Mayendit	4 665	0.80	3 732	2 986	57 407	4 880	-1 894
Mayom	8 912	0.70	6 239	4 991	128 848	10 952	-5 961
Panyijar	4 083	0.75	3 063	2 450	54 140	4 602	-2 152
Pariang	5 744	0.80	4 595	3 676	87 998	7 480	-3 804
Rubkona	3 686	0.80	2 949	2 359	106 989	10 164	-7 805
<b>Upper Nile</b>	<b>77 790</b>	<b>0.79</b>	<b>61 232</b>	<b>48 985</b>	<b>1 036 228</b>	<b>86 428</b>	<b>-37 443</b>
Returnees	338	0.60	203	162	6 901	587	-424
Baliet	3 947	0.75	2 961	2 368	51 245	4 100	-1 731
Fashoda	4 441	0.75	3 331	2 664	38 978	3 118	-454
Longochuk	4 156	0.75	3 117	2 494	67 422	5 394	-2 900
Luakpiny/Nasir	13 360	0.75	10 020	8 016	224 151	17 932	-9 916
Maban	4 935	0.75	3 701	2 961	48 286	3 863	-902
Maiwut	5 260	0.85	4 471	3 577	84 816	6 785	-3 209
Malakal	4 417	0.75	3 313	2 650	135 005	12 825	-10 175
Manyo	5 052	0.75	3 789	3 031	40 571	3 246	-215
Melut	5 650	0.75	4 238	3 390	52 560	4 205	-815
Panyikang	2 090	0.75	1 568	1 254	48 488	3 879	-2 625
Renk	17 878	0.85	15 196	12 157	147 032	13 233	-1 076
Ulang	6 266	0.85	5 326	4 261	90 774	7 262	-3 001
<b>W Bahr el Ghazal</b>	<b>37 495</b>	<b>1.13</b>	<b>42 206</b>	<b>33 765</b>	<b>367 535</b>	<b>41 465</b>	<b>-7 700</b>
Returnees	629	1.10	692	554	11 336	1 247	-693
Jur River	9 784	1.10	10 762	8 610	136 496	15 015	-6 405
Raga	6 406	1.25	8 007	6 406	58 051	5 805	601
Wau	20 676	1.10	22 744	18 195	161 653	19 398	-1 203
<b>Warrap</b>	<b>125 612</b>	<b>0.94</b>	<b>117 497</b>	<b>93 998</b>	<b>1 071 435</b>	<b>104 216</b>	<b>-10 219</b>
Returnees	1 956	0.90	1 761	1 409	32 071	3 208	-1 799
Abyei	4 298	0.90	3 868	3 095	56 494	5 084	-1 990
Gogrial East	13 182	1.00	13 182	10 545	110 336	10 482	63
Gogrial West	32 023	1.10	35 225	28 180	260 577	27 361	820
Tonj East	15 714	0.60	9 428	7 543	124 051	12 405	-4 862
Tonj North	22 143	0.85	18 821	15 057	176 504	17 650	-2 593
Tonj South	10 845	0.90	9 760	7 808	92 505	8 325	-517
Twic	25 451	1.00	25 451	20 361	218 897	19 701	660
<b>Western Equatoria</b>	<b>111 669</b>	<b>1.25</b>	<b>140 102</b>	<b>112 081</b>	<b>675 274</b>	<b>87 902</b>	<b>24 179</b>
Returnees	514	1.15	591	472	13 975	1 817	-1 344
Ezo	18 005	1.20	21 606	17 285	86 383	11 230	6 055
Ibba	10 365	1.35	13 993	11 194	44 728	5 815	5 380
Maridi	12 359	1.20	14 831	11 864	88 092	11 452	412
Mundri East	5 998	1.15	6 897	5 518	51 617	6 452	-934
Mundri West	3 541	1.15	4 072	3 258	36 295	4 537	-1 279

STATE/COUNTY	Total cereal area (ha)	2010 yield (t/ha)	2010 gross cereal production (tonnes)	2010 net cereal production (tonnes)	Population mid-2011	2011 consumption (t/year)	2011 surplus/deficit (tonnes)
Mvolo	5 767	1.15	6 633	5 306	51 421	6 428	-1 122
Nagero	2 121	1.15	2 439	1 951	10 765	1 399	552
Nzara	15 375	1.35	20 756	16 604	70 199	9 126	7 479
Tambura	12 545	1.15	14 427	11 542	59 146	7 689	3 853
Yambio	25 080	1.35	33 858	27 086	162 654	21 958	5 128
<b>SOUTH SUDAN</b>	<b>920 798</b>	<b>0.95</b>	<b>873 820</b>	<b>695 230</b>	<b>9 157 745</b>	<b>986 222</b>	<b>-290 993</b>

Table 4 shows the series of cereal harvested area and net production for the traditional sector from 2006 onward. As explained in section 3, harvested area and production figures for 2009 have been revised using information gathered during the field work on post-harvest yields and comparing them with current yields.

**Table 4 - Cereal harvested area and net production in the traditional sector in 2006-2010**

States/zones	2006		2007		2008		2009		2010 forecast	
	Area 000 ha	Net prod 000 t	Area 000 ha	Net prod 000 t	Area 000 ha	Net prod 000 t	Area 000 ha	Net prod 000 t (revised)	Area 000 ha	Net prod 000 t
<b>UPPER NILE</b>	<b>274</b>	<b>230</b>	<b>172</b>	<b>149</b>	<b>237</b>	<b>237</b>	<b>218</b>	<b>90</b>	<b>261</b>	<b>156</b>
Upper Nile	92	84	55	48	79	67	77	34	78	49
Unity	44	35	27	25	43	42	37	18	40	24
Jonglei	139	111	90	76	115	126	104	38	143	84
<b>BAHR EL GHAZAL</b>	<b>266</b>	<b>220</b>	<b>270</b>	<b>258</b>	<b>292</b>	<b>342</b>	<b>298</b>	<b>223</b>	<b>319</b>	<b>262</b>
North Bahr el Ghazal	55	38	50	37	59	44	71	49	79	60
West Bahr el Ghazal	35	32	32	39	34	52	39	30	37	34
Lakes	82	70	77	79	84	101	69	53	76	66
Warrap	94	80	112	103	116	145	119	90	126	94
<b>GREATER EQUATORIA</b>	<b>247</b>	<b>259</b>	<b>263</b>	<b>304</b>	<b>323</b>	<b>490</b>	<b>335</b>	<b>228</b>	<b>343</b>	<b>284</b>
Central Equatoria	108	119	106	112	131	201	121	72	127	93
Eastern Equatoria	49	31	66	55	85	94	98	53	103	79
Western Equatoria	91	109	91	136	107	196	116	102	112	112
<b>SOUTH SUDAN</b>	<b>788</b>	<b>709</b>	<b>705</b>	<b>711</b>	<b>853</b>	<b>1 068</b>	<b>852</b>	<b>541</b>	<b>921</b>	<b>695</b>

*B. Mechanized sector*

The rainfed mechanized sector is confined mostly to Upper Nile/Renk County, but also includes some relatively small areas in Unity State. Households engaged in mechanized farming are cultivating larger areas and selling their produces on the market. Due to an outbreak of armed conflict in Renk between SPLA and SAF forces, the Mission could not visit the mechanised farming and information were collated from informants and the report produced by the Rapid Crop Assessment-RCA conducted in August 2010.

In mechanized farming areas of Renk, credit are provided by the Jebelein Agricultural Bank branch in White Nile – through *Salam*<sup>5</sup> loans, mostly benefiting farmers who do not permanently reside in Renk. The Agricultural Bank branches in Upper Nile have reportedly not conducted lending operations this year, which negatively affected farmers who do not qualify to the Jebelein Bank loans. As a result, most of the agricultural production in Renk is being operated by large commercial farmers based in White Nile State. Informants have estimated that 90 percent of the grain produced in Renk County<sup>6</sup> is transported to Kosti for storage, before some of which is traded toward South-Sudan. Kosti is the main sorghum trading hub between Northern Sudan and Upper Nile, part of Jonglei and Unity States but also up to Juba<sup>7</sup>. According to the Upper Nile State MoAF, over 442 thousand hectares of crops (sorghum and sesame mainly, but also sunflower and millet) under mechanised farming were harvested in 2010<sup>8</sup>. The agricultural land mapped by the Land Cover database suggests the above data might be over-estimated. Data on mechanised farming in Unity State were not available. Since most of the production from the mechanized sector is destined for northern Sudan, it has been omitted from calculations of levels of satisfaction of consumption requirement for Southern Sudan.

<sup>5</sup> Loan to be repaid by farmers in kind.

<sup>6</sup> Part of it through *Salam* loans.

<sup>7</sup> Transport is mainly done by barges along the Nile.

<sup>8</sup> The breakdown by county is the following: Renk County: 294 thousand hectares; Manyo County: 105 thousand hectares; Maban County: 11 thousand hectares; Melut county: 33 thousand hectares.

In Malakal, this year the small Mohammed El Jak scheme used 2 tractors for ploughing, harrowing and seeding 500 feddans of sorghum. The scheme had difficulties accessing spare parts for the machinery – especially seed drillers. Crops were reportedly affected by striga, particularly in block 1. Fuel costs have also been high and transportation to the farm was reported as a constraint for farming operations. As a result, yield levels in the scheme are reported to vary between 250 and 500 kg/feddan. According to MoAF, these yield levels are still higher than the traditional farming in the surrounding areas due to comparatively better soil fertility as these lands were recently opened for cultivation. In Unity State, lands allocated for cultivation by tractors are generally more prone to floods as other lands are reportedly secured for individual households farming.

### 3.3.2 Cassava

Cassava represents an important food safety net throughout the Green Belt areas in three Equatoria States as well as part of Lakes and Western Bahr el Ghazal. Cassava is also traded in local markets in the form of tubers, dried cassava chips and cassava flour. The cassava area varies from location to location increasing southwards west of the White Nile from a line drawn from Raja to Warrap. In Rumbek, the crop is noted to be planted around plot and household boundaries. In Wau and Raja, cassava is noted to be planted both as single or intercrop along with sorghum and sesame. In Western and Central Equatoria, inter-cropping of cassava is noted with a wide range of cereals, sesame, groundnuts and beans during the first year of its development. Plant density varies significantly from one location to the other but also within plots. Agricultural practices for cassava are noted to be similar in Raja, Wau and the Greenbelt. They involve a fixed planting season in May-August when the cassava cuttings are planted with the second groundnut crop and other admixtures. Weeding occurs during the first year and into the second year (18-24 months) during which time either harvesting is started (more northerly growing areas) or, the crops are left for the forests to close around them during the third year (24-36 months) when harvesting is completed plant-by-plant as needed. Both sweet and bitter cassava varieties are grown. Regarding the latter, after harvesting the tubers are skinned, chipped, soaked, dried and pounded to flour for use, storage and sale. Fresh matter yields vary significantly with plant density in single or intercropped fields. The cassava crop translates to substantial reserves of carbohydrates for consumption from Raja to Kajo-Keji and Yei.

### 3.3.3 Livestock

Generally, with 11 million head of cattle and 27 million head of small ruminants (14 million goat and 13 million sheep) estimated to be kept in Southern Sudan (see Table 5), the contribution of animals to household food economies is considerable. If evenly distributed, this number would suggest holdings of 19 heads per household. The Mission observations in the field suggests a better overall livestock performance in 2010, confirmed by the good body condition (score 3-4) of cattle in most states; the abundant pasture; plenty of browse and water. There was no major disease outbreak reported except the East Coast Fever in Jonglei and Central Equatoria (Terekeka) States which resulted in substantial losses of cattle. Livestock numbers have increased compared to last year. As in past years, cattle raiding have altered local distribution patterns within most States. Reports of conflicts also appear regularly as a negative effect regarding pasture utilisation and were reported to all Mission teams in 2010 during field visits (as in past years). The most dramatic include incursion of Bor Dinka to Terekeka aiming at reaching West Equatoria causing disorder among grazers and settled agriculturalists. The Mission observed that livestock poor body conditions were often associated with insecurity that prevented herders to access good pastures and water. This was particularly noted by the Mission in Lakes, Warrap and Jonglei States.

**Table 5 - Cattle numbers (thousands) by state (2005-2010)**

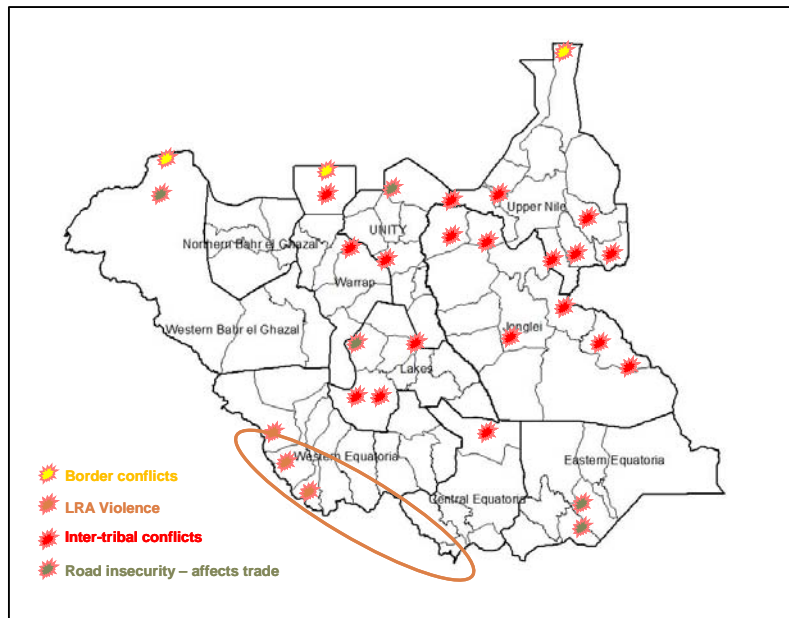
States	2005	2006	2007	2008	2009	2010
Central Equatoria	895	908	922	926	878	880
Eastern Equatoria	883	896	910	913	888	895
Western Equatoria	680	690	701	703	675	680
Jonglei	1 475	1 497	1 521	1 526	1 465	1 475
Upper Nile	990	1 005	1 021	1 024	983	990
Unity	1 189	1 207	1 226	1 230	1 180	1 189
Lakes					1 311	1 320
Warrap	1 539	1 562	1 586	1 592	1 528	1 539
Western Bahr el Ghazal	1 256	1 275	1 295	1 300	1 248	1 256
Northern Bahr el Ghazal	1 590	1 615	1 640	1 646	1 579	1 590
<b>SOUTH SUDAN</b>	<b>10 497</b>	<b>10 655</b>	<b>10 822</b>	<b>10 860</b>	<b>10 424</b>	<b>11 814</b>

Source: Ministry of Animal Resources and Fisheries for 2005-2008; FAO Livestock Population Estimates for 2009-2010.

### 3.4 Security

Although 2010 was marked by political elections in April and the preparation of the referendum on Southern Sudan self determination which is officially scheduled on 9 January 2011, the overall security situation has noticeably improved compared to 2009. However, the Mission noted several troubled areas (see Map 1), mainly due to inter-tribal conflicts, where mobility of people and livestock in 2010 has been severely limited due to insecurity. The Mission also noted that cattle raiding increased in some States such as Lakes and Warrap. In some unsecured areas, tribal conflicts prevented farmers from accessing land located far from homestead and thus resulting in reduction of planted area. This was particularly severe in various counties of Jonglei, Upper Nile and Unity States. Insecurity also often limited the access to diversified food sources such as fishing, wild food gathering and hunting. Insecurity on roads, with increasing risk of ambushes to traders, is affecting food supply and market access, particularly in Eastern Equatoria, Western Bahr El Ghazal and Unity State. Security conditions may change as the date of the self-determination referendum get closer and political tensions may build up.

**Map 1 – Main insecurity factors affecting current agricultural season**



## 4. CEREAL SUPPLY/DEMAND SITUATION

### 4.1 Cereal balance

As already shown in Table 3, total cereal consumption in 2011 was estimated at about 986 000 tonnes, using a projected 2011 mid-year population of about 9.16 million people and an average per capita consumption of 108 kg of cereals per year. Estimates of cereal per capita consumption are based on information provided by the 2009 National Baseline Household Survey (NBHS) at state level and adjusted by the Mission at county level to take into account differences between urban and rural areas and the relative importance of crops and livestock in local diets. Per capita food consumption rates by the 2009 NBHS are generally higher than those used in past CFSAMs. In addition, the Mission decided to augment 2009 cereal consumption figures by 5 percent to take into account that the NBHS may have somehow underestimated food consumption because of two factors: 1) it was conducted in a year when cereal production was severely affected by drought and 2) it was conducted during the lean season period when overall food consumption usually decrease. Consequently, used consumption rates varied from 80 to 140 kg per capita per year. Mid-2011 population has been calculated assuming a population growth rate of 2.052 percent per annum as in previous CFSAM.

With an estimated net cereal production of approximately 695 000 tonnes, a cereal deficit of about 291 000 tonnes is forecast for the marketing year 2011. In addition, the Mission forecast an additional 12 000 tonnes of cereals required for each 100 000 people returning to Southern Sudan to participate in the self-determination referendum in January 2011. Considering the current estimate of about 400 000 people that



have already registered to return from Northern Sudan, the overall cereal deficit for 2011 to be covered by commercial imports and food aid is likely to reach about 339 000 tonnes. This figure compares with 2010 revised deficit of about 417 000 tonnes.

Table 6 summarises the estimated cereal supply situation for each state in 2011, without including additional food requirements to satisfy the demand of foreseen returnees in coming months. Jonglei state is forecast to have the largest shortfall, with about 74 300 tonnes. Only Western Equatoria state is expected to register a surplus, while Western Bahr el Ghazal state shows a relatively small deficit.

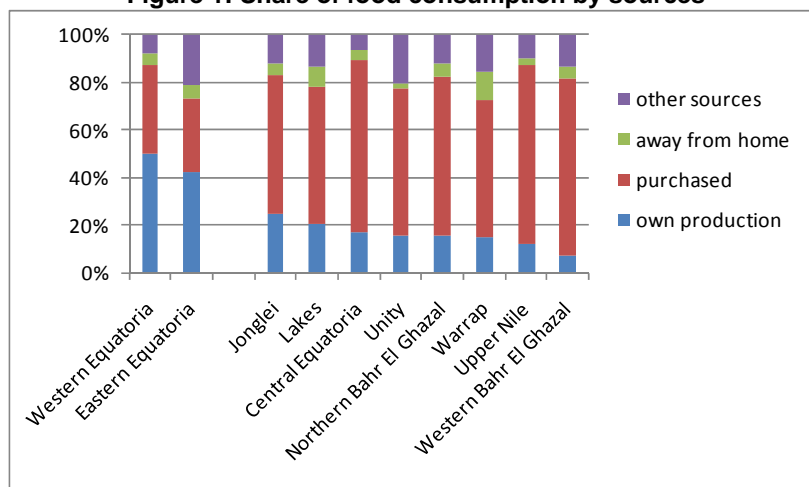
**Table 6 – Estimated cereal surplus/deficit by state in 2011**

States	Surplus/deficit (tonnes)
Central Equatoria	-63 878
Eastern Equatoria	-42 777
Western Equatoria	24 179
Jonglei	-74 259
Upper Nile	-37 443
Unity	-33 992
Lakes	-17 905
Warrap	-10 219
Western Bahr el Ghazal	-7 700
Northern Bahr el Ghazal	-26 998
<b>Southern Sudan</b>	<b>-290 993</b>

#### 4.2 Cereal and livestock markets

The 2009 National Household Baseline Survey (NHBS) showed that food purchased on local markets is the main source of food in Southern Sudan. At the time of the survey, households acquired their food mostly from purchases (57.6 percent), followed by their own production (23.9) and other sources (12.9 percent), which include mainly gifts, food aid, and payment in kind. The survey found that own production is not the main source of calories in most lowland States, ranging from 24.7 percent in Jonglei to 7.1 percent in Northern Bahr El Ghazal. Different patterns are in Western and Eastern Equatoria as own production represents respectively 50.0 and 42.1 percent of the dietary energy consumption (see Figure 1). Although the NHBS was undertaken in the month of May, during the lean season when market purchases by agricultural and agro-pastoralist households are usually predominant if compared to the second part of the year, it underlines the growing importance of local markets to access food in Southern Sudan and the potential impacts on food security when markets are disrupted.

**Figure 1: Share of food consumption by sources**



Source: 2009 National Baseline Household Survey

After the 2005 Comprehensive Peace Agreement, the development of the road network started to receive the attention of GoSS. In fact, one of the major peace dividends is that rural areas are now better connected to urban centres with substantial improvement of trade flows of supplies of food and other household items. The benefits resulting from de-mining, clearance and grading of many of the major trunk roads are evident. However, feeder roads are still mostly unusable and this continues to be an obstacle to farmers' access to food and farming inputs as well as a serious disincentive to increase food production, even in potentially surplus production areas (e.g. in the Greenbelt zone). This situation compels entire communities to live in quasi-autarchic conditions, relying mostly on subsistence agriculture. In Jonglei State, for instance, communities in places such as Pochalla have almost no road connection to the outer world. The nearest market of Pinyido in neighbouring Ethiopia is six hours away by bicycle, while Pibor is connected by a makeshift road only for three months per year, from January to March, during the dry season. In this and similar cases, stockpiling by food traders is usually practiced, with increasing storage costs and food losses.

As reported in Figure 2, nominal retail prices of white sorghum have been characterized by a rising trend in the first part of 2010, mainly as a consequence of 2009 poor harvest. They peaked in May-June 2010 in the post-electoral period and then they decreased in some markets like Juba and Aweil Town, in coincidence with the release of Governmental food stocks at subsidized prices, the distribution of food aid and a sustained flow of imports from North Sudan, Uganda and Kenya. Generally, sorghum prices remain above the level of one year ago. Prices in Wau kept a steadily rising trend for the whole year, mainly because of severe problems of market access due to insecurity at border with North Sudan that limited movements of traders from South Darfur to Wau and extremely poor road conditions between Wau and Aweil in recent months. According to Mission's observations, prices in Malakal, Bentiu and other urban centres in border States are already showing some increases.

Regarding maize prices, the Mission reported that, especially in the three Equatoria states where maize is one of the main staple foods, current prices are generally lower than a year ago. This reduction is partially due to the good 2010 production, but mainly to a sustained import flow from neighbouring Uganda. In fact, in Kampala market, wholesale maize prices registered record low levels between July and September 2010, averaging USD 110-120 per tonne.

**Figure 2: Retail prices of white sorghum in selected markets**

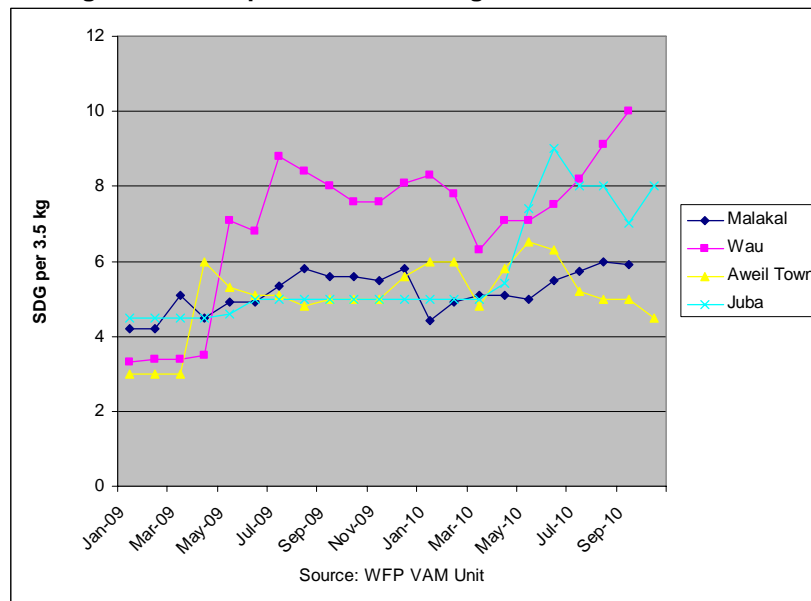


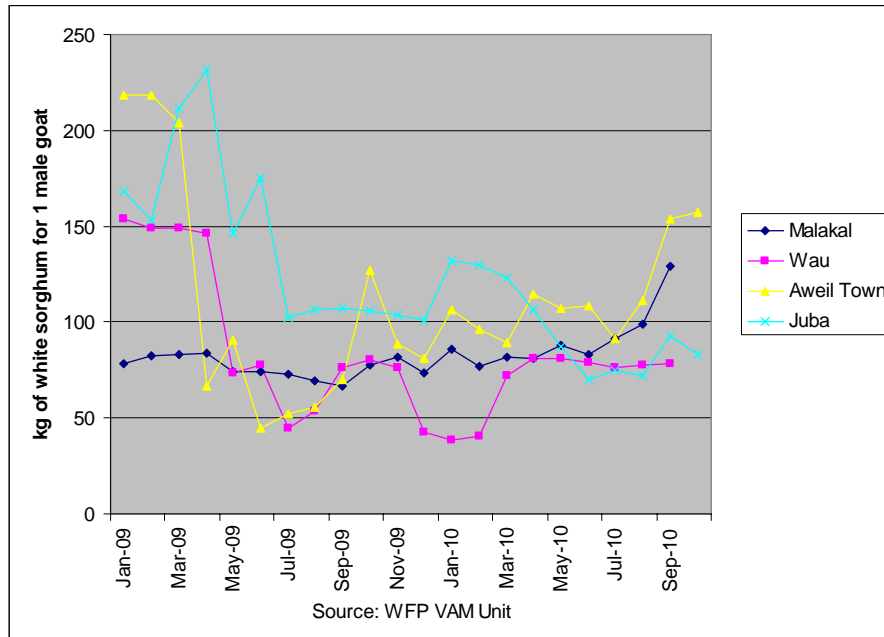
Figure 2 shows also the existence of significant price differentials between markets, illustrating limited integration. They are mainly due to markets segmentation and high transportation costs from surplus to deficit areas. In Southern Sudan, transportation costs are determined by several factors, such as poor conditions of the road network especially during the rainy season, formal and informal taxation system at check points, high expenses related to insecurity and the presence of a considerable number of intermediaries handling food along the value chain. In May 2010, the GoSS issued a directive to exempt imported staple food commodities from taxation. However, any analysis of the extent of its implementation and impact would require a follow-up. Regarding the value chain of white sorghum, the Mission analysed price formation in Upper Nile state, from mainly mechanized cereal producing area of Renk to the retail

market of Malakal, and it was found that the price received by farmers in Renk is less than 30 percent of the price paid by final consumers in Malakal, the rest being used to remunerate the services provided by the intermediaries.

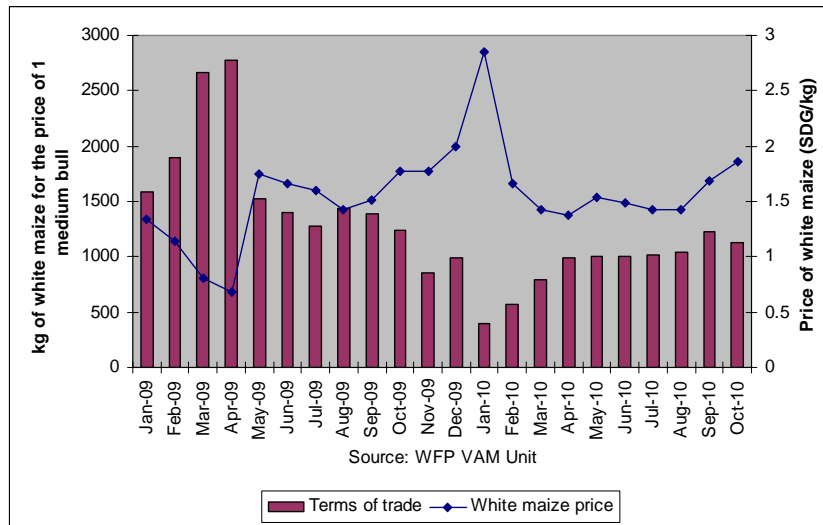
Prices of livestock are currently higher than one year ago due to the good animal body conditions following better availability of pasture and water. In main markets, distress sales of goats and cattle continued almost until mid-2010 due to the negative effects on grain production and pasture conditions of last year's drought. Since then, with the beginning of the rainy season, the number of animals on sale, especially heifers, has gradually decreased and livestock prices have started to increase. Current terms of trade are generally favourable for pastoralists to the detriment of grain producers as shown in Figure 3. In Malakal and Aweil, the price of a male goat in September/October 2010 was equivalent to 130-150 kg of white sorghum, while it was equal to only 90 kg in July 2010. In Wau, terms of trade improved for pastoralists from February to April 2010 and then they remained quite stable due to the exceptional local high prices of grains.

In Juba, sorghum/goat terms of trade steadily declined from January to June 2010 and then they remained constant with marginal improvements in recent months. However, given the major importance of maize and maize flour in local diet in Juba town, it is also interesting to analyse the maize/livestock terms of trade shown in Figure 4. Maize/bull exchange constantly deteriorated from April 2009, when a medium bull was traded for about 2 800 kg of maize, until January 2010, when maize retail prices hit record level of SDG 2.85 per kg and a medium bull could be then obtained in exchange of only 400 kg of maize. Since then, terms of trade for pastoralist have gradually improved, remaining constant at about 1 100-1 200 kg of maize per bull.

**Figure 3: Terms of trade - White sorghum/medium male goat in selected markets**



**Figure 4: Terms of trade - White maize/medium bull in Juba**



The Mission foresees some potential effects of the self-determination referendum on trade flows, food demand in some areas and the overall food security situation. As the referendum’s date gets closer and security conditions become more uncertain, some traders from North Sudan as well as neighbouring Uganda and Kenya are expected to reduce their activities or leave the country, at least temporarily. This is already taking place in some markets closer to northern border, where a gradual reduction of food stocks has been registered during Mission’s field visits. Two maps visualizing the likely impact of the referendum on grain and flour trading flows are in Annex III.

Food demand is also expected to increase in coming months as a result of the likely flow of people returning to Southern Sudan for voting at the self-determination referendum. Although these figures are still tentative and may change in the near future or even after the referendum, in the short term, returnees are expected to concentrate in state capitals (especially Juba, Malakal, Bentiu, Aweil and Kwajok) and determine an increase in food and non food demand. At the same time, food demand may further increase in coming weeks if local households perceive the risk of potential food shortages during the referendum period and they may consequently decide to hoard substantial quantities of food as a copying strategy.

In conclusion, the Mission anticipates an increase in food prices especially in communities bordering Northern Sudan due to reduced import flows and increased food demand. Depending on post-referendum security conditions, this increase in food prices may continue into the 2011 lean season that usually starts in April/May and ends in August with the new harvest. This situation would mean that food prices may stay high for a period of about 8 months, with a severe negative impact on the access of most vulnerable households, especially in urban areas.

**5. HOUSEHOLD FOOD SECURITY SITUATION**

**5.1 Methodology**

The mission undertook extensive field visits throughout the 10 states covering all livelihood zones to assess underlying dynamics and trends in the food security situation and to cross-check findings from secondary sources. Government authorities and key food security partners were consulted at national, state and county level. In addition, the mission conducted focus group discussions with men and women (including resident population and IDPs) at community level and interviewed retailers and wholesalers in major markets across the country.

Secondary sources included the 2009 and 2010 Annual Needs and Livelihood Assessment (ANLA), the 2009 National Baseline Household Survey, and the Situation Analysis of Nutrition in Southern Sudan (draft September 2009). Recently, stakeholders, including GOSS, WFP, FAO and UNICEF decided to rename the ANLA to “Annual Needs and Livelihood Analysis” to emphasize the increased need for more in-depth analysis of the dynamics and underlying causes of food insecurity. The recent data collection round forms

part of a food security monitoring system (FSMS) initiated in 2010. The food security situation will be re-assessed in February (dry-season, post-referendum), June (lean season) and October (post-harvest) 2011.

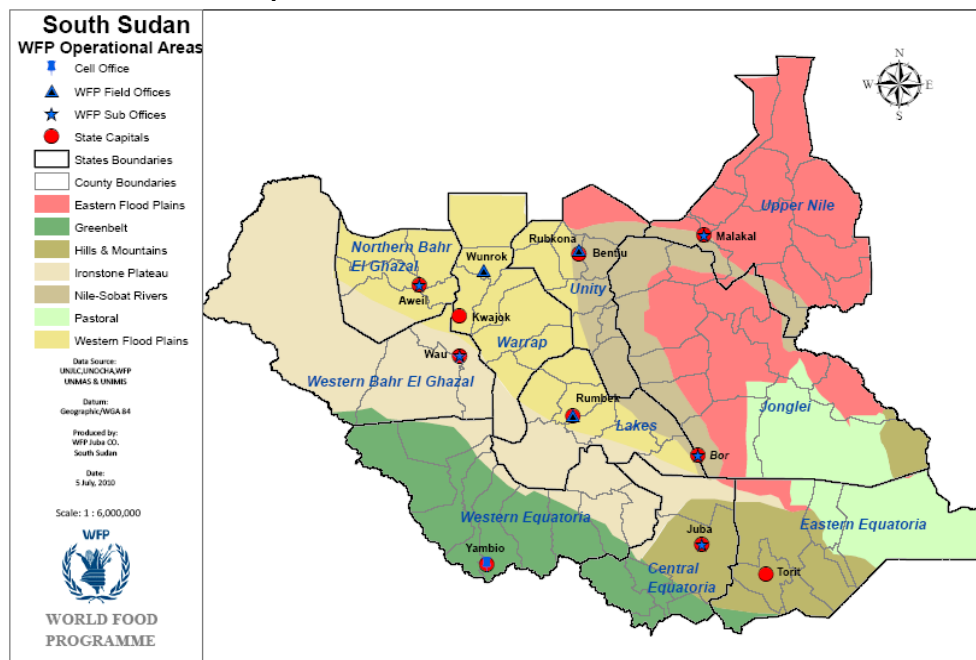
The 2010 FSMS/ANLA covered 8 out of 10 states. In each state, 10 sentinel sites (bomas) were purposively selected through a consultative process at the state-level taking into account representation of various livelihood zones and administrative areas within each state. In total, 1,841 households were interviewed. The purposive selection of sites is a pragmatic necessity but imposes certain analytical limitations and constraints. Selected key food security indicators were also collected during the statistically representative National Health Survey conducted in June 2010 but the analysis was still ongoing during the time of the mission. For future reference, it is recommended to establish a baseline using the National Health Survey findings and adjust trends on a seasonal basis using the results from the food security monitoring system.

## 5.2 Livelihood context and trends

Livelihood patterns are determined by the agro-ecological conditions as well as the culture and traditions of the various tribes. For most households in Southern Sudan, cattle-keeping is the fundamental basis for wealth and social status. Crop production plays an important complementary role but is generally perceived as a less important activity more for cultural than agro-ecological reasons especially among the Nilotic tribes (Dinka and Nuer). Other activities include fishing, gathering of wild foods and trade. Access to food is highly seasonal and location specific and the majority of households move around to exploit seasonal patterns. Mobility is crucial and food insecurity often arises where inter-tribal clashes and other conflicts constrain this mobility. There are seven distinct livelihood zones in Southern Sudan (see Map 2).

The Greenbelt comprised of Western Equatoria and parts of Central and Eastern Equatoria benefits from a weakly bi-modal rainfall patterns which enables two planting seasons. Main livelihood is subsistence agriculture with the potential of surplus production. The main crops cultivated are root crops (cassava, sweet potatoes), maize, millet, groundnuts and finger millet. Despite the fact that there has been a reduction in new displacements, fear of attacks of the Lord Resistance Army continue to interrupt agricultural production in parts of Western Equatoria, in particular in Ezo, Tambura and Nagero counties and selected payams in Nzara and Yambio counties. Poor marketing opportunities are a major disincentive for farming households to increase their outputs. In 2010, WFP has started a small-scale local Purchase-for-Progress (P4P) initiative which has motivated some farmers organized in groups to increase their maize production. A general concern is that price expectations of farmers exceed by far the amount WFP is able to pay pegged on the prevailing global and regional maize price levels.

Map 2 - Livelihood zones in Southern Sudan



The Pastoral livelihood zone lies in the arid south-east of Southern Sudan encompassing parts of Eastern Equatoria and Jonglei. In this zone, seasonal migration in search of water and pasture for livestock is the

predominant livelihood activity. After the 2009 drought which limited pastoralists access to pasture and water resources forcing them to migrate long distances, the situation is much more favourable since the onset of the rains this year. Number of livestock is expected to have increased and the mission did not observe distress sales in the Kapoeta livestock market which were very common last year and during the first quarter of 2010. This year, livestock is remaining longer around their homesteads contributing to increased milk intake of the entire household. Though agricultural outputs were hampered by bird attacks and increased level of aphids due to the high rainfall in August, households are able to compensate due to improved Terms of Trade for livestock products and gold. In South and East Kapoeta it was observed that mining activities have been increasing as a response to poor livestock conditions and harvest last year.

The Hills and Mountains zone covers parts of Jonglei, Central and Eastern Equatoria zone and is characterized by agro-pastoralism. This was one of the worst affected areas by the 2009 drought. Mostly vulnerable were communities in the lowlands who engage in the production of short- and long-term sorghum, while communities in the mountains who cultivate cereals, pulses and vegetables were doing relatively better due to more favourable rain conditions in higher altitudes. During the first half of 2010 households were highly dependent on market purchases and food aid. The situation has improved since mid-year due to declining food prices and increased consumption from own production following the harvest of short-term sorghum in June/July. Though agricultural productivity has increased, outputs remain below normal due to damages caused by the heavy rainfall in August. Selling of vegetables and pulses has slightly decreased in the mountain areas due to longer vegetation periods. Casual labour and selling of charcoal, firewood, bamboos, poles and grass – common coping strategies in times of distress – have decreased remarkably this year compared to last year.

In both Pastoral and Hills and Mountain zones, key informants indicated that cattle raiding have reduced in 2010 compared to the previous year due to major reconciliation and sensitization campaigns of the government and some NGOs. On the other hand, armed ambushes targeting trucks and personal vehicles have increased especially on the Torit-Kapoeta and Ikotos-Hiyala road. These attacks have potential implications on food insecurity as it affects the mobility of traders who import food commodities from Uganda.

The Western and Eastern Flood Plains cover Upper Nile and parts of Unity, Jonglei, Warrap, Northern Bahr el Ghazal and Lakes. Primary livelihood activity is agro-pastoralism supplemented by fishing, wild food gathering and to some extent hunting in the Eastern Flood Plains. The Western and Eastern Plains are separated by the Nile and Sobat River Zone where fishing contributes significantly to household food access. Livelihoods are highly dependent on changing water levels and settlements are concentrated on small portions of land that are slightly elevated. Seasonal flooding increases the yield of pasture for livestock, fish and wild foods, but can affect agricultural production and be the cause of displacements. Other economic activities in this region include the oil fields in Unity and mechanized farms around Renk in Upper Nile but benefits for the local population are generally limited to improvements of the local road infrastructure for which the 2 percent direct share of oil revenues are mainly used.

This year, above normal rainfall and higher water levels in rivers flowing from Ethiopia caused localized flooding in parts of Upper Nile, Unity, Jonglei and Northern Bahr El Ghazal resulting in destructions of crops and displacements of affected households. The situation was exacerbated by the often inadequate drainage in the newly constructed roads. Insecurity caused by inter-tribal/clan clashes is considered as the main factor affecting households' access to food this year as it prevented flood affected households to mitigate the impacts of floods to access remote cropping areas on higher lands which remained flood free. Fishing opportunities on the other hand are above normal – especially once the water level subsides and fishing activities along the rivers resume. Likewise, livestock body conditions are good due to above average availability of pasture and water and households continue to engage in restocking their herds. Though game meat contributes to the food diet in parts of Upper Nile, the increased presence of armed factions and enforcement of new regulations have decreased reliance on this activity compared to last year.

Given the configuration of transportation infrastructure, Unity and to a slightly lesser degree Upper Nile and the Northern parts of Jonglei are almost exclusively dependent on Northern Sudan for its market supply. Also Northern and Western Bahr el Ghazal depend largely on trade of cereals from the north. As many traders are anticipating problems for their business with the referendum approaching, the number of traders has declined as many have opted to return back to the North and those staying are no longer replenishing their stocks. Market prices have generally remained higher this year compared to the previous year despite the better harvest this year. This is expected to be aggravated by the increased demand of returnees who are already starting to come back from the North ahead of the referendum. Insecurity due to ethnic and inter-tribal conflicts remains a concern in Jonglei though the situation was relatively calm at the time of the mission. The trading route from Malakal to Akobo was disrupted earlier this year due to insecurity but barges are now moving freely again.

The Ironstone Plateau covering parts of Lakes, Warrap, Northern and Western el Ghazal, Western and Central Equatoria highly depends on crop production, mainly sorghum, groundnuts, sesame and tobacco. In some areas also honey production is an important supplementary activity. Generally income crop production is expected to be higher this year compared to last year though some areas produced less as they were affected by displacements last year and throughout early 2010. Body conditions of animals in Lakes state were reported to be poor compared to last year which was attributed to overgrazing and restricted access to water pasture as a result of insecurity caused by cattle-raiding. In Warrap, some locations are still flooded and pastures are not accessible, therefore livestock have been moved to higher grounds causing conflicts with local population groups. Despite generally improving conditions for agricultural production, Western Bahr El Ghazal is affected by poor road conditions linking Wau and Juba due to several broken bridges, which is limiting trading activities with the Southern states.

In summary, across Southern Sudan, income from activities considered highly reliable and sustainable (e.g. sales of cereals and animal products) have increased compared to last year (ANLA/FSMS 2009/10). The fact that sale of livestock has decreased in relative terms is rather a positive sign as traditionally most livestock herders only sell their animals in times of distress. On the other hand, the relative importance of coping strategies such as selling of grass, charcoal and firewood has decreased compared to last year, however they remain important in Jonglei, Northern Bahr El Ghazal, Eastern Equatoria and Unity States (see Table 7). The high reliance last year on the production of firewood and charcoal has contributed to a certain decline in woodland and forest resources around towns and in more populated areas forcing households (mainly women) to walk longer distances to fetch firewood.

**Table 7: Share of income sources (%) (Oct 2010)**

	EEQ	Jonglei	Lakes	Upper Nile	WBEG	NBEG	Warrap	Unity	Total	Trend compared to last year
<b>High reliability/sustainability</b>										
Sale of cereal	6	11	21	31	21	7	14	10	15	(+)
Sale of livestock	25	9	15	3	3	1	14	7	9	(-)
Sale of animal products	1	3	2	7	1	1	4	4	3	(+)
Skilled labour	1	2	1	10	1	2	2	1	2	(+)
Salaried work	4	16	4	22	8	5	10	4	9	(+)
Petty trade/small business	1	3	4	3	4	8	2	3	4	(+)
<b>Sub-total</b>	<b>37</b>	<b>44</b>	<b>48</b>	<b>76</b>	<b>37</b>	<b>24</b>	<b>46</b>	<b>29</b>	<b>42</b>	<b>(++)</b>
<b>Medium reliability/sustainability</b>										
Sale of other crops and products	4	5	9	2	16	5	6	2	6	(+)
Sale of alcoholic beverages	16	7	10	3	9	11	19	10	11	(+)
Casual labour (agriculture)	5	1	11	6	11	22	3	7	8	(+)
Sale of fish	0	2	4	1	1	0	1	9	2	(-)
Other	6	0	3	0	2	3	2	0	2	(+-)
<b>Sub-total</b>	<b>30</b>	<b>16</b>	<b>36</b>	<b>12</b>	<b>39</b>	<b>41</b>	<b>30</b>	<b>27</b>	<b>30</b>	<b>(+-)</b>
<b>Low reliability/sustainability</b>										
Casual labour (construction)	1	1	0	1	1	1	2	4	1	(-)
Other non-agri casual labour	2	2	4	2	1	2	2	2	2	(+)
Sale of firewood	14	21	3	5	5	15	4	15	10	(-)
Sale of charcoal	11	3	2	1	10	5	2	10	5	(-)
Sale of grass	2	7	2	3	5	10	4	12	6	(-)
Kinship/gifts from others	1	4	2	0	1	2	1	0	1	(-)
Begging	0	0	1	0	0	1	0	0	0	(-)
Sale of food aid	0	1	2	1	0	0	4	0	1	(+)
Borrowing	1	1	1	0	1	0	5	1	1	(+-)
<b>Sub-total</b>	<b>32</b>	<b>40</b>	<b>16</b>	<b>13</b>	<b>24</b>	<b>35</b>	<b>23</b>	<b>43</b>	<b>28</b>	<b>(--)</b>

Source: Calculated based on ANLA 2009/20010 and FSMS (2010) data

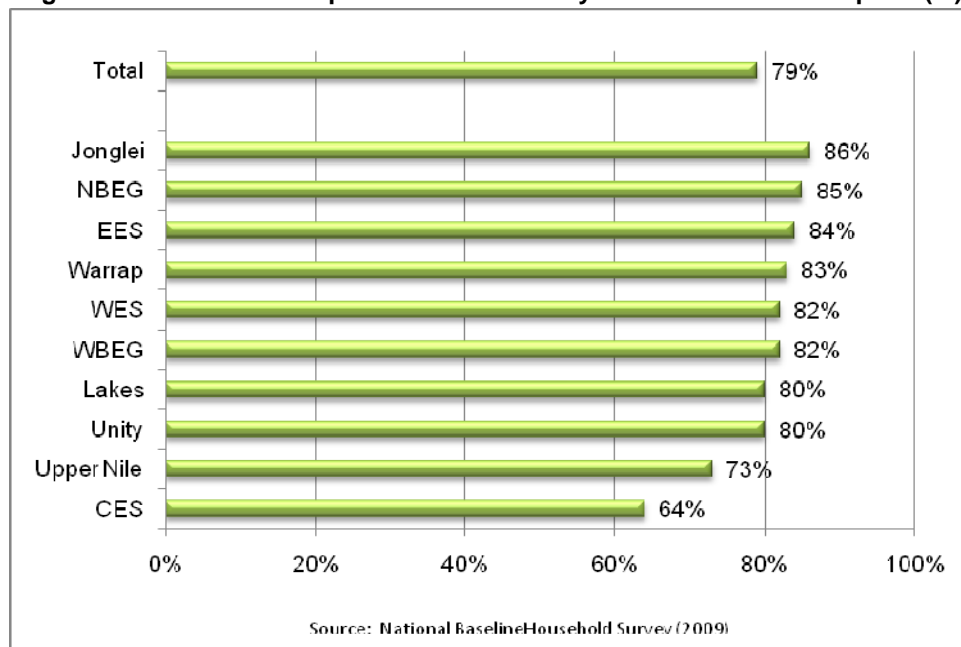
### 5.3 Current food security situation and projected trends

The current food security situation has improved remarkably compared to the previous year which can mainly be attributed to good rainfall, increased food production and favourable livestock conditions. Despite these improvements, future prospects highly depend on how the referendum and post referendum period evolves. Recent gains could easily be reversed due to the following risk factors: (1) Limited or no supplies in the Northern States of Southern Sudan as traders are pulling out; (2) increased food prices across all states due to temporarily reduced inflows from Uganda and increased demand from the Northern states which were supplied from Northern Sudan so far; (3) increased number of returnees in the pre- and post-referendum period who will additionally increase the demand for food commodities in the markets and place a burden on families hosting returnees; (4) potential increase of ethnic and intertribal conflicts in the aftermath of the referendum impacting access to agricultural land and pasture in 2011; and finally (5) a risk of escalating localized conflicts in the border areas of Northern and Southern Sudan. Farming households relying on their own production will be slightly more resilient due to the favourable 2010 agricultural season. They will, however become vulnerable during the time of the lean season (see seasonal calendar in Annex V) when they will become highly dependent on market purchases.

#### 5.3.1 Food expenditure and food sources

According to the National Baseline Household Survey (NBHS) conducted during the dry/lean season in April-May 2009 following a good harvest in 2008, households in Southern Sudan spent 79 percent of their total consumption on food, in rural areas 81 percent and in urban areas 69 percent. Eight out of ten states have shares higher than 80 percent (see Figure 5). This is concerning when taking into account the current and anticipated trends of food commodity prices (see section 4.2).

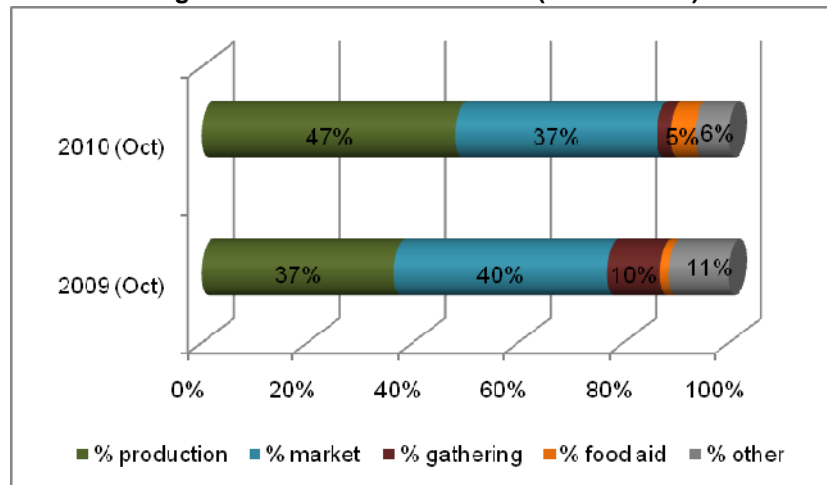
**Figure 5: Share of food expenditure in monetary value in total consumption (%)**



Compared to one year, households are currently spending less cash on food (ANLA/FSMS 2009 and 2010). Last year, 41 percent of households were considered to have high share of food expenditure, this year only 27 percent, an indication that households are able to rely more on their own production. This trend is also reflected for the main sources food (see Figure 6.). Currently, more households are able to rely on their own production to access food compared to the same period last year while purchases from markets have slightly decreased. Also the dependency on gathering of wild foods has decreased, while some households are still benefiting from food aid distributed during the lean season as a response to the 2009 drought. During 2010, food aid remained an important source. Overall, 39 percent of interviewed households reported to have benefited from food assistance during the lean season.



**Figure 6: Share of food sources (ANLA/FSMS)**

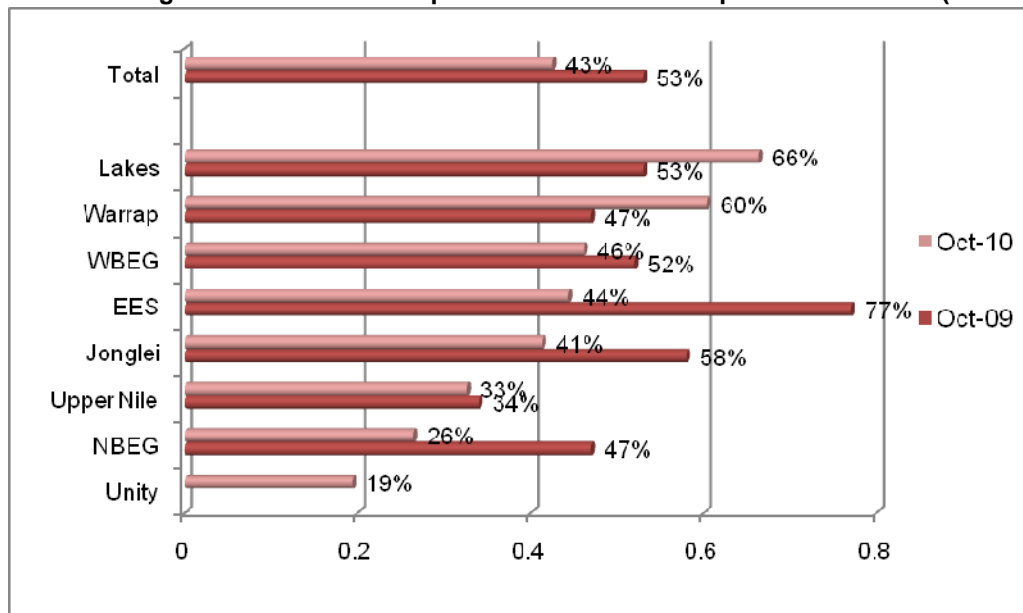


**5.3.2 Food consumption and coping strategies**

Food consumption based on dietary diversity and frequency has improved this year. Households with poor food consumption reduced from 26 percent to 19 percent, while households with acceptable food consumption increased from 47 percent to 57 percent. This is an indication that after the recent harvest, households were able to improve their food consumption levels compared to the previous year which was heavily affected by the drought. While last year every second adult was consuming one meal per day, it is now only every fifth person. However, despite this positive trend, nearly every second household continues to have a diet that lacks dietary diversity and energy.

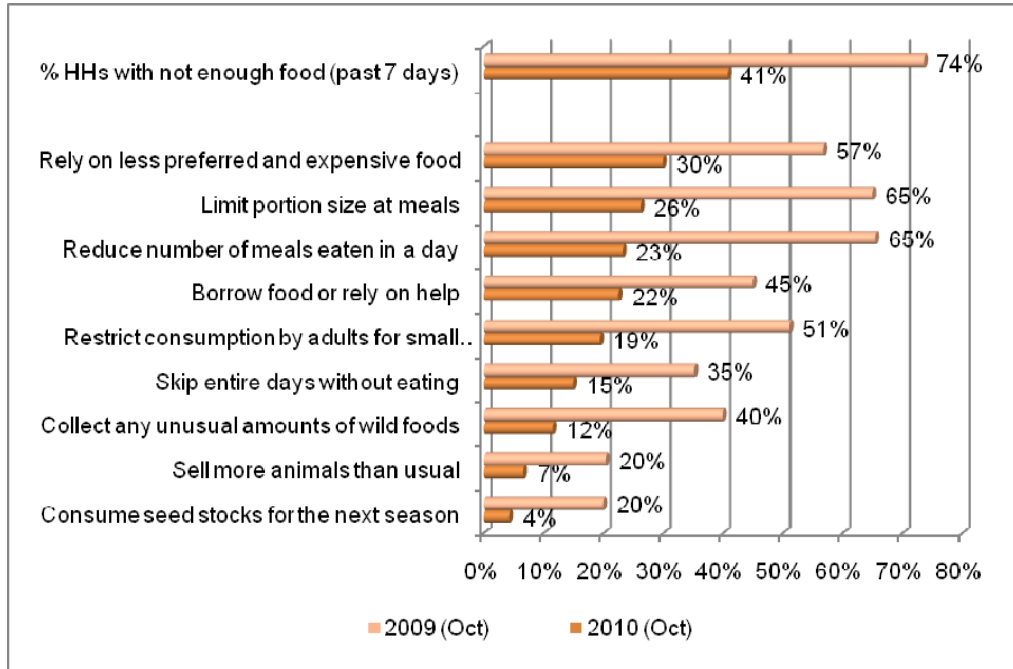
The situation has improved across all covered states except for Lakes and Warrap which could partly be explained by the fact that in Lakes State the predominant long-term sorghum has not yet been harvested, while households' food security was also affected by increasing levels of insecurity caused by inter-tribal clashes and cattle-raiding. Remarkable are the improvements in Eastern Equatoria and Northern Bahr El Ghazal which were heavily affected by the 2009 drought but benefited from the improved rainfall and livestock conditions this year (see Figure 7).

**Figure 7: Percentage of households with poor/borderline consumption Oct. 2009/10 (ANLA/FSMS)**



Across Southern Sudan households are applying fewer coping strategies, an indication that they are currently less stressed compared to last year. In October 2009, more than seven out of 10 households reported not having enough food or money to buy food, this year only four. While last year, 65 percent reported to have reduced their number of meals and meal sizes, this year, it is only around 23 percent. Also the distress sales of livestock and consumption of seed stocks reduced remarkably (see Figure 8).

**Figure 8: Coping strategies (ANLA/FSMS)**

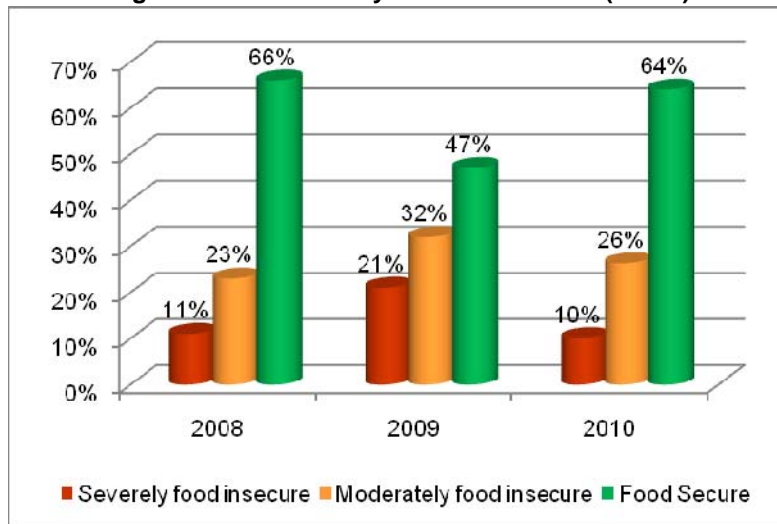


### 5.3.3 Food security

During the ANLA/FSMS, the household food security status is determined by three components: (1) food consumption based on dietary diversity and frequency, (2) food access based on the reliability and sustainability of income activities pursued by the household and share of food expenditure, and (3) coping strategies derived from the frequency and severity of different coping strategies employed by households. Based on these factors, households were classified into three categories: severely food insecure, moderately food insecure and food secure.

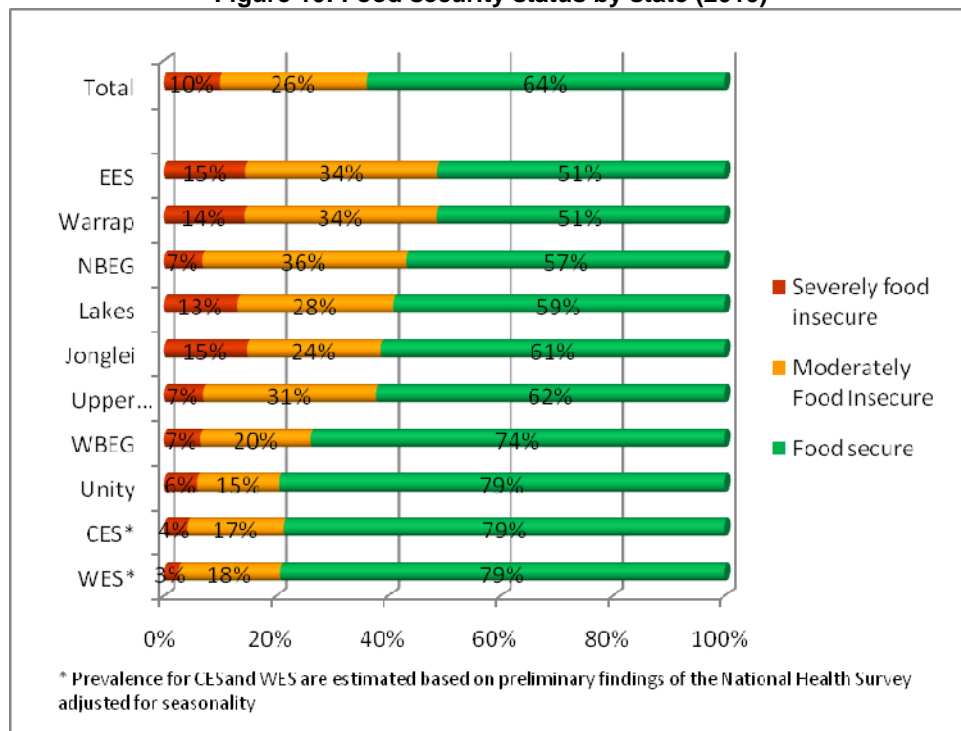
According to the findings of the 2010 FSMS/ANLA, almost 890 000 people (9.7 percent) in Southern Sudan are severely food insecure and an additional 2.4 million people (26.3 percent) are moderately food insecure. In a good or typical year, households considered to be moderately food insecure are considered to be able to cope; however, they will become food insecure in case a major shock occurs. The remaining 64 percent are considered to be food secure and relatively resilient in case a shock occurs. Overall, the situation has improved compared to 2009 and is comparable with the situation in 2008 (see Figure 9).

**Figure 9: Food security trends 2008-2010 (ANLA)**

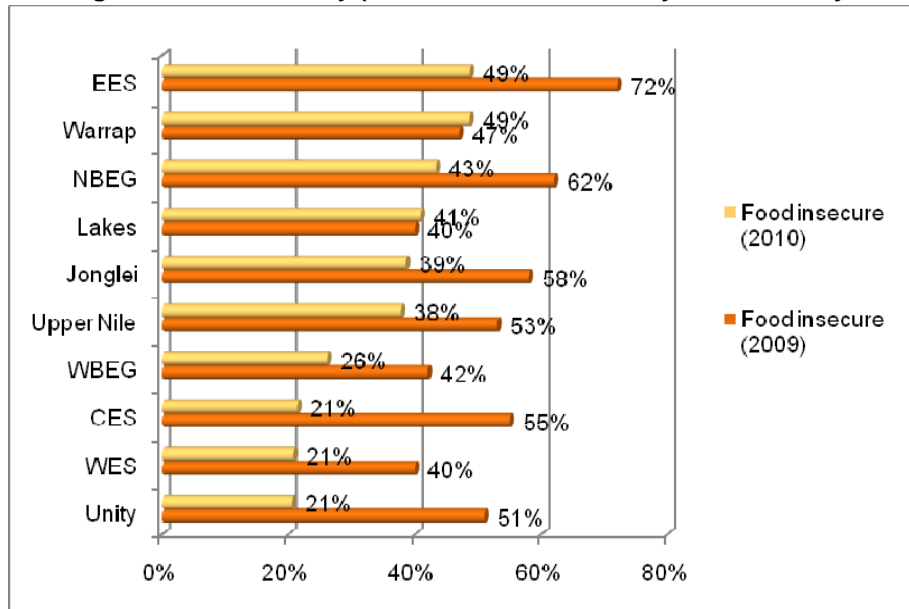


The five states worst off are Eastern Equatoria, Warrap, Lakes, Jonglei and Northern El Bahr Ghazal, (see Figure 10). Compared to the previous year, the food security situation improved across the entire region except for Warrap and Lakes where food insecurity levels remained the same. This is an indication that households were not yet able to recover from the drought last year as the harvest of the long-term sorghum is expected to take place in late 2010. An additional factor could be the exposure to floods and continued insecurity restricting the mobility of people and livestock this year (see Figure 11). A close monitoring of the situation in Warrap and Lakes is therefore recommended.

**Figure 10: Food security status by state (2010)**



**Figure 11: Changes in food insecurity (% of households severely or moderately food insecure)**



#### 5.3.4 Exposure to shocks

The underlying causes of food insecurity have shifted. In 2009, more than 80 percent of households reported to have been affected by the delay of rains, this year only 16 percent. On the contrary, households affected by floods increased from 6 percent to 22 percent. The states mostly affected have been Jonglei, Upper Nile, Northern Bahr el Ghazal and Unity. Also Lakes and Warrap experienced increased exposure to flooding compared to last year which is in line with the observation made by the mission teams. More households reported exposure to human sickness which is associated with higher rainfall and increased flooding causing higher incidences of malaria and other water-borne diseases. The second main shock reported in both years was high food prices with a particular high prevalence in Upper Nile and Unity states. Overall, the perceived exposure to insecurity and violence remained the same compared to last year, however increased in Lakes caused by inter-tribal conflicts and Eastern Equatoria due to increased number of road ambushes and other incidences associated with cattle-raiding. In Lakes, 4 out of 5 households reported to have been affected by insecurity, followed by Warrap, Jonglei and Eastern Equatoria, where nearly every second household was affected. One issue increasingly impacting on household's ability to access food is lack of free access or movement, which is both associated with the flooding and/or insecurity. Increasingly levels were particularly observed in Warrap, Upper Nile and Jonglei (see Table 8 and Annex IV).

**Table 8: Percent of households reporting shocks**

	Insecurity/ violence	High food prices	Lack of free access/ movement	Livestock disease	Floods	Human sickness	Returnee/ IDP living at HH	Delay of rains	Weeds/ pests
EES	43	55	5	29	12	59	0	18	50
Jonglei	51	52	19	20	31	63	1	7	19
Lakes	76	43	18	15	26	63	1	16	14
Upper Nile	11	83	29	29	34	47	4	7	2
WBEG	8	59	1	12	3	80	1	33	40
NBEG	0	59	3	21	30	77	2	16	35
Warrap	46	45	31	28	16	43	1	22	19
Unity	26	69	25	19	30	84	1	10	4
<b>Total (2010)</b>	<b>33</b>	<b>57</b>	<b>16</b>	<b>21</b>	<b>22</b>	<b>65</b>	<b>1</b>	<b>16</b>	<b>23</b>
<b>Total (2009)</b>	<b>31</b>	<b>58</b>	<b>7</b>	<b>16</b>	<b>6</b>	<b>43</b>	<b>4</b>	<b>81</b>	<b>17</b>
<b>Trend compared to 2009</b>	<b>(+-)</b>	<b>(+-)</b>	<b>(++)</b>	<b>(+)</b>	<b>(++)</b>	<b>(+)</b>	<b>(-)</b>	<b>(--)</b>	<b>(+-)</b>

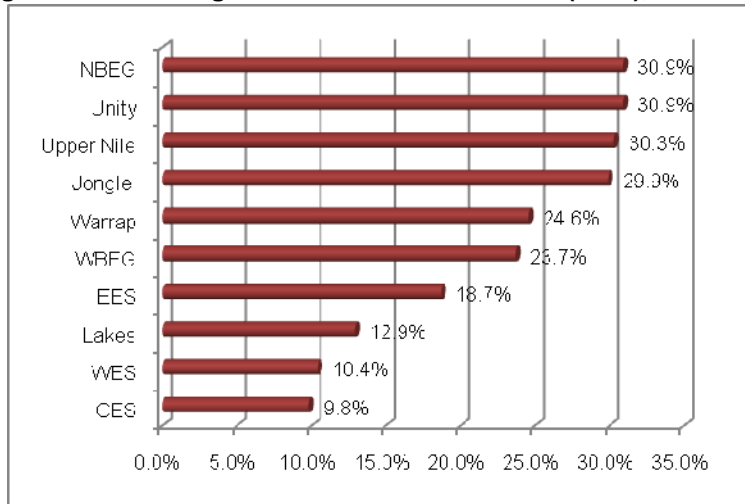
Source: ANLA 2009/2010 and FSMS (2010)

Despite the fact that the food security situation has improved compared to last year, future prospects highly depend on the forthcoming referendum and aftermath period. It will therefore be critical to monitor the situation closely and re-assess the food security situation in the post-referendum period. Key indicators to be monitored throughout the period include market prices (including price developments in Uganda), trade flows, number of organized and spontaneous returnees, and number of newly displaced persons. In addition, seasonal forecasts for rainfall and NDVI during the planting season (March to May) would assist to early on estimate the potential performance of the 2011 agricultural season.

#### **5.4 Nutrition situation**

High rates of global acute malnutrition (GAM), which regularly exceed the emergency threshold of 15 percent, constitute a significant public health challenge in Southern Sudan. According to the 2006 Sudan Household Health Survey (SHHS), 22 percent of children were acutely malnourished with severe acute malnutrition rates of above 4 percent. Seven out of 10 states had rates above the emergency level of 15 percent. More recent surveys show rates of around 19 percent (see "Situation Analysis of Nutrition in Southern Sudan", draft September 2009). A new representative health survey was conducted in June 2010 but results were not yet available during the time of the mission. Deficiencies of Vitamin A, iodine and iron are expected to be widespread due to limited dietary diversity and high incidences of infectious diseases. The acute malnutrition peak from April to June coincides with the dry season and is directly linked with high diarrheal incidences and to some degree with livestock and population movements and the agricultural lean season. A second smaller peak is associated with increased malaria incidences during the rainy season in August/September (see seasonal calendar in Annex V).

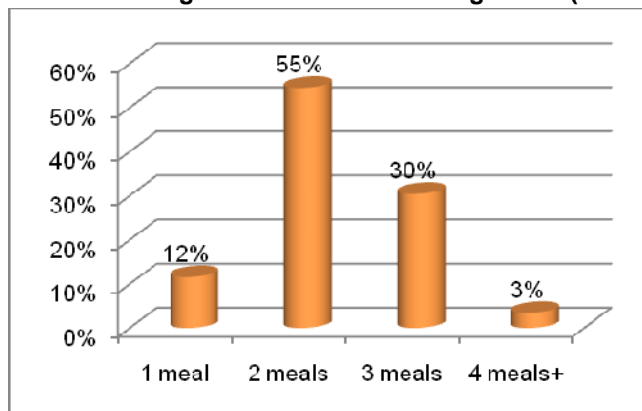
**Figure 12: Percentage of children-under5 wasted (GAM), SHHS 2006**



Malnutrition is generally attributed to the high disease burden, poor infant and young feeding practices, poor hygiene and sanitation, poor access to quality health services, and food shortages caused by recurrent shocks (drought, crop failure, insecurity, and high food prices). According to the Situation Analysis of Nutrition in Southern Sudan (draft September 2009), diarrhoeal diseases seem to be the most prominent cause of malnutrition in most of Southern Sudan. Diarrhoea is mainly caused by the use of unsafe drinking water, poor sanitation conditions and contaminated food. Overall, less than half of the population have access to improved drinking water sources and less than 6 percent of households in Southern Sudan use improved sources of drinking water and sanitation, implying that the majority are constantly at risk of water-borne diseases (SHHS 2006). The sources and quality of drinking water vary according to season. During the dry season, water sources are significantly depleted and water sources get congested and contaminated leading to increased risks of diarrhoeal diseases.

Another major concern is the food intake of young children. Young children require at least four meals per day as they are not able to absorb larger quantities in fewer meals. According to the recent ANLA/FSMS, only 3 percent of children ate four meals while two-thirds of children only ate one or two meals during the previous day (see Figure 13) though the number of meals may be underreported. A more detailed study on child feeding practices is therefore highly recommended. Also breastfeeding and infant feeding practices are poor with only between 11 and 28 percent of children under six months exclusively breastfed. Only very third child received timely complimentary feeding (SHHS 2006).

**Figure 13: Percentage of children consuming meals (FSMS 2010)**



Despite some recent improvements, nutrition continues to have a relatively low priority and it receives an insufficient allocation of staff and resources to support sustainable nutrition programme implementation and delivery. The coverage of targeted therapeutic and supplementary feeding programmes is low and mainly concentrated in few pockets in selected states run by NGOs. It is estimated that less than 10 percent of moderately malnourished children are currently covered by supplementary feeding programmes. This and

the generally high global acute malnutrition rate justify the implementation of a blanket supplementary feeding programme prior and during the two seasonal peaks.

### **5.5 Estimated food assistance requirements in 2011**

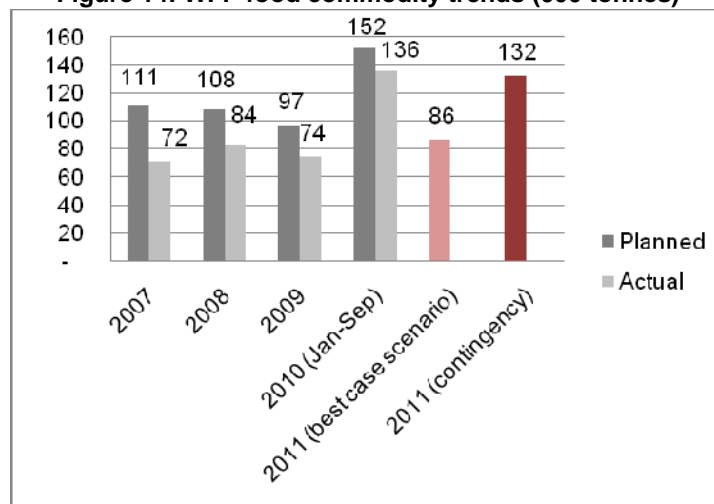
Two scenarios were developed based on different possible trajectories of the referendum and aftermath period. Based on these two scenarios, food aid requirements were estimated.

**Best-case scenario** (higher food prices due to temporarily reduced trade inflows combined with increased demand, peaceful referendum process without major security incidences): Main concern will be increasing food prices caused by the increased demand from returnees and temporarily reduced trade flows, particularly in the border states as they depend highly on the imports from the north. A peaceful referendum would likely result in the resumption of trade flows in the post-referendum period but prices could be relatively inelastic due to the perceived higher risks of doing business. Majority of rural households remain resilient during the initial three months due to the favourable 2010 harvest but they would become vulnerable during the lean season when they depend highly on market purchases. In this best-case scenario only severely food insecure households in rural areas will be targeted through food distributions for four months during the lean season starting April 2011. A more likely scenario based on projections on how anticipated food prices during the referendum are likely to affect food access using the cost-of-the food basket method will be developed but analysis is still ongoing.

**Contingency scenario** (reduced trade inflows combined with increased demand leading to persistent high food prices combined with increased insecurity in the post-referendum period): In addition to persistent high food prices (and potentially a temporary supply crunch in the border states), households' food security status will be at risk due to increased insecurity and internal displacement caused by escalating tensions, internal fragmentation and localized conflicts in the post-referendum period. The situation could be exacerbated by a rapid and large-scale return from Northern to Southern Sudan. In this scenario, in addition to the severely food insecure, also moderately food insecure households in states likely to be affected by multiple shocks (Unity, Upper Nile, Warrap, Northern Bahr El Ghazal, Western Bahr El Ghazal and Jonglei) will be targeted through the lean-season distribution during the peak of the lean season (May to July).

In the best case scenario, the total food assistance requirements for 2011 are estimated at 86 000 tonnes for an average monthly caseload of around 816 000 beneficiaries. About 77 percent of the estimated tonnage is comprised of cereals. The beneficiaries would include severely food insecure residents in rural areas, children vulnerable to malnutrition, refugees, IDPs and regular and referendum returnees. Approximately 322 000 newly displaced persons – mainly in Jonglei, Warrap, Lakes and Western Bahr El Ghazal – will require on average food assistance for three months. In addition, 25 500 refugees in camps in Jonglei, Western and Central Equatoria will be supported with full monthly rations. The number of regular returnees is estimated at 8 000 and referendum related returnees 70 000 who will receive a onetime distribution of a three-month ration. In addition, 12 600 children (6-59 months) from returning households will benefit from a blanket supplementary feeding for three months. Finally, a blanket supplementary feeding programme (BSFP) will be implemented in eight priority states targeting 250 000 resident children (6-24 months) and 50 000 pregnant and lactating women during the two seasonal peaks in malnutrition (April to May and August to September). Being a preventive intervention, the BSFP will already begin in March when contributing conditions are starting to deteriorate.

**Figure 14: WFP food commodity trends (000 tonnes)**



In the contingency scenario, 132 000 tonnes will be required for a caseload of 1.14 million beneficiaries (monthly average). This estimation includes a 3-month ration for currently moderately food insecure households in states likely to be impacted by multiple shocks. For every additional 100 000 returnees, an additional 14 900 tonnes would be required to assist them with a three-month return package and blanket supplementary feeding for children (6-59 months). The need to implement the contingency scenario will be advised by the FSMS exercise planned for February 2010.

**Table 9: Estimated food assistance requirements in 2011**

	Best case scenario		Contingency	
	Average beneficiaries (monthly)	Total (tonnes)	Average beneficiaries (monthly)	Total (tonnes)
Jonglei	157 100	17 600	236 400	28 700
EEQ	94 200	9 200	94 200	9 200
WEQ	19 500	4 600	19 500	4 600
CEQ	22 700	4 700	22 700	4 700
Warrap	121 200	12 300	204 900	24 100
WBEG	71 800	7 400	85 900	9 400
NBEG	80 400	7 500	151 800	17 500
Lakes	84 400	8 300	84 400	8 300
Upper Nile	104 200	8 700	164 000	17 100
Unity	60 700	6 000	79 900	8 700
<b>Total</b>	<b>816 200</b>	<b>86 300</b>	<b>1 143 700</b>	<b>132 300</b>
<b>For every additional 100 000 returnees</b>			<b>100 000</b>	<b>14 900</b>

WFP has received support from donors to ensure that 75 000 tonnes of food commodities are available for emergency distributions. As of 4 December 2010, about 47 000 tonnes were in-country. The advance positioning is scheduled to be completed by 15 December 2010. In addition, WFP also accelerated its procurement of Plumpy Doz (a Ready-to-Use Supplementary Food) for the Blanket Supplementary Feeding Programme.

Figure 15 and 16 illustrate the estimated number of beneficiaries and food assistance requirement by month. The beneficiary caseload and monthly food requirement will begin to rise gradually from the start of the year peaking in April to July before starting to decline in August. The steep spike anticipated – reaching over around 1.4 million (2.7 million) vulnerable people in May is commensurate with the peak of the malnutrition and the beginning of the lean season. The beneficiary caseload is expected to fall to around 600 000 at the beginning of the dry season in October assuming that the political situation stabilizes in the second half of 2011 and depending on the performance of the 2011 agricultural season.



Figure 15: Tonnage by month

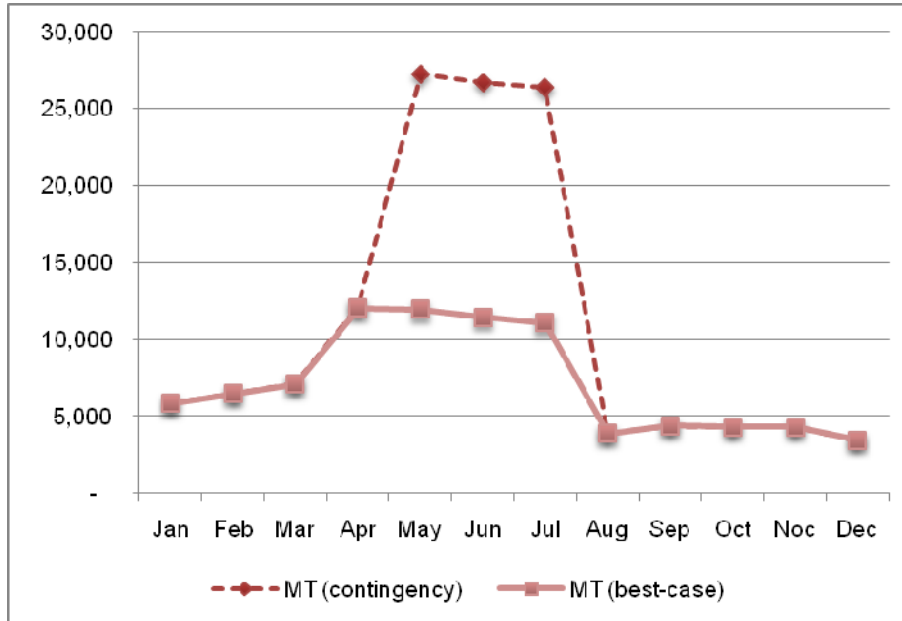
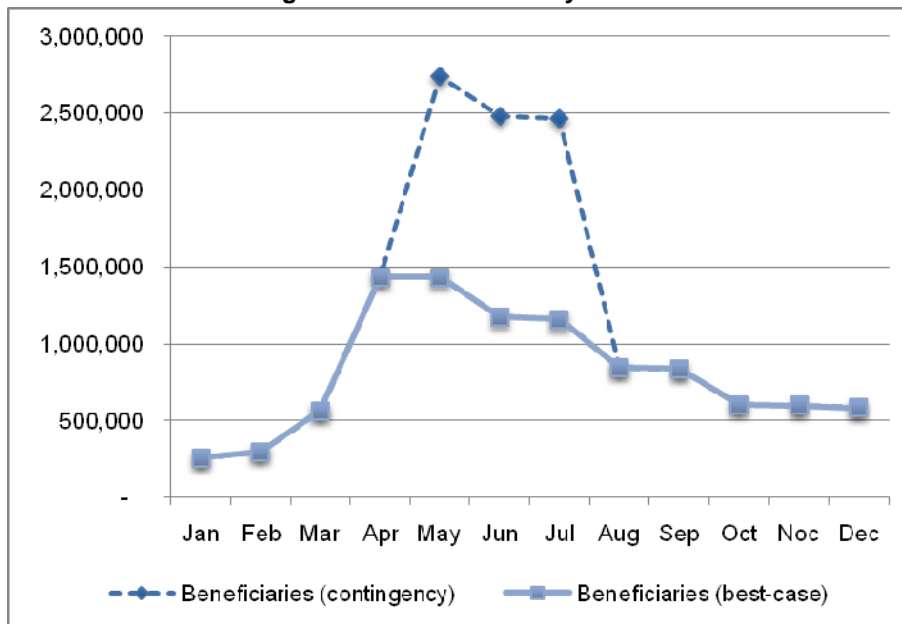


Figure 16: Beneficiaries by month



It is strongly recommended to monitor the food security situation carefully throughout 2011 in order to make appropriate adjustments throughout the year. Food security status will be re-assessed in February, June and October 2011, while food prices (including cross-border trade and food prices in Uganda), return migration and new incidences of internal displacements should be monitored on a weekly/monthly basis. In addition, seasonal forecast for rainfall and NDVI could assist to estimate the potential performance of the 2011 agricultural season early on.

## **6. RECOMMENDATIONS**

A combination of short- and medium-term interventions is necessary to address agriculture, food security and nutrition needs. The below provides a list of selected recommendations which should be reviewed and further elaborated by GoSS and local partners.

### **Recommended short-term food security interventions:**

1. Contingency plans shall be in place ahead of the referendum, considering the various risks pertaining particularly in bordering States with the North. Sufficient strategic food reserves shall be pre-positioned at decentralized levels, taking advantage of the easier logistics during the dry season and before the referendum takes place. All partners, including GoSS shall share data on their food reserves in the various states and hubs. Contingency plans shall also include a close monitoring of triggers that may indicate worst case scenarios ahead.
2. During the referendum and post-referendum transition period, provide emergency food assistance to returnees and newly displaced households. In addition, provide assistance to severely food insecure rural households during the times of anticipated high food prices and agricultural lean season. If the situation worsens, expand assistance to moderately food insecure households in the States bordering the North (contingency caseload). Blanket supplementary feeding targeting children under-2 is recommended during critical times of the year.
3. Conduct further in-depth analysis of the local seed system and its constraints in relation to availability, access and utilization.
4. Expand monitoring of food supplies and prices during the next 6 months in order to be alerted early of deteriorating conditions in specific locations. Develop a value-chain approach to monitor price trends as a proxy for more distant locations and forecast impacts of price changes on household food security using the costs-of-the-food basket method. In addition, conduct seasonal forecast for rainfall and NDVI using remote sensing.
5. Monitor closely vulnerabilities related to returns, particularly in urban areas. Urban vulnerability is not systematically monitored in Southern Sudan and adapted tools to the context shall be developed.

### **Recommended medium-to longer term interventions:**

1. Increase GoSS budget allocated to agriculture and develop a clear policy framework for the utilisation of increased resources.
2. Improve coordination and analytical capacity of Governmental and non-Governmental interventions related to agriculture and food security, particularly at State and County levels.
3. Conduct a rigorous agricultural survey to establish a solid baseline on crop production. The land cover data provides the necessary base upon which a sample survey can be designed.
4. Improve integration of existing food security and market information systems.
5. Conduct an evaluation of mechanization programs to identify constraints and best practices.
6. Gradually shift the emergency interventions to a more safety-net oriented programme by increasing national preparedness and rapid emergency response capacities and investing in early recovery and restoration of community and household assets through protective and productive safety nets.
7. Explore potentials to expand local purchases (P4P) of commodities for food assistance programmes in the Greenbelt livelihood zone, analyzing also the risks for farming households.
8. Expand all weather feeder roads network for better market integration.

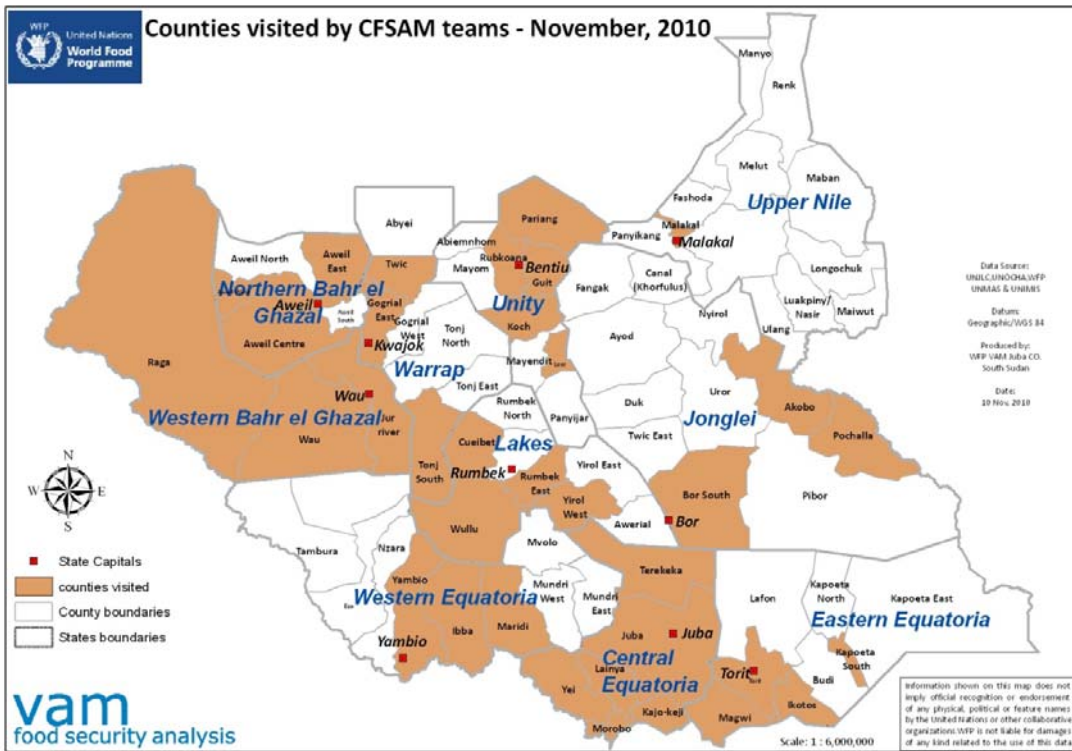
## ANNEX I

### Counties visited by the Mission

The Mission visited the following States and counties during the field work conducted between 20 October to 5 November 2010:

1. Northern Bahr el Ghazal: Aweil Centre, Aweil East, Aweil West
2. Western Bahr el Ghazal: Wau, Jur River, Raja
3. Unity: Leer, Koch, Guit, Rubkona, Pariang
4. Warrap: Gogrial West, Twic, Tonj South,
5. Lakes: Rumbek East, Cueibet, Yirol West, Wulu
6. Upper Nile: Malakal
7. Jonglei: Bor, Pochalla, Akobo
8. Central Equatoria: Kajo-Keji, Juba, Yei, Morobo, Lainya, Terekeka
9. Western Equatoria: Yambio, Ibba, Maridi
10. Eastern Equatoria: Torit, Ikotos, Kapoeta South, Magwi

### Counties visited by the CFSAM teams

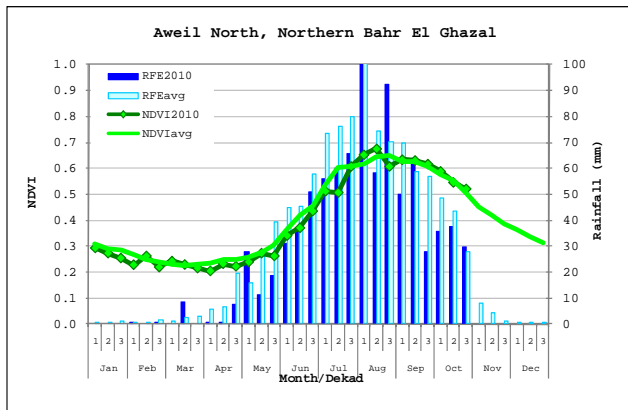
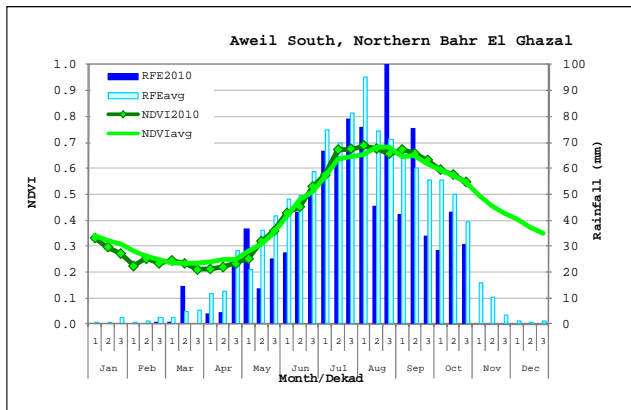


**ANNEX II**

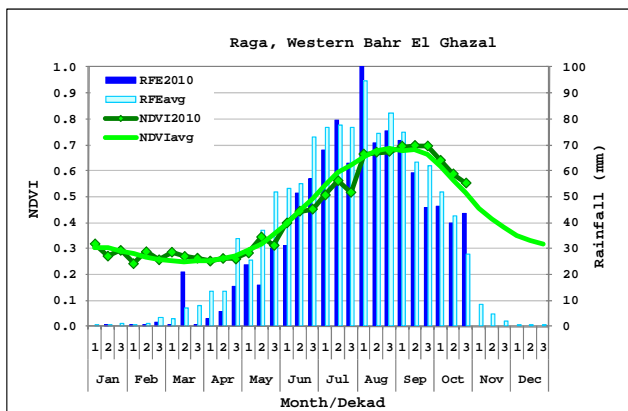
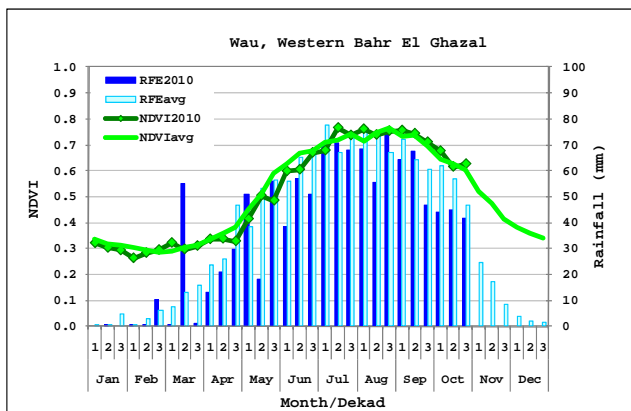
**Rainfall and NDVI**

Graphs 2 to 25. Rainfall estimates (RFE) and NDVI from remote sensing. Source: JRC

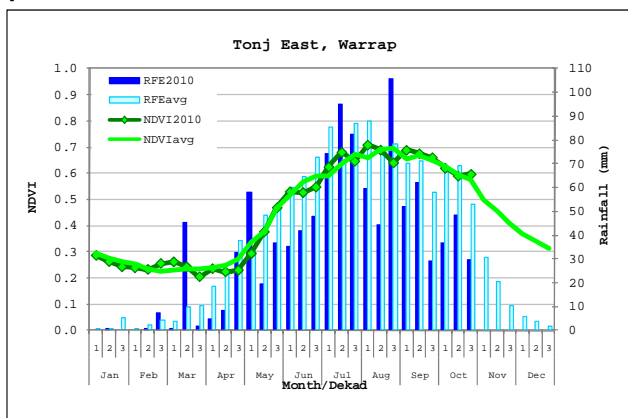
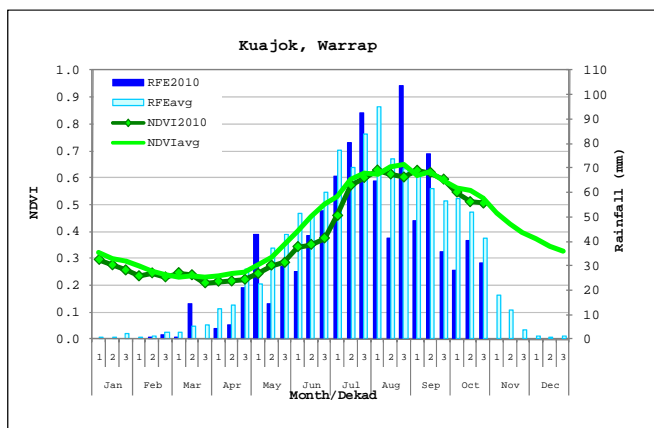
**Northern Bahr El Ghazal**



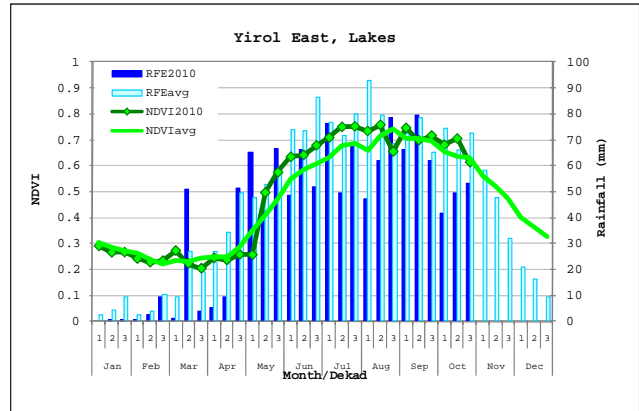
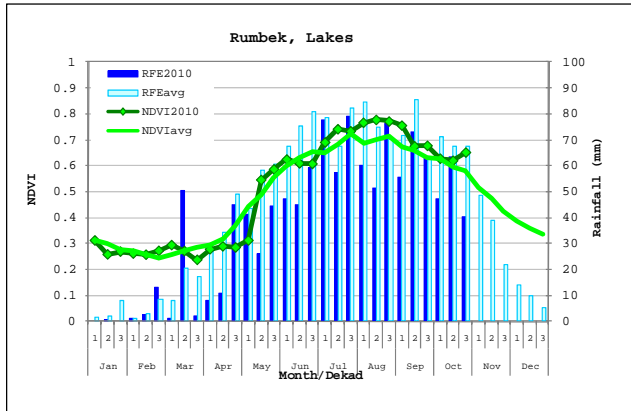
**Western Bahr El Ghazal**



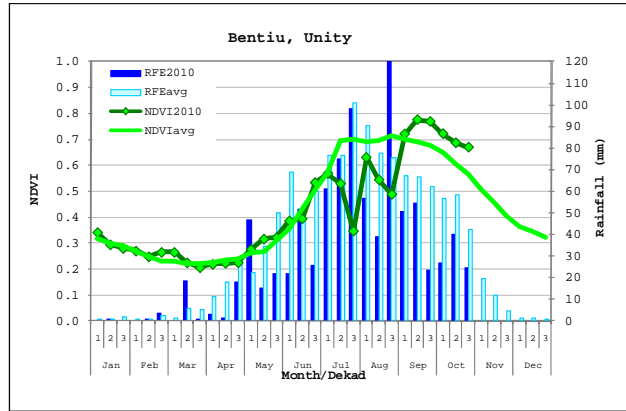
**Warrap**



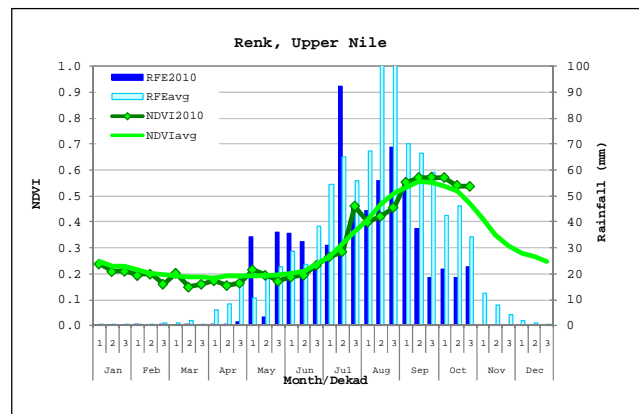
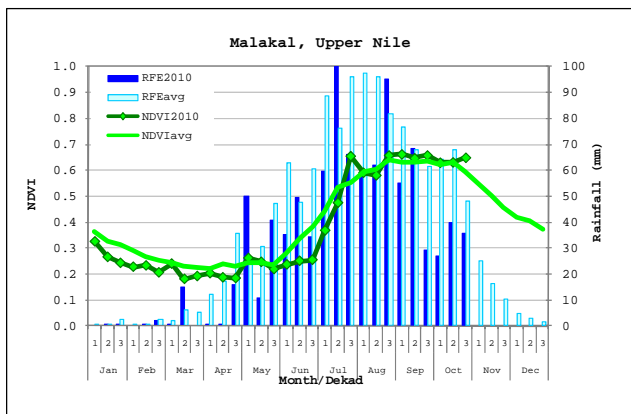
### Lakes



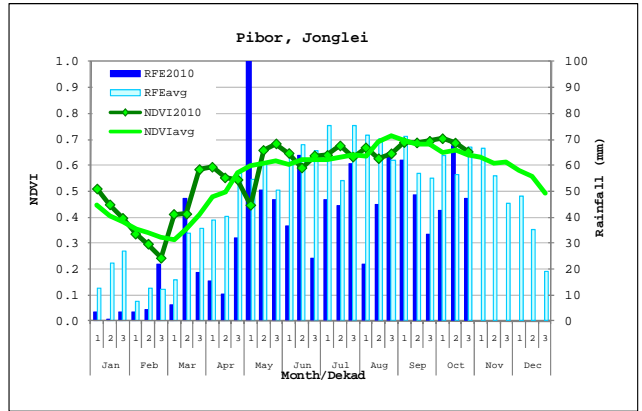
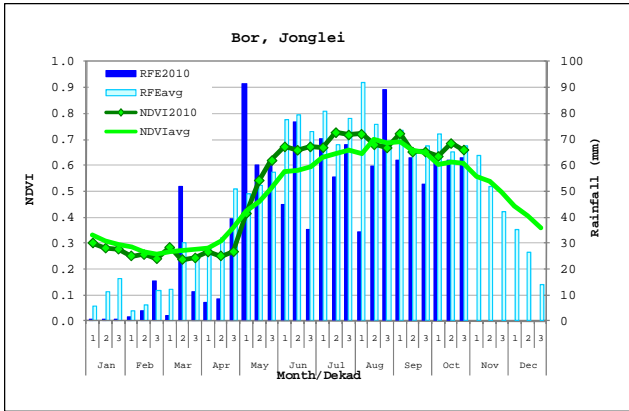
### Unity



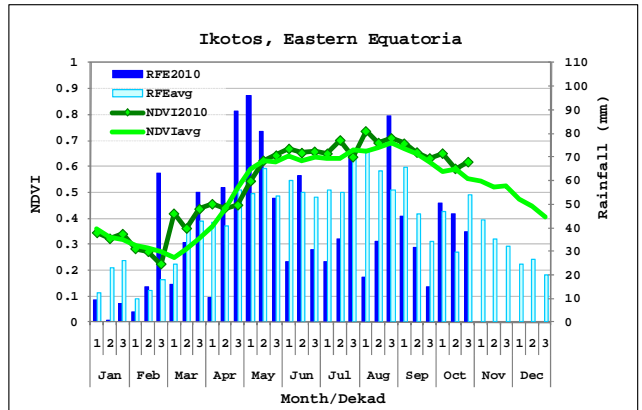
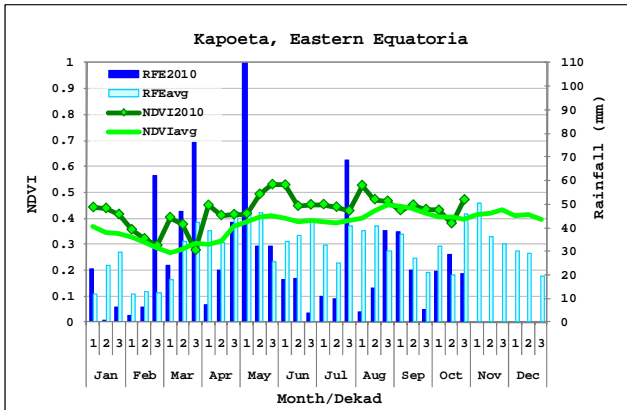
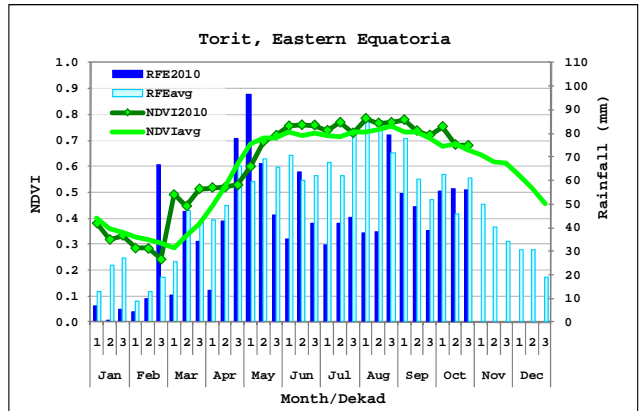
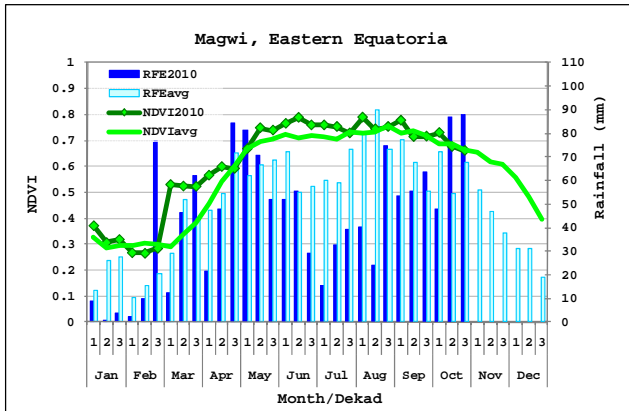
### Upper Nile



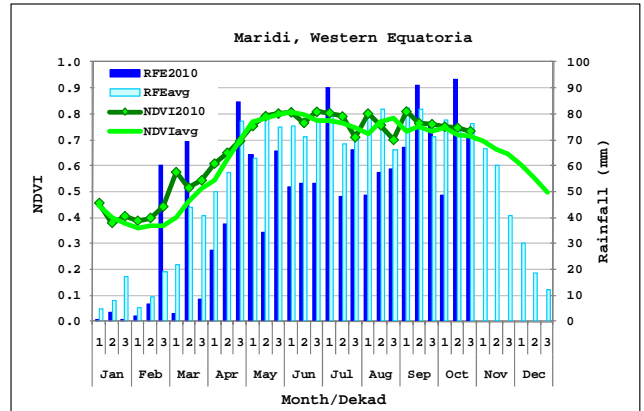
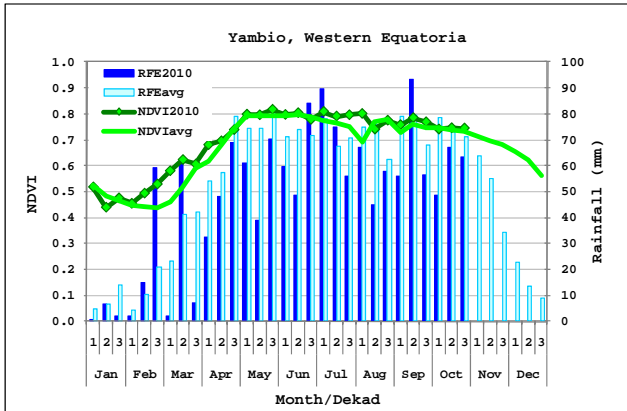
### Jonglei



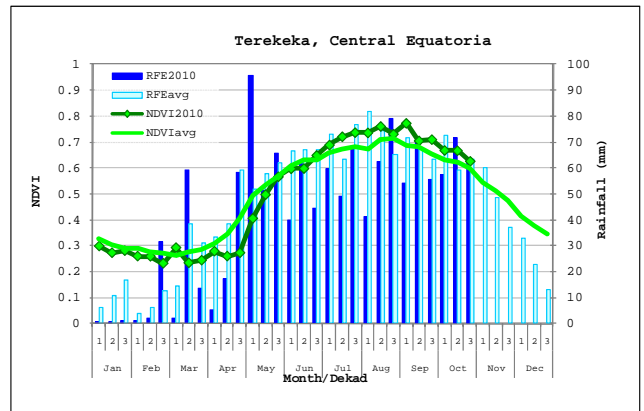
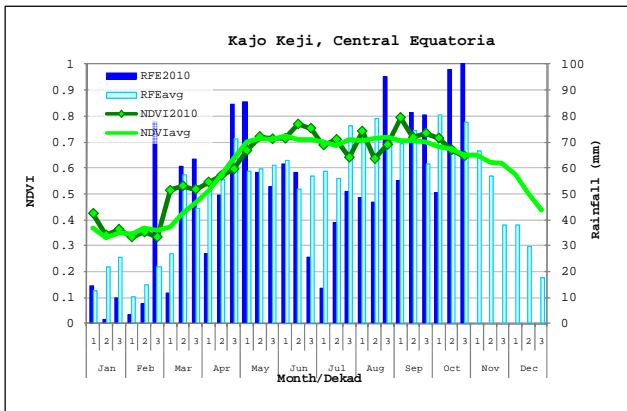
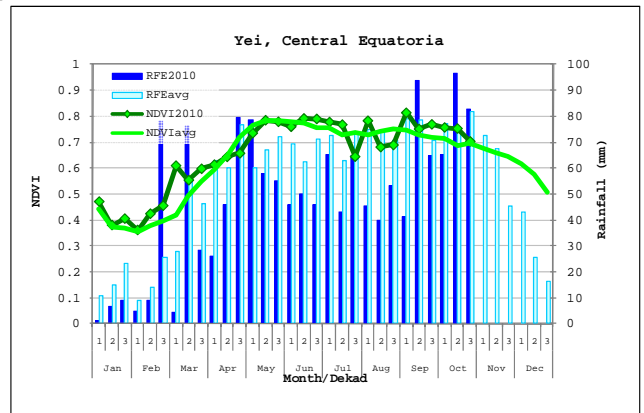
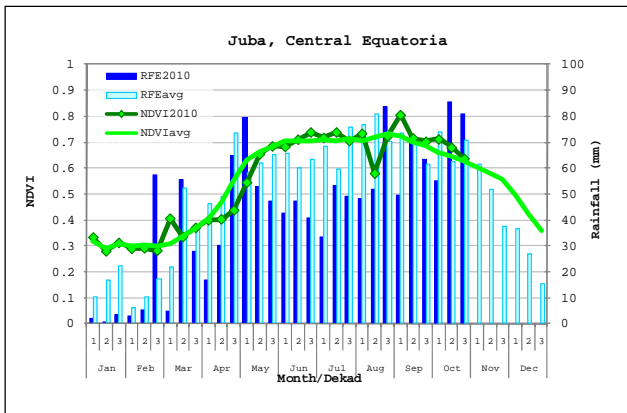
### Eastern Equatoria



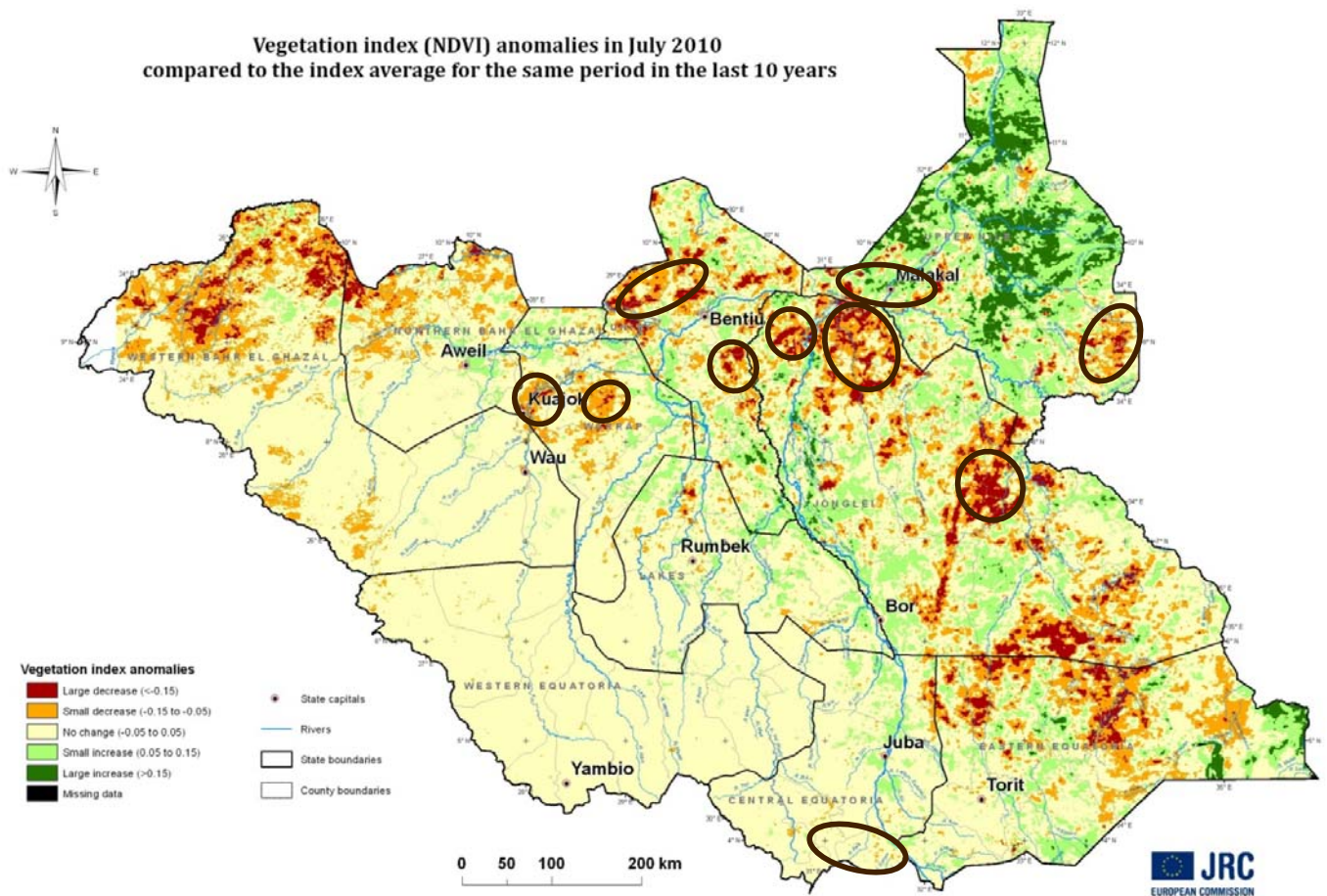
### Western Equatoria



### Central Equatoria

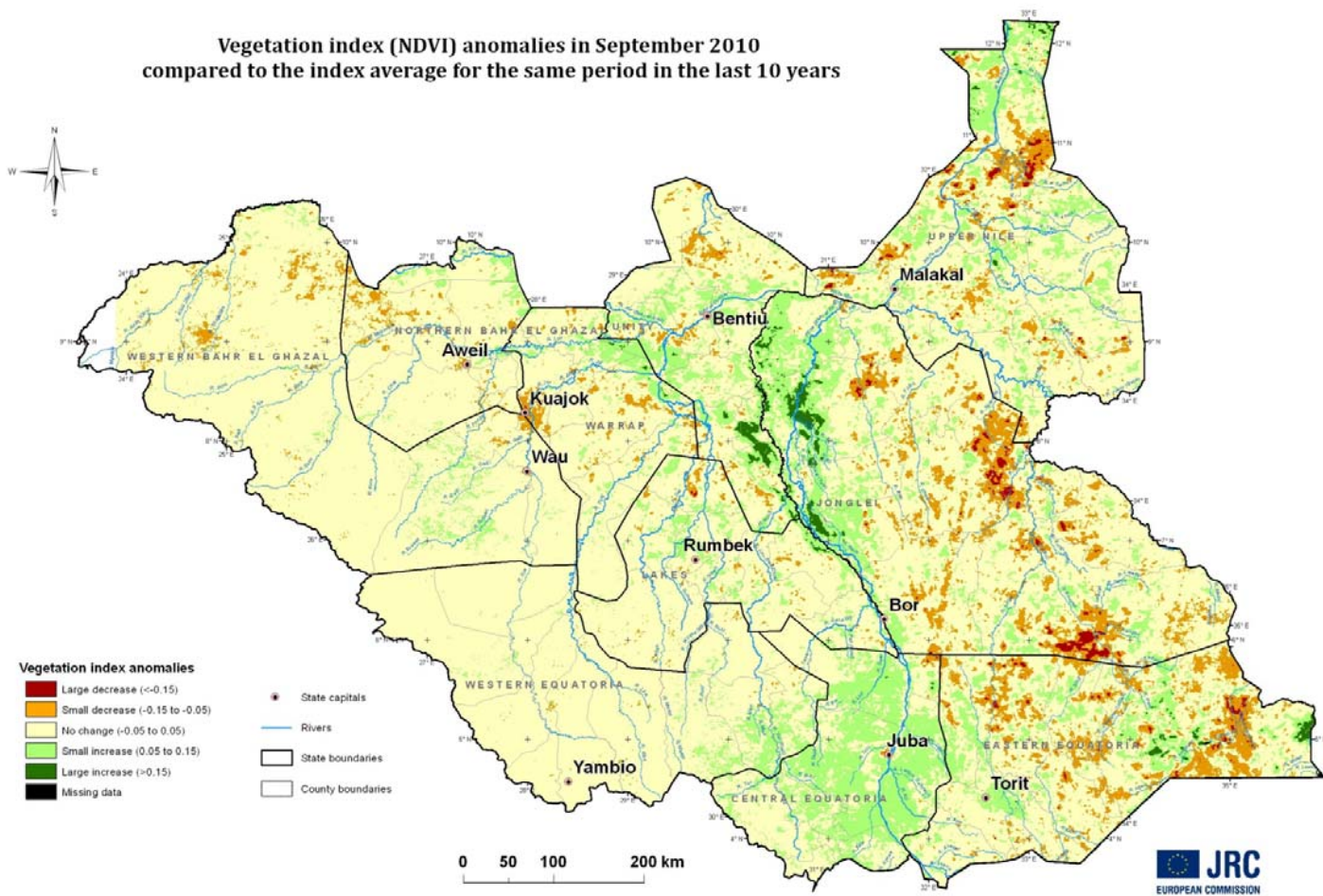


Vegetation index (NDVI) anomalies in July 2010 compared to the index average for the same period in the last 10 years



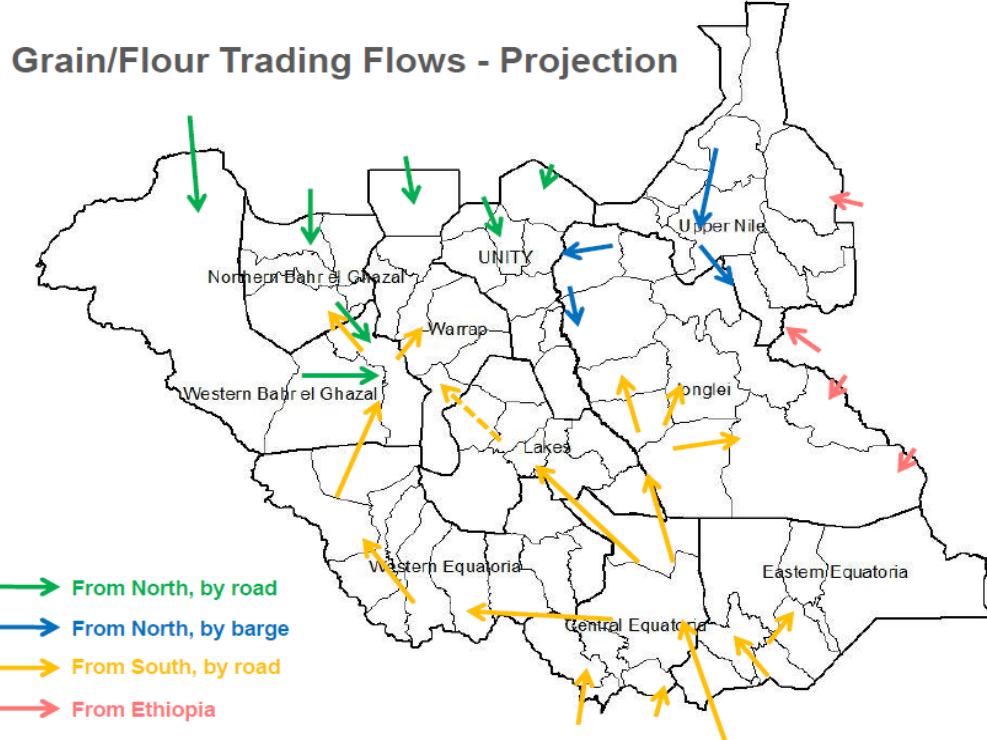
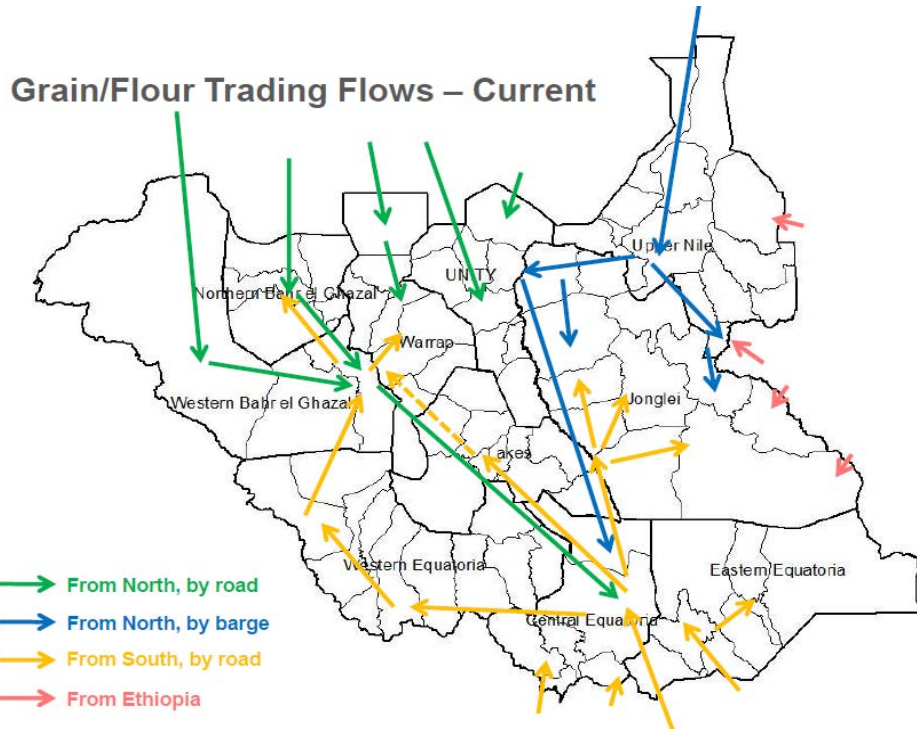


### Vegetation index (NDVI) anomalies in September 2010 compared to the index average for the same period in the last 10 years



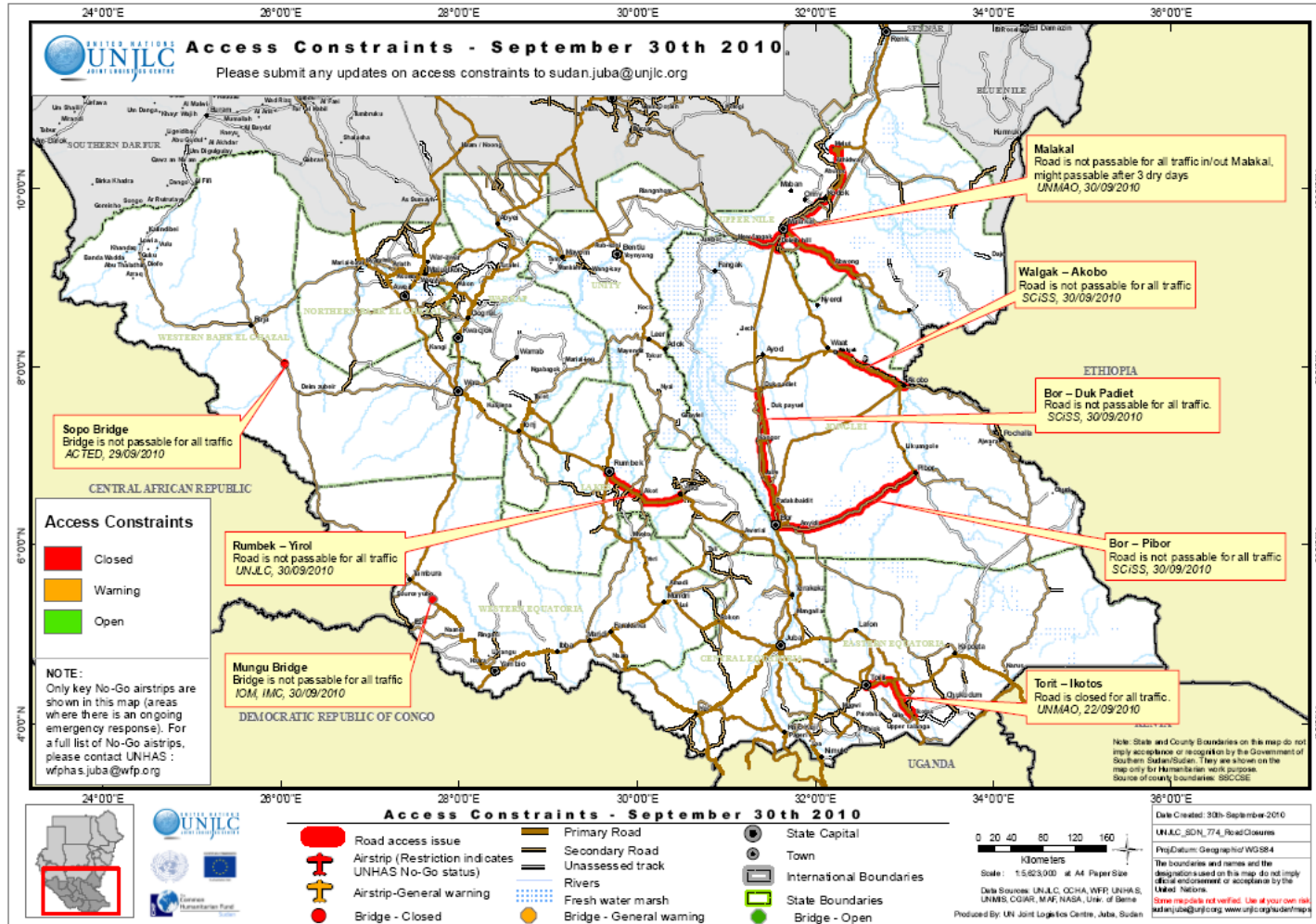
**ANNEX III**

**Likely impact of the Referendum on grain/flour trading flows**



**ANNEX IV**

**Road access constraints (September 2010)**



**ANNEX V**

**Seasonal Calendar**

	Critical events	ACTUAL								PROJECTED								
		Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
Jun-Sep/Nov zones	Rainfall	Dry season		Wet season						Typical dry season					Typical wet season			
	Cropping season		Planting	Cropping season		Harvest (Jun-Sep crops)		Harvest (Jun-Nov crops)						Planting	Cropping season			
	Hunger season	Early start due to 2009 drought												Flood/insecurity affected areas	All areas			
Greenbelt/Hills and mountains	Rainfall	Dry season	Wet season						Typical dry season				Typical Wet season					
	Cropping season	1. Planting		1. Cropping season		1. Harvest/2. Planting		2. cropping season		2. Harvest				Planting	1. Cropping season		1. harvest	
	Hunger season	Hills and mountain zone affected heavily by drought, greenbelt experienced no major hunger season despite lower outputs														Normal start due to good 2010 harvest		
Food prices	HIGH (due to low production, peak in June due to elections)				LOW (due to good harvest, increased supply through food aid and government food stocks)				HIGH (in anticipation of the referendum)		VERY HIGH (due to reduced trade inflows, increased demand of inflowing returnees and increased incidences of insecurity)							
Livestock movements/increased cattle-raiding	In most zone livestock movement reduced due to good rain conditions										Typical livestock migration							
Floods				Above normal floods in Upper Nile, Unity, Jonglei, Lakes, Warrap and NBEG					Improved fishing						Early floods			
Child morbidity	Diarrhoea		Fever	Fever and malaria (increased due to rainfall)				Fever				Diarrhoea				Fever and malaria		
Political events		Elections							Registration	Referendum	Post-referendum transitions (potentially associated with increased insecurity)							

## **ANNEX VI**

### **Situation by State**

#### **1. UPPER NILE**

##### **1.1 Upper Nile State**

In most parts of the State, rainfall started on time or earlier than normal and was above normal throughout the season. This resulted in generally above average vegetation growth in most areas. This is reflected in the green colour on the July 2010 NDVI map. However, in Malakal, Panyikang, Maiwut and part of Luapiny/Nasir counties the onset of rains was reported to have started later than normal this year, but once the rain was established, it was generally above normal. In Panyikang and East of Malakal, a dry spell was noted in July which resulted in crop withering and some farmers reportedly had to replant their crops. These affected areas are shown in red on the July 2010 NDVI map. In the Northern counties (Renk, Melut), rainfall started earlier than normal (in May), which benefited land preparation and crops, but there was a break of rainfall in July in some parts of Renk county (Gosrom, Intiat, Akon and Adham). Farmers had to replant their sorghum crops. Overall, the outlook of the 2010 harvest looked generally promising until late in August when above normal rainfall and higher water levels in rivers flowing from Ethiopia caused wide flooding on the Eastern part of the State. Particularly affected counties are Luakpiny/Nasir, Maiwot, Longuchok and Maban. These floods reportedly caused destructions of crops, affected housing and resulted in internal displacements as well as temporary migrations toward Ethiopia. The impacts of these floods on crop production are non-negligible as due to insecurity situation, many farmers did not access remote cropping areas on higher lands which remained flood free.

In general livestock body conditions are good due to above average availability of pasture and water. No outbreak of diseases was reported in the State. Livestock number is expected to have increased. Livestock prices are higher than last year. Fishing opportunities are above normal this year, thanks to wide flood coverage in the State. However, for fishing communities along the Sobat River corridor, a higher than normal water level reduces fish catches temporarily. Catches are however anticipated to be higher than normal once the water level subsides and fishing activities along the River resume. The State reportedly host the largest stock of wild life is Southern Sudan and game meat provides a non negligible contribution to the food diet. The State has witnessed several incidents of ethnic and inter-clan conflicts that caused population displacements this year. Areas affected by insecurity cover 6 of the 13 counties in the State, mainly Fashoda, Panyikang on the Western Bank of the Nile and Baliat, Ulang; Maiwut, and Luakpiny/Nasir on the Eastern side. These conflicts were sparked due to land disputes between and within tribes, cattle raiding and factional fighting as a result of the April elections. Insecurity prevented affected households to mitigate the impact of floods by diversifying crop production risks, access to market, fishing and livestock grazing.

In Malakal main market, several traders from the North have closed their shops and departed in anticipation of problems related to the forthcoming referendum. The situation is however not as severe as in Bentiu. Northerners in Malakal seem to have better integrated with local communities and therefore feel more confident than their peers in Unity State. However, the recent fighting outbreak in Renk may erode northern traders' confidence. At the time of the Mission, commercial food supply was functional in Malakal and grain prices remain approximately at the same level than last year. Many spontaneous returnees, coming back from the North ahead of the referendum, have been reported by the State SSRRC. As many returnees for Upper Nile and Jonglei States will pass through or settle more permanently in Malakal and Nasir, local authorities have expressed serious concerns over humanitarian and security consequences in town.

At household level, food stocks are expected to last one month or less in flood and conflict affected areas and 3-4 months for better off households in areas which achieved better crop production. Most farming households in the State will depend on local markets to access food starting from early January onward. The Mission anticipates the availability of food on the local market to be moderately to severely constrained from that period onward. In addition, returnees coming back from Northern Sudan in anticipation of the referendum will almost exclusively depend on local markets to access food. Given the inaccessibility of most parts in the Southern Section of the State, market disruptions could have serious consequences on access to food. Access to food, particularly for remote flood and conflict affected zones, could become a serious concern in the coming six months or more.



## 1.2 Unity State

This year, the rainfall started on time early May in most counties and was generally above normal throughout the season, resulting in overall good crop conditions. A dry spell was noted in some areas for a period ranging from 2 to 6 weeks in May and June. The vegetation growth was below average in areas affected; Rubkona, Abiemnhom, Mayom as well as the North-Eastern part of Koch and Leer counties. These areas are shown in red on the July 2010 NDVI map. Lower than average crop performances were observed in affected areas and in some cases farmers reported to have replanted failed crops. Rainfall was normal to above normal from the start of the season in the Southern part of the State in Panyijar, Mayendit and Leer counties, resulting in above average vegetation growth. These areas are shown with a large NDVI increase on the July 2010 map. In July and August, rainfall was normal to above normal across the State which was widely beneficial to crops. These rains positively influenced vegetation growth as shown on the September 2010 NDVI map. During the same period, the Nile River overflowed and vast areas were inundated. In some counties, the flood levels went much above normal and directly affected crops and settlements, causing temporary displacements, particularly in Panyijar, Leer and Guit counties. Land cultivated by farmers groups were more affected by floods. Crops were also reportedly affected in Buow payam of Koch County, due to conflicts that took place between different armed factions. The local population had fled the areas after planting and returned before the harvest. Production had reportedly decreased as weeding operations could not be conducted during the period of insecurity. Due to continuing insecurity, the Mission could not visit Buow payam.

Livestock numbers have reportedly increased over the past 3 years, mainly owing to the peace agreement which reduced the dependency of rebel groups on local livestock population. As a result, many rural households could re-engage in restocking their herds. In general livestock body conditions are good due to above average availability of pasture and water. No outbreak of diseases was reported with the exception of a contained foot and mouth disease outbreak in Pariyang County. Good pasture availability will reduce tensions amongst tribes and clans during the forthcoming dry season. Fishing opportunities are above normal this year, thanks to wide flood coverage in the State. Visited communities are engaged in seasonal fishing activities. Fish resources near the Nile River are normal to above normal and provide trading opportunities as fresh or dry fish with Northern Sudan.

Given the configuration of transportation infrastructures, the State is almost exclusively dependent on Northern Sudan for its market supply. Many traders are anticipating problems for their businesses with the referendum approaching. In markets visited during the Mission, the number of traders has declined as many have opted to return back to the North and those staying are no longer refurbishing their stocks. No direct restriction in trade were reported between Unity State and the North at the moment, but insecurity on the road and military check points were reported as main constraints for traders and transporters. As a result, market prices have generally remained higher on average as compared to the previous years for main food items in spite of the harvest period. Panyijar and Mayom counties remain inaccessible by road during the rainy season and prices are reported to be 30-50 percent higher than in other locations. Livestock, fish, firewood/charcoal sale and Government salaries payments (army and administration) are the main sources of cash for rural communities. The richer households sell livestock to procure grain while the poorer resort to firewood/charcoal collection and sale. Gathering wild food such as water lilies, 'thau' (*Balanites aegyptica*), palm tree fruits, reed's roots, is another mean of complementing food energy requirement for poor household, particularly during the hunger period. Many spontaneous returnees, coming back from the North ahead of the referendum, have been reported by the State SSRRC during their monthly coordination meetings. In all counties visited, the Mission noted the presence of returnees having re-integrated their community of origin.

At household level, food stocks range are expected to last one month or less in dry spell and flood affected areas and 4-5 months for better off households in areas which achieved better crop production. Many farming households in the State will depend on local markets to access food starting from early December and most of them from early January. The Mission anticipates the availability of food on the local market to be severely contracted from that period onward. In addition, returnees coming back from the North ahead of the referendum will almost exclusively depend on local markets to access food. Considering market dynamics, perception of traders on the business risks pertaining to the referendum and already increasing food prices, access to food could become a serious concern for most communities in the State in the coming six months or more.

### 1.3 Jonglei State

Rainfall generally started on time in April and was normal to above normal in many parts of Jonglei State, particularly in Bor, Twic East, Nyrol, Uror and Pochalla counties. This resulted in above average vegetation growth in many areas. This is reflected in the green colour on the July 2010 NDVI map. However, in Fangak, Khorfus/Pigi and part of Ayod, Akobo and Pibor counties, a dry spell was noted in June/July which resulted in crop withering and some farmers reportedly had to replant their crops. These affected areas are shown in red on the July 2010 NDVI map. The low NDVI (red) in the southern and drier part of the State bordering Eastern Equatoria could not be confirmed by the Mission as these areas were not visited and secondary data did not confirm below average rainfall or dry spells. Rainfall were reported to be well above average in July in Bor and Twic East counties and in August in Pochalla and Akobo counties as well as in the surrounding Ethiopian hills. These caused water logging and wide scale floods in seven out of the eleven counties, affecting crops and settlements and resulted in internal displacements. Flood affected counties are Bor, Twic East, Pibor, Ayod, Uror, Akobo, Nyiror. The impacts of these floods on crop yield and production are non-negligible as due to insecurity situation, many farmers did not access remote cropping area on higher lands which remained flood free, particularly in Fangak and Khorfus/Pigi counties. An outbreak of army worm has affected crops at vegetative stage in Pibor and Twic East, affecting productivity this year.

In general livestock body conditions are good due to above average availability of pasture and water. An outbreak of East Coast Fever was however reported in Bor and Pibor counties, which was significant enough to cause important losses resulting in a reduction of the cattle numbers. In other counties, normal incidence of animal diseases was reported and overall livestock numbers is expected to have increased in the State. Fishing opportunities are above normal this year, thanks to above normal flood coverage. However, as for Upper Nile, fishing communities along the Sobat River corridor face a temporary reduction of fish catches as water levels in the river is higher than normal. However, catches are anticipated to be higher than normal once the water level subsides and fishing activities along main rivers resume. Also, as in Upper Nile, the State reportedly hosts a large stock of wild life and game meat provides a non negligible contribution to the food diet. Hunting parties are anticipated to resume with the coming dry season, when grasses are burned. The State has witnessed several incidents of ethnic and inter-clan conflicts that caused population displacements this year. Areas affected by insecurity cover 5 of the 11 counties in the State, mainly Fangak, Khorfus/Pigi, Akobo, Pochalla and Uror counties. Insecurity is considered as the main factor affecting household food security this year as it prevented affected households to mitigate the impact of floods by diversifying crop production risks, access to market, fishing and livestock grazing.

Jonglei is a large State and transportation infrastructures are amongst the least developed in Southern Sudan, leaving some counties amongst the most isolated. Pochalla is amongst the most remote. The town can only be accessed by road from Boma between January and March, thereafter it remained cut off by road from the rest of the Jonglei State. Some grain is carried on foot or by bicycle on foot tracks from distant markets in Ethiopia. As a result extremely high food prices prevail in remote and isolated locations (see section 4.1). The Northern part of the State is supplied from Northern Sudan via Malakal (Akobo) or through the Nile/Zeraf River (Fangak, Ayod, Duk). The Southern part of the State is mainly supplied from Bor, which market is integrated with Juba. Analysing market prices in Bor would need to account from these diversities and seasonal supplies.

At household level, food stocks are expected to last one month or less in flood and conflict affected areas and 3-4 months for better off households in areas which achieved better crop production. Most farming households in the State will depend on local markets to access food starting from early January. Roads will become more accessing during the dry season and supply from Bor is anticipated to resume. However, the Mission anticipates the availability of food on the local market to be moderately to severely constrained from January onward, particularly in the Northern part of the State, supplied from Northern Sudan (see discussion on trade flows in section 4.2). In addition, returnees coming back from Northern Sudan in anticipation of the referendum will almost exclusively depend on local markets to access food. Malakal in upper Nile and then Bor could become concentration points. In more distant locations, the economy is little monetized and reliance on fishing, wild food and game meat is significant. In part of the State, bordering Ethiopia, two cropping seasons are possible and these will ease some of the food supply stresses. Considering the market structures, uncertainties on food supply as early as January 2011, access to food, particularly for remote flood and conflict affected zones in the Northern part of the State, could become a serious concern in the coming six months or more.

## **2. BAHR EL GHAZAL**

### **2.1 Northern and Western Bahr El Ghazal States**

In 2010, the rains started on time in late April/early May in most counties of both States, following by normal to above normal rainfall throughout the season, resulting in more land cultivated and generally good crop conditions. Also, this resulted in above average vegetation growth in many areas. This is reflected in the green colour on the July 2010 NDVI map. The low NDVI (red) in the northern part of the States could not be confirmed by the Mission as these areas were not visited and secondary data did not confirm below average rainfall or dry spells. The land cover data also indicates that, particularly in Western Bahr El Ghazal, these areas have limited agricultural land and therefore lower than average rainfall in these specific locations would have limited effects on crop production. A dry spell was however noted in Aweil East which had moderate effects on crop performances. Floods occurred later in September due to raising water levels from local rivers taking their sources in CAR. These floods occurred while sorghum and maize was at harvesting or just after harvesting and therefore did not significantly affect these crops. However, floods damaged rice cultivation at vegetative stage as well as settlements and households could not adequately trash and store harvested grains. Therefore, post-harvest losses are anticipated to be higher than normal in affected areas. As observed in other States, road construction without culverts aggravated the impacts of floods on crops and settlements. Pests and diseases pressures were reported higher than normal, which is often the case in years with above average rainfall. Striga was reported as a main problem in both States.

In general livestock body conditions are good due to above average availability of pasture and water. No outbreak of diseases was reported in both States. However, higher incidence of diseases on sheep and goat was noted in Western Bahr El Ghazal. Security situation has improved in both States this year and cattle raiding was not reported as a constraint. Livestock number is anticipated to have increased, with the exception of sheep and goats in some locations of Western Bahr El Ghazal. Fishing is mainly done along Lol and Akuiem Rivers as well as along the various smaller rivers criss-crossing Western Bahr El Ghazal State. This year fish catches are above normal, thanks to above normal rainfall and floods. The main fishing season is anticipated to peak in December-January when water level recedes in main rivers and streams. Fish will provide an important source of protein in the diet for riverside communities.

Wau and Aweil are the main market centres in the States and are mainly supplied from Northern Sudan. Insecurity on the road from Rumbek negatively affected trade from Juba. In both towns, traders, mainly from the North, are moving out ahead of the referendum. In addition, due to a bridge damaged between Aweil and Wau, trade was interrupted for about two months from July to August 2010, disrupting food stock supplies in Wau city. The alternative supply road via Raga could not be used due to insecurity over Western Bahr El Ghazal and Southern Darfur border. As a result, grain stocks on local markets are declining, resulting in increased prices particularly in Wau, but also noted by the Mission on local markets. The State authorities have not imported grains to stabilise market prices as it occurred in neighbouring Warrap State.

At household level, food stocks were available and sufficient to bridge local consumption of most household until the long cycle sorghum varieties are harvested in December/January. With this forthcoming harvest, households are generally expected to obtain sufficient stocks for the following 3-4 months, until March-April 2011. This delayed harvesting, comparatively to Warrap, Unity or Upper Nile States, ease the anticipated grain shortfall due to trade disruption related to the forthcoming referendum (see section 4.2). In the iron stone plateau region of Western Bahr El Ghazal, long term varieties and cassava is expected to provide sufficient food stock until next June. However, returnees coming back from Northern Sudan in anticipation of the referendum will almost exclusively depend on local markets to access food. The Mission observed returnees who arrived in Wau and Aweil towns. Particular attention is to be given to returnees in the States in the coming 6 months or more and for the general population starting from April/May in the flood plain of Western and Northern Bahr El Ghazal and from June in the iron stone plateau.

### **2.2 Warrap State**

This year rainfall started on time in April/May in all parts of Warrap State and was generally above normal throughout the season, resulting in generally good crop conditions. This resulted in generally above average vegetation growth in most areas. In parts of Gogrial East, West and Tonj North, a short 1-3 weeks dry spell was noted in July which however did not affect significantly crop productivity. These affected areas are shown in red on the July 2010 NDVI map. The Mission noted that the rains had not ceased at the time of the visit and post harvest losses could be affected if rainfall continues beyond the normal season. In Tonj South, there was significant use of ox-plough in the county. An estimated 700 ox-plough units were reportedly



distributed since last season. Increased use of ox-plough is anticipated to positively influence area cultivated. The northern part of the State, bordering with Unity State includes some large pasture land which are accessed during the dry season. These areas are flooded with waters coming from the Nile River (across Unity State) and a network of rivers which take their sources in DRC and CAR. This year, high water levels from the Nile River (see Unity State summary) caused floods across in Warrap State. With water levels above normal, settlements were affected, but secondary information suggests that impacts on crops were limited in these locations. There was no outbreak of pests and diseases reported, but pressures were above normal this year. Due to higher population density in many areas of Warrap, soil fertility is a major constraint for yield. Wealthier households which can afford to pay for cattle camps livestock owners to camp their livestock on their crop land near their homestead, can benefit from increased soil fertility and yield. Yield differences between richer and poorer households are noticeable.

In general livestock body conditions are good due to above average availability of pasture and water. No outbreak of diseases was reported in the State. In Warrap State, the communities on the border with Unity State reported cattle raiding incidences as well as between Tonj North and Tonj East communities. Livestock body conditions were visibly poorer in communities which experienced local insecurities and as a result did not have access to better but distant pastureland. No outbreak of diseases were reported and at aggregated levels, cattle number is anticipated to have increased this year, although raiding may affect local distribution. The number of shoat is expected to have decreased due to poor cereal production last year and increased sell of animals than normal to access grain on local markets early this year. Fishing is satisfactory, thanks to above normal rainfall and some floods in the northern part of the State. The main fishing season is anticipated to start in November and December and will provide an important source of protein in the diet.

Kuajok is the main market and is mainly supplied from Northern Sudan, via Aweil in Northern Bahr El Ghazal. Traditionally Warrap depended on surplus from Abyei, but due to the security conditions, supply was disrupted. Supply from Juba somewhat suffered this year due to security situation on the road between Kuajok and Rumbek. Furthermore, as in other States bordering Northern Sudan, several traders have already left Kuajok market and others are selling their stocks and plan to move out ahead of the referendum. Warrap State Government has intervened in grain supply and procured grain from Khartoum to stabilize the food prices. Grains were reportedly still in Government warehouses at the time of the Mission, but further information was not communicated. As a result, prices of grains remained stable throughout the season. However, Government partners and traders met were concerns stock would run out before the referendum.

In Warrap, over 90 percent of the cereal cultivated is short term sorghum, which is harvested in September. At household level, food stocks are expected to last on average 2 to 3 months from the time of the field visit. Therefore, most farming households in the State will depend on local market to access food starting from early January. The Mission anticipates the availability of food on the local market to be severely constrained from that period onward. Information on Government stocks would allow refining projection. In addition, returnees coming back from Northern Sudan in anticipation of the referendum will almost exclusively depend on local markets to access food. Kuajok could become a concentration point. Considering the market structures and uncertainties on food supply as early as January 2011, access to food could become a serious concern in the coming six months or more.

### 2.3 Lakes State

In 2010, the rains started early in March-April in most counties of Lakes State, following by normal to above normal rainfall throughout the season, resulting in more land cultivated and generally good crop conditions. Also, this resulted in above average vegetation growth in many areas. This is reflected in the green colour on the July 2010 NDVI map. However, in some areas, rainfall started later in May, particularly in Cuibet County, but was also followed by good rainfall afterward. Above average rainfall in July/August resulted in some floods in some part of Yirol West County. Also, in Yirol East, along the Nile River, floods occurred as the water level increased in August as it occurred in the southern part of Unity State. Floods in Lakes State occurred mostly in non cultivated areas and as such had a limited impact on crop performances. Despite good rainfall, severe security events affected crop conditions in Wulu County. Last year, neighbouring Dinka community invaded the county and grazed their livestock on the local Jur tribe, causing wide displacements. Some villages were reportedly burned. Jur returnees this year could not engage fully in cultivation as they had lost their farming assets and many had to clear new farms this year, fearing to return to their original location. Following these disruptions, some farmers in Wulu procured seeds from distant markets as far as Wau town.

Livestock body conditions for most animals were poor compared to seasonal norm. This was due to overgrazing as a result of insecurity following cattle raiding events in 2009 and early 2010. This was

significant especially in Rumbek East County's Atiaba Payam. Cattle numbers are reported to have decreased due to insecurity, cattle raiding and resulting limited access to pasture and water. With weaker animals, incidence of diseases was above normal in conflict areas. Rumbek is the main market in Lakes. Some traders, mainly from the North, are moving out ahead of the referendum. Quantities of sorghum grain from the North are limited on local markets. Maize flour is imported from Juba and Uganda. Due to prevailing insecurity on the roads surrounding Rumbek town, prices of grain is reportedly higher in rural markets throughout the State. The State authorities have not imported grains to stabilise market prices as in neighbouring Warrap State.

At household level, food stocks were minimal at the time of the Mission. The majority of sorghum cultivated is long term and expected to be harvested in December/January. At the time of the Mission, main food sources were from short term sorghum, sesame and local markets. With the harvest in December/January, households are generally expected to obtain sufficient stocks for the following 3-4 months, until March-April 2011. This delayed harvesting, comparatively to Warrap or Unity States, ease the anticipated grain shortfall due to trade disruption related to the forthcoming referendum (see section 4.2). However, the Mission identified many vulnerable communities mainly related to conflicts and cattle raiding which apparently went out of control this year. Communities whose livelihood were affected with these conflicts, could be badly hit by trade disruptions and forecasted increased prices early 2010. In addition, returnees coming back from Northern Sudan in anticipation of the referendum will almost exclusively depend on local markets to access food. The Mission observed many returnees who arrived in Rumbek town. Particular attention is to be given to vulnerable population in the States in the coming 6 months or more and for the general population starting from April/May 2011. In particular, restoring security in conflicts areas such as Wulu would yield significant benefit on livelihoods.

### **3. EQUATORIA**

#### **3.1 Central Equatoria State**

This year, the rainfall for the first cropping season started one month late in April, followed by a dry spell in June which both affected crop performance. The Mission visited Central Equatoria as the second crops were at vegetative stage. However, secondary information collected suggests that the first season crop output was below average this year. Rainfall for the second cropping seasons started on time and was generally average to above average throughout the season until the time of the Mission. Excess rainfall has affected pulses in some areas. Overall, good rainfall resulted in more land cultivated and generally very good crop conditions for the second season in bimodal areas as well as for the main season in unimodal Terekeka County where ground-nuts is a major crop. No outbreak of pests and diseases were reported, beside localised incidence of green grasshoppers, birds and striga. Storage for ground-nut from one season to the other is problematic in Terekeka and seeds are reportedly imported from Uganda to satisfy local demands.

In general livestock body conditions are good due to above average availability of pasture and water. No outbreak of diseases was reported in the State, except in Terekeka where an outbreak of East Coast Fever was reported to have affected cattle. In other areas, livestock numbers have increased compared to last year. Conflicts between livestock owners and farmers have erupted in some of the counties. In Kajo-Keji, a fine to be levied on livestock owners in case crop destruction by cattle or goats was introduced. This helped implementation of tighter control over livestock from owners and diffuse tensions between these groups. Insecurity in Terekeka County was a major factor affecting crops and livestock. In June, July and August, Dinka tribes from Bor who crossed with large number of livestock and forcefully invaded three payams in Terekeka; Tindilo, Tali and Muni. Entire communities were displaced and as a result no agricultural activities took place this year. These events occurred in areas bordering Juba County, the capital of Southern Sudan.

Juba, the capital of Southern Sudan, is the main market in the State. Main cereals found on the market are maize flour imported from Uganda. Sometimes sorghum is imported from the North by Government agencies at subsidised prices, which influences prices when released on the markets. The Mission noted large quantities of food aid in specific wholesale shops in town. Foreign traders, mainly Ugandans, are anticipated to move out from Juba during the period surrounding the referendum. It is expected that a temporary price surge will occur during the weeks of the referendum. If security prevails, traders would soon after return to Juba and resume their activities to satisfy local demands. Road infrastructures in rural areas of Central Equatoria are particularly difficult, limiting possibilities of farmers producing surplus targeting Juba market.

South of Juba, food stocks at household level are satisfactory, particularly in view of the forthcoming good second harvest in December/January. With standing cassava in the field, the Mission estimated that those areas have sufficient food reserves until the following first cropping season in July/August 2011. Possibilities of local procurements (P4P) could be explored in Kajo Keji and Marobo counties. In Terekeka, the situation

is different. In counties not affected by insecurity, sale of ground-nuts yielded sufficient income for most household to secure food until March/April 2011. However, populations in the payams which experienced insecurity are particularly vulnerable. It is anticipated that access to food may not become a serious concern for the counties South of Juba. However, conflict affected areas of Terekeka are of serious concerns and restoring security in these areas would yield significant benefits on livelihoods.

### 3.2 Western Equatoria State

Rainfall and crop performance have generally been good in 2010 in nearly all locations and harvests are expected to be higher than those of 2009. The overall cultivated area in 2010 is reported to be higher than last year due to better security. Also the WFP P4P initiative may have provided an incentive to open up larger plots in certain locations. Rains started on time and are still continuing and are expected to end at the usual time in late November or early December. A dry spell was experienced in May for 2-6 weeks in parts of the state though with limited impact on agricultural outputs. Farmers planted first season crops at the normal time in April. Planting of second season crops, which include groundnuts, maize and sorghum, were also done at the normal time and harvest will take place in Dec/Jan. There was no outbreak of pests and diseases within the State for both seasons, but a higher incidence of rosette virus damaging groundnuts was observed in various locations. The performance of both cropping seasons has been generally good, with the exception of ground-nuts. As in other parts of Sudan, agriculture is mainly conducted using hand tools. The intensive labour required as well as limited storage facilities and particularly poor road conditions hampering access to markets are discouraging farmers from cultivating larger fields.

The condition of animals, pasture and water were reported to be very good, although some diarrheal diseases were reported for goats. As the conditions are generally favourable, livestock herders from other states and countries are attracted to the state. Reports indicate that herders from Lakes cross into Mvolo and from CES into Mundri during the dry season causing some conflicts with the local residents. The Ambororo nomads came in 2005/6 from West Africa and appreciate the favourable conditions in the western and central counties. They have been ordered to leave by the state government due to poor coexistence with the resident population but are reported to remain in the border areas to CAR and DRC.

Over the past 2 years, LRA activities have been the main cause for interruptions in the agricultural cycle. According to the SSRRC, more than 27,600 households with more than 121 800 individuals have been displaced. Out of these, 70 717 were verified through joint assessments missions and are benefitting from WFP food assistance. As LRA incidences have somewhat slowed down in 2010 due to strengthened police and military activities, number of new displacements have reduced compared to 2009. Yet the situation remains fragile. Households who were displaced in previous years are now cultivating small plots either in their counties of origin on plots assigned to them by the government in Maridi or Ibba towns or on plots informally accessed around Yambio town. Counties that continue to be heavily affected by new displacements in 2010 are Ezo, Tambura, Nagero and parts of Yambio and Nzara. There were 12 000 new IDPs in May and June 2010 reported in these areas, OCHA estimated 35 000 displacements in the state in 2009. Though the security situation has improved in many parts, many IDP households fear to return to their home communities as criminal activities by LRA and other groups continue to be reported. In addition to the IDPs the state hosts 5 010 households refugee from DRC and CAR representing 15 483 individuals registered by UNHCR as of October 2010. A total of 3 797 are residing in two camps (Ezo and Makpandu settlements). While the security situation in Ezo County restricts agricultural activities, refugees in Makpandu have access to agricultural land assigned to them. Their interest in farming is however limited as they remain hopeful to return to their counties when LRA activities across the border recede.

The main markets are Yambio and Maridi, followed by Tambura, Nzara, Ezo, Mundri-West and Mvolo. At the time of the Mission, volumes of food stuff were reported to be higher this year compared to last year due to increased trade of cereals and local production. The exception is groundnuts as many traders from Northern Sudan or Lakes State are no longer passing this route due to broken bridges between Wau and Yambio. Overall, the number of traders has increased over the past two years due to increased demand from the displaced population. The main constraint to trade is the lack of transport as merchants mainly rely on trucks managed by Northerners who are already pulling out ahead of the referendum. It is anticipated that the gap will be filled by local and Somali traders who have recently entered the market, hopeful to make profit during the referendum period. So far taxes for basic food commodities have not been waived despite the government policy introduced earlier on this year. There are currently no government food reserves in place.

Generally, household ability to access food has increased compared to last year. This is valid for both residents as well as displaced population with the exception of those who were recently displaced. Resident households are increasingly able to sustain themselves throughout the year in terms of cassava and/or cereals in the high production areas. Trading is undergoing structural changes, which might be accelerated

with the referendum. However, given the good crop production this year, dynamic new comers in the market and limited number of returnees expected from Northern Sudan food supply and access may not be a serious concern in the State. However, the Mission identified vulnerable population, particularly IDPs and refugees, requires continued humanitarian support.

### 3.3 Eastern Equatoria State

In 2008 and 2009, the State suffered from droughts. This year the rainfall started on time in April in some locations, while in others with a slight delay, particularly in Torit County. The delay, however, had no major impact as the period coincided with the election campaign and most farming households started their agricultural activities after the elections. The amount received in August has been above normal in many locations which generally resulted in an increased area cultivated. It caused localized flooding in Lopa/Lafon County and along the main streams in Torit County. The heavy rain also caused delays and difficulties in harvesting and drying of produce like beans and groundnuts, particularly in Ikotos County. Harvest in the mountains was delayed compared to last year as heavy rains affected maturation of crops. The heavy rain also affected the fruiting of sorghum and sesame, particularly in Magwi County. Here also some of the cassava in water-logged areas was reported to be rotting. In Greater Kapoeta, the onset of rains was in Mar/Apr but as usual it was mostly showers which covered the region in patches. In other places the rainfall started later and was also below normal for some 6-7 weeks in May-June. The rainfall was therefore not good enough in some locations while in others the sorghum grew well until the time of fruiting when quelea ("army")-birds (*Quelea quelea aethiopica*) attacked the crops all over Greater Kapoeta and caused severe damage on all farms. Only late cultivators were better off, only about 5 percent of the entire farming households. In a good year, households benefit from the ratoon after the first season crops are cut. The ratoon that sprouted was performing well with the good rains received in August. Unfortunately on many farms, the ratoon was affected by aphid and smut which sucked the fruits leaving the heads without grain. Although yields are better than last year, which was particularly dry, yield this year are below average, due to too much rainfall (Ikotos) and destructive pests on crops.

After two years of drought in Eastern Equatoria which also affected pastoralists due to poor pasture and water resources, the situation is very favourable this year. Outbreaks of East Coast Fever and other tick-borne diseases were reported in Kimatong (Budi County), Loudo (Torit County and Imotong (Ikotos County). Overall, the number of livestock is expected to have increased. Security has been generally good in Eastern Equatoria state except for cattle rustling and ambushes of vehicles on roads. Most key informants indicated that cattle raiding have reduced in 2010 compared to the previous year due to peace making and sensitization campaigns of the government and some NGOs.

The most active food market is in Torit which offers a large variety and volumes of food commodities from Uganda and Kenya. Earlier on this year, the government brought in cereals first at market price, later at subsidized price which had a positive impact on households' ability to access food during the drought year. Main constraints were the poor handling and management of government food reserves. For example, it is estimated that about 50 percent of the food stocks (sorghum) was wasted due to heavy termites' infestation. Security has been a constraint to trade. Incidences of road ambushes have increased this year especially on the Torit-Kapoeta and Ikotos-Hiyala road, affecting food supply on local markets. In the coming months, most traders from Uganda and Kenya intend to stay outside the country during the referendum period. Others are intending to reduce their stocks to reduce risks. This could trigger a price increase of cereals during the referendum period which is followed by the lean season.

Reflecting the various constraints experienced this year, the ANLA conducted in late 2009 showed that Eastern Equatoria and in particular the Hills and Mountain livelihood zone had one of the worst food consumption levels (measured in terms of dietary diversity and frequency). Across the entire state 40 percent were considered to have poor and 37 percent borderline food consumption levels. Considering the market structures, low food supply and the already difficult consumption level, access to food is of serious concern for the entire State, particularly during the period of the referendum and the following 6 months or more.