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Acronyms and Abbreviations

ACF	Action Contre la Faim
BYDA	Bahr El Gazhal Youth Development Agency
CAHW	Community Animal Health Workers
CBS	Central Bureau of Statistics
CPA	Comprehensive Peace Agreement
CRS	Catholic Relief Services
EFSNA	Emergency Food Security and Nutrition Survey
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFW	Feeding and Food for Work
GAM	Global Acute Malnutrition rate
GoSS	Government of South Sudan
GoNU	Government of National Unity
HAC	Humanitarian Affairs Commission
HAC	Humanitarian Aid Commission
IARA	Islamic Africa Relief Agency
ICRC	International Committee of the Red Cross
IDPs	Internally Displaced Persons
IFAD	International Fund for Agricultural Development
IRC	International Rescue Committee
JAM	Joint Assessment Mission
JRC	Joint Research Centre
MICS	Multiple Indicator Cluster Survey
MoA	Ministry of Agriculture
MoA	Federal Ministry of Agriculture
MoE	Ministry of Education
MoH	Ministry of Health
NDA	National Democratic Alliance
NDIs	Polio Immunization Days
NDVI	Normalized Difference Vegetation Index
NGOs	Non-Governmental Organizations
NGR	Natural Growth Rate
NSCSE	New Sudan Centre for Statistics and Evaluation
OCHA-IMU	UN Office for the Coordination of Humanitarian Affairs-Information Management Unit
PRRO	Protracted Relief and Recovery Operation
SFM	Swedish Free Mission
SPLA	Sudan Peoples Liberation Army
SPLM	Sudan Peoples Liberation Movement
SRC	Strategic Reserve Corporation
SRRC	Sudanese Relief and Rehabilitation Commission
SSCCSE	Southern Sudan Commission for Census Statistics and Evaluation
STARBASE	Sudan Transition and Recovery Data Base
TF	Tearfund
UMCOR	United Methodist Committee for Relief
UN	United Nations
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UNMIS	United Nations Mission in Sudan
VAM	Vulnerability Analysis and Mapping
VSF	Vétérinaires sans Frontières
WFP	World Food Programme
WHO	World Health Organization

Mission Highlights

- A record cereal harvest of 6.64 million tonnes is forecast for Sudan in 2006/07, of which 78 percent will be sorghum, as a result of favourable rains and relatively few outbreaks of pests or diseases.
- At this level, production is about 22 percent higher than last year's good production and 36 percent above the average of the previous five years and, together with high levels of carryover stocks, is expected to result in large cereal surplus in 2007.
- Market prices for sorghum have begun falling in the main producing areas; financial difficulties thus threaten farmers and could result in sharp reductions in area planted next season.
- Livestock and pasture conditions are good over most of the country and the water levels in water holes (*hafirs*) are generally satisfactory.
- Increased export earnings from oil, rising to US$4.2 billion in 2005, have continued to boost overall economic activity.
- Despite the bumper harvest and strong economic growth, problems of physical and financial access to food due to war, displacement, poor infrastructure, weak marketing system and economic isolation continue to render millions of vulnerable people dependent on food assistance.
- About 4.6 million people in Sudan will need emergency food assistance during 2007 mainly due to civil unrest. The recent escalation of conflict in Darfur region alone is estimated to have resulted in substantial losses of cropped areas and the displacement of about 1.6 million people.
- As food aid targeting is a major challenge, a thorough examination of beneficiary lists is needed to minimize inclusion error.
- In view of the ample domestic cereal availability, timely local purchases of cereals by the Sudan Strategic Reserve Corporation (SRC) and for food aid programmes are highly recommended. This will support markets and ensure locally-acceptable varieties of cereals.
- In addition, timely assistance in the agricultural sector is required, including emergency support to returnees and to other vulnerable farming communities. This should take place before the start of the next cropping seasons in April/May in southern Sudan, and June/July in northern Sudan.

1. OVERVIEW

An FAO/WFP Crop and Food Supply Assessment Mission visited southern Sudan from 7 to 29 October 2006 and northern Sudan from 11 November to 5 December 2006 in order to assess the current season's cereal production, forecast wheat production from areas prepared for planting, and estimate cereal import requirements for the marketing year 2006/07 (November/October). The Mission in both northern and southern Sudan received the full cooperation from all concerned Government Authorities. The Mission included representatives from the Federal Ministry of Agriculture, the Ministry of Agriculture and Forestry (MoAF) of the Government of South Sudan (GOSS), Humanitarian Aid Commission (HAC) and the Strategic Reserves Cooperation. The Mission was accompanied by EC and USAID observers and benefited from a wide range of discussions with both national and international stakeholders.

The mission reviewed latest available information on early warning indicators, crop production, markets, food security, nutrition and humanitarian reports combined with field observations and discussion with key informants. The main data and reports that were critically reviewed were: remote sensed vegetation indices and rainfall monitoring reports, crop production forecasts by the Ministry of Agriculture, the national Annual Needs Assessment and the inter-agency Darfur Emergency Food Security and Nutrition Assessment. Annexes 1 and 2 provide further details on the methodology.

In northern Sudan, pre-harvest estimates of area and yield were provided by the State Ministries of Agriculture and the various irrigation schemes. The Mission discussed and crosschecked these estimates during field inspections and interviews with farmers, herders and traders. Discussions were also held with key informants from relevant local government offices, credit institutions, UN Agencies and Non-Governmental Organisations (NGOs). It is particularly worth mentioning the valuable information provided by the Food Security Coordination Committees (FSCC) led by FAO and WFP in all three Darfur States. The formation of these committees, which consist of representatives of relevant government authorities, UN agencies and NGOs working in these areas is an encouraging development which needs to be strengthened.

In southern Sudan, the Mission held meetings with officials of various ministries of Government of South Sudan (GOSS) including the Ministry of Agriculture and Forestry (MoAF), the South Sudan Relief and Rehabilitation Commission (SSRRC), the South Sudan Centre for Statistics and Evaluation (SSCCSE) and the Ministry of Trade and Commerce; officials of UN and other international agencies. Location specific information was provided by the NGOs Action Contre la Faim (ACF), FARM Africa, CARE International,

Oxfam-UK, International Committee of the Red Cross (ICRC), Sudan Red Crescent (SRC), World Vision International (WVI), International Rescue Committee (IRC), SudanAid, Adventist Development and Relief Agency (ADRA), Swedish Free Mission (SFM), Catholic Relief Services (CRS), CONCERN, Tearfund (TF), Vétérinaires sans Frontiéres (VSF)-Belgium, MSF-Spain, Action Africa Help (AAH), Mercy Corps, Norwegian Peoples Aid (NPA), International Aid Services (IAS), War Child, ACORD and GTZ. Information on population was provided by the Information Management Unit for Sudan of the UN Office for the Coordination of Humanitarian Affairs (OCHA –IMU). The Mission Team was also supported by information from the FAO Emergency Unit, WFP VAM Unit and JRC. Information obtained from State officials, NGOs and international agencies was cross-checked by the Mission's own field inspections and interviews with farmers and traders. The Mission also undertook spot-check market surveys. In addition, low flying, wherever possible, enabled to note the farm, field and crop condition for the duration of the flights.

Since the signing of the Comprehensive Peace Agreement (CPA) in January 2005, the Government of South Sudan (GOSS) has formally established four line Ministries directly dealing with natural resources: The Ministry of Agriculture and Forestry, the Ministry of Animal Resources and Fisheries, the Ministry of Water Resources and Irrigation and the Ministry of Environment and Wildlife. These four Ministries link to ten State Ministries of Rural Development and Natural Resources that contain departments mirroring the directorates in the ministries at the federal level in South Sudan. The main effect of the progress made so far is a sense of improved security in southern Sudan and in the Nuba Mountains. This has led to increased freedom of movement and investment of time and energy in land cultivation and other rural endeavours allowing for an expansion of cropped land and the incipient resettlement of previously displaced families.

In southern Sudan, the 2006 agricultural season was characterized by increased amount of rainfall compared to the previous year. However, dry spells at critical periods of crop establishment and growth in June and July affected crops, particularly in the normally surplus regions of Central and Western Equatoria and parts of Unity and Jonglei. In addition, severe localized floods in parts of Upper Nile, Unity, Jonglei, Lakes and Warrab States have caused serious crop and livestock damage. On the other hand, better distributed rains in Greater Bahr-el-Ghazal, allowed for more production. There were adequate seed supplies among the settled farmers, IDPs, returnees and host families in most areas. FAO supported seed distributions in targeted areas were both timely and appropriate with the exception of Western Bahr-el-Ghazal where it was reported that the seeds were delivered relatively late for the planting season. In addition, improved security conditions encouraged more returnees to go to their original villages which in turn allowed for the cultivation of more land. As in previous years, the Mission's estimate of cultivated area under traditional farming is based on numbers of households, derived from the projected population figures, and average size of holding per household. The increase in the area cultivated is not commensurate with the natural population growth and the number of returnees settling into their villages as it is still inhibited by the slow pace of de-mining activities particularly in fields surrounding the old garrison towns. In addition, armed activities of Uganda's Lords Resistance Army (LRA) in parts of Central, Western and Eastern Equatoria last May/June and inter-clan conflicts and cattle rustling have displaced sizeable number of households, negatively affecting cultivation of land. LRA attacks at harvest time have also resulted in looting and loss of produce.

In northern Sudan, the cropped areas in all three sectors: -irrigated, mechanised rainfed, and traditional- increased in 2006, and yields were generally better than in 2005. Aggregate production across the three sectors is considerably better than the previous year's above average performance and is above the long-term average. However, insecurity in Darfur, especially the recent upsurge in conflict, may seriously hamper harvesting in the region.

Overall, the Mission found that generally favourable growing conditions have resulted in a record cereal crop in 2006/07 which is forecast at about 6.64 million tonnes, comprising 5.2 million tonnes of sorghum, 792 000 tonnes of millet, 642 000 tonnes of wheat (to be harvested in April/May 2007) and small amounts of maize and rice. This represents an increase of 22 percent over the previous year's good crop and about 36 percent over the average for the previous five years. This record cereal crop will result in ample supplies in the 2006/07 (November/October) marketing year. Prices of cereals, mainly sorghum, have shown a sharp decline in major producing areas and are expected to fall further with the arrival of the bulk of the harvest on local markets.

Livestock are generally in good condition throughout the country with pasture and water levels in water holes (hafirs) generally satisfactory. Livestock prices are relatively high and with the expected national surplus of grain and declining prices, the terms of trade for pastoralists are expected to improve markedly.

Increased export earnings from oil have continued to boost overall economic activity. Oil exports rose from zero in 1998 to US$4.2 billion in 2005, when they accounted for 85 percent of exports. Real GDP growth

accelerated to reach an average of 8 percent and 10 percent in 2005 and 2006, respectively. In 2007 GDP growth is forecast at 10.9 percent. Foreign exchange reserves nearly doubled to US$2.5 billion in 2005 compared to 2004 and rose to US$2.8 billion in May 2006. These factors have also led to the appreciation of the Sudanese Dinar from an average of SD244:US$1 in 2005 to SD212:US$1 in December 2006. The foregoing, notwithstanding, Sudan's debt holds sway over its development prospects. Total external debt is estimated at about US$29 billion in 2006. The World Bank is currently working with the International Monetary Fund (IMF) on the question of arrears and debt relief, in coordination with a debt support group being led by the United Kingdom, to ensure that the country's debt does not hinder the flow of funds from international lenders and donors. it is also estimated that the current-account deficit has widened to around US$5bn (12.6 percent of GDP) in 2006. It will forecast to fall back to about US$4.8bn (8.8 percent of GDP) in 2007, as the trade position strengthens, before widening again to US$5.4bn in 2008 although it will continue to fall as a proportion of GDP.

The overall food situation is, therefore, highly favourable. At the aggregate level, the country is able to cover all of its cereal requirements following a record level of cereal production; a relatively large carry-over stock from last year's above average crop and the country's enhanced ability to import commercially to cover any domestic shortfalls. Large quantities of grain could also be exported, provided that export markets are secured, particularly in some neighbouring countries.

However, problems of physical and financial access to food due mainly to war and conflict related displacement and economic isolation render millions of vulnerable people dependent on food assistance. The intermittent and recently escalating civil conflict in the three Darfur states has already caused increased displacements of people. In addition, in southern Sudan, the overall food security outlook in 2007 will be rather mixed - while the availability of food commodities will relatively improve, due to increased crop production mainly in the traditionally food deficit areas of Greater Bahr-el-Ghazal, economic accessibility varies by population groups as well as regions. The IDPs and returnees remain the most vulnerable of the population groups while Northern Bahr-El- Ghazal, Eastern Equatoria, Jonglei and Unity States are relatively more precarious regions. As a result, nearly 4.6 million people are estimated to be in need of food assistance in 2007.

Significant quantities of food assistance commodities were observed in several markets, especially in Darfur. While the WFP country office indicated that it had been intended that beneficiaries in Darfur would sell a portion of their rations to meet other needs – including milling costs and foods not included in the ration – this should be more closely monitored to ensure that the entry of food aid commodities into local markets does not provide a disincentive to local production or commercial trade. The Mission recommends the following steps – some of which are already underway – to address these concerns:

- A market study needs to be carried out to determine the extent of commodity flows, market functions & impact of food aid on agricultural production and domestic markets.

- A thorough scrutiny of beneficiary lists is recommended to minimize any inclusion errors, to ensure that the aid goes to those who need it most.

- Consider other method of financing milling cost than through increased food aid ration which is at a much higher cost to financing agencies and potential source of leakage of food aid into the market.

Given the countries recent economic growth and consecutive favourable production season's, the central government and local institutions need to be encouraged to take more responsibilities in caring for the chronically food insecure: In particular:

- Phase down and phase out of international food assistance in eastern and central Sudan. WFP needs to prepare a work plan to ensure a coordinated use of food allocation with the SRC during the recommended final phase of food assistance.

- Strengthen early warning systems, particularly in areas where food aid is reduced or withdrawn.

- Alter the cycle of emergency appeal period from the current January to December to April to March, so that the emergency appeal benefits from the several assessment missions and surveys carried out.

Furthermore, given the large sorghum surplus in the country, it is recommended that well-timed local purchases be made by the Sudan Strategic Reserve Corporation (SRC) and for food aid programmes, in order to meet food aid requirement so as to prevent domestic food market distortions and ensure locally-

acceptable varieties of cereals. In addition, timely assistance is required to support the agricultural sector, including emergency support to returnees and other vulnerable farming communities, before the start of the next cropping season in April/May in the south, and June/July in the north.

2. SOCIO-ECONOMIC CONTEXT

2.1 General

Several parts of Sudan have been devastated by decades of civil wars and conflict, destruction of physical and human resources, and erosion of institutions and social capital. The state of continuous conflict that had prevailed since 1983 in southern Sudan ended in 2005 with the signing of a Comprehensive Peace Agreement (CPA). This agreement provides for six years of joint rule before a plebiscite in 2011 to determine whether the region will continue as an autonomous part of Sudan or become an independent sovereign state. The CPA also includes special provisions for Abyei, Southern Kordofan and Blue Nile (also referred to as the Transitional Areas or the Three Areas).

Another peace agreement was signed in mid-October 2006, following a series of talks mediated by Eritrea, between the government and insurgents from the Eastern Front. Although this agreement provides for some power-and wealth-sharing mechanisms, its long-term viability will depend upon the success of a national conference, planned for 2007, which is intended to produce a broader consensus on the administrative balance of power between the national government, the regions and the states.

The yet unresolved conflict in the three states of Darfur remains a large-scale humanitarian emergency, with a high toll in terms economic and social disruption, and loss of life. Peace talks between the Government of Sudan and the Darfur rebel groups are ongoing, but conflict continues and the United Nations and NGOs are continuing to provide humanitarian relief.

2.2 Population

Estimating population in Sudan is a daunting task. The most recent government census, in 1993, could not be carried out in southern Sudan so that even that survey – now 13 years out of date – is not national in scope. Nevertheless, the population figure from that census – 24.9 million – serves as the point of departure for estimates of the population of northern Sudan.

In southern Sudan, population dynamics are highly fluid with large refugee and IDP flows, unknown numbers of war deaths, compounded by inconsistent area definitions. Counting a semi-nomadic population is also complicated by the fact that men are often away with their cattle. As a result, population estimates for southern Sudan differ enormously between different sources. The publication of the NSCSE/UNICEF[1] report "Towards a Baseline: Best estimates of social indicators for Southern Sudan" in 2004 provided a comprehensive revision of available demographic indicators and presented new population estimates based on Census projections, migration assumptions, and the review of the WHO/NDIs based population estimate. Population in 2003 is estimated by NSCSE at 7.5 million, increasing at a high natural growth rate (NGR) of 2.85 percent. This estimate is only for the former rebel-held areas and does not include population in the towns previously controlled by the central government. Figures for these populations were neither available at the National Statistic Bureau in Khartoum, but estimates vary from 500 000 to over 1 million people. Forward projection of the 2003 population has been made difficult by the lack of accurate information on the number and family composition of refugees and IDPs returning to the south from 2004 to 2006.

Taking account of these separate sets of population estimates, Table 1 and 2 below indicate estimates for northern Sudan, based on Central Bureau of Statistics (CBS) and southern Sudan, based on the above-mentioned NSCSE 2003 population estimates.

[1] NSCSE (New Sudan Centre for Statistics and Evaluation) has been renamed as South Sudan Centre for Statistics and Evaluation (SSCCSE).

Table 1. Sudan: Population estimates in Northern Sudan and three areas, 2005, 2006 and mid-2007

State	Estimated Population ('000) 2005	Annual Growth Rate (%) 2003-2008	Estimated Population ('000) 2006	Forecast Population ('000) Mid-2007
Northern	634	1.58	644	649
Nile	990	1.81	1008	1 017
Red Sea	736	0.30	738	739
Kessela	1 666	2.51	1 708	1 729
Gadarif	1 727	3.19	1 782	1 810
Khartoum	5 757	3.67	5 968	6 078
Gazira	3 903	2.79	4 012	4 068
Sinnar	1 334	2.53	1 368	1 385
White Nile	1 676	2.47	1 717	1 738
Blue Nile	737	2.92	759	770
North Kordofan	1 602	1.52	1 626	1 638
West Kordofan	1 219	1.33	1 235	1 243
South Kordofan	1 190	1.38	1 206	1 214
North Darfur*	1 707	3.16	1 760	1 788
West Darfur*	1 775	2.37	1 817	1 839
South Darfur*	3 279	3.41	3 390	3 448
Total Northern Sudan	**29 932**	**2.72**	**30 738**	**31 153**

Source: CBS 2006 and Mission forecast.

* The population figures indicated above for the three Darfur States add up to 7.07 million people. However, the Interagency Emergency Food Security and Nutrition Assessment (EFSNA), following provisions for the displaced within and outside Sudan, indicated that the total population figure to be around 5.775 million in mid-2007.

For southern Sudan, population projections were made with adjustments to the returnees population based on latest information and discussions with relevant institutions. The following assumptions were used to arrive at the current population estimates:

- The NSCSE 2003 population estimate of 7.5 million, reported by UN-OCHA on its "Sudan Transition and Recovery Data Base" (STARBASE), was used as a base. The year 2003 has been adopted as baseline because no further effort was made to project into subsequent years until the population and housing census, planned for November 2007, is carried out.

- As the number of counties and their borders have increased since last year and were still changing at the time of the Mission, estimates of population and production, unlike earlier years, were made at the state level.

- The annual average NGR of 2.85 percent has been used for all states, as no detailed information by state was available.

- Population data from the former "garrison towns" were used from the previous year's CFSAM estimates and projected into 2007 at the average NGR.

- Preliminary returnee figures from 2004 to 2006 and projected returnees for 2007 were adjusted by the Mission following discussions with OCHA, SSCCSE and SSRRC. One million people are assumed to have returned from 2004 to 2006 and about 350 000 projected to return in 2007. Through further discussions, the net returnee figures to southern Sudan - to account for the returnees from one part of southern Sudan to another and avoid double counting – 75 percent of the 1 million were assumed to have returned from either northern Sudan or neighbouring countries. In the absence of better information on the family composition and growth rate of the returnee population, the average NGR of 2.85 percent was used.

Based on the above assumptions, the mid-2007 population of Southern Sudan is projected by the Mission at 9.85 million people. It is important to re-emphasize that in absence of firm and comprehensive statistics on population, the Mission's population figures, and the derived production and cereal balance estimates, should be taken with great caution.

Table 2. Southern Sudan: Estimated Population in 2006 and Projected Population in mid-2007

State	Population 2006	Projected Population mid-2007
Upper Nile	710 970	720 924
Jonglei	1 271 575	1 289 377
Unity (Liech)	587 639	595 866
Warrab	1 606 158	1 628 644
North Bahr el Ghazal	1 131 510	1 147 351
West Bahr el Ghazal	398 217	403 792
Lakes	866 824	878 959
West Equatoria	787 553	798 579
Central Equatoria (Bahr-el-Jabal)	673 899	683 334
East Equatoria	673 649	683 080
Sub Total	**8 707 995**	**8 829 906**
Returnees2004-2006	*1 000 000*	*1 014 000*
Less South-South Returnees	750 000	760 500
Total	**9 457 995**	**9 590 406**
Expected Returnees2007		350 000
Less South-South Returnees		262 500
GRAND TOTAL	**9 457 995**	**9 852 906**

Source: UN-OCHA "Sudan Transition and Recovery Data Base" (STARBASE) and Mission forecast

Accordingly, Sudan's total population in 2006 is estimated at about 40.2 million, comprising of 30.75 million in northern Sudan and about 9.46 million in southern Sudan. However, it is important to underline that in absence of firm and comprehensive statistics on population, the Mission's population figures, and the derived production and food deficit estimates, should be taken with caution.

2.3 Macro-economic situation

For much of the period after independence, from the late 1960s to the early 1990s, Sudan approached economic development through an expanded role for the state, both as investor and manager of enterprises. Beginning in 1969, the majority of private enterprises were nationalized, and interventionist policies such as price controls and credit and exchange rate restrictions were introduced. These policies, together with the cost of war, mainly in southern Sudan, contributed to the subsequent decline of the Sudanese economy. In the period from the late 1970s to the early 1990s, huge fiscal and balance-of-payment deficits, runaway inflation, difficult living conditions and the emigration of professional and skilled Sudanese mainly to the Gulf countries characterized the economic situation of this country.

A serious implementation of economic reforms began in the mid-1990s. The results of the reforms were evident in four main areas: the role of the state was reduced and that of the private sector increased; price and market controls were relaxed and incentives for production restored; the economy was stabilized and inflation dropped substantially from 130 percent in 1996 to 4.9 percent in 2001 and increased again to between 7 and 9 percent in 2005 and 2006. Economic growth started up once again; GDP grew on average by 3.8 percent per annum during 1990–1995 and then accelerated to an average of 6.6 percent per annum during 1996–2000. Real GDP growth accelerated to reach an average of 7.3 percent 8 percent and 10 percent in 2004, 2005 and 2006 respectively. In 2007 GDP growth is forecast at 10.9 percent. The GDP sectoral composition in 2005 indicate the continued dominance of the agricultural sector at 39 percent followed by the service sector at 34 percent and the manufacturing sector at 28 percent.

Oil exports have significantly boosted the Sudanese economy and triggered large changes in both the macro-economic environment and Sudan's external position and relations. Oil exports rose from zero in 1998 to US$4 187 million in 2005, when they accounted for 85 percent of exports. Foreign exchange reserves in 2005, reached US$2.5 billion compared to US$1.6 billion in 2004 and rose further to US$2.8 billion in May 2006. This is an all-time high for Sudan –during the two decades before the development of the country's oil export sector reserves averaged just US$75m – and has done much to increase its resilience to external shocks. The Sudanese Dinar has continued to strengthen against the US dollar, reflecting Sudan's robust external-account performance during the ongoing oil boom. In 2004 and 2005 the exchange rate averaged

SD258: US$1 and SD244: US$1 respectively. In December 2006 the Dinar stood at SD212: US$1. The foregoing, notwithstanding, Sudan's debt holds sway over its development prospects. Total external debt is estimated at US$26 billion. The World Bank is currently working with the International Monetary Fund (IMF) on the question of arrears and debt relief, in coordination with a debt support group being led by the United Kingdom, to ensure that the country's debt does not hinder the flow of funds from international lenders and donors. Furthermore, although Sudan's trade position is expected to improve over the outlook period, it must be set against a widening non-merchandise deficit. As new oil capacity comes on stream, greater income repatriation by foreign firms will result in a substantial increase in income debits, and services payments will rise roughly in line with imports and the needs of the oil sector. These negative flows will be only marginally offset by increased current transfer credits, as workers remittances rise. Overall, it is expected that the current-account deficit would have widened to around US$5bn (12.6 percent of GDP) in 2006. It will fall back to about US$4.8bn (8.8 percent of GDP) in 2007, as the trade position strengthens, before widening again to US$5.4bn in 2008"although it will continue to fall as a proportion of GDP.

2.4 The agricultural sector

Despite the diminishing share in overall export earnings, the agricultural sector continues to be the backbone of Sudan's economy in terms of its contribution to GDP. Overall, agriculture represented 39 percent of the GDP in 2005, of which 25 percent was from crop production while 20 percent was from livestock. There are no official statistics of GDP composition in the areas of southern Sudan affected by the conflict, but agriculture is considered the most important sector. Agriculture also remains the main source of employment and household income in rural areas where 65 percent of the population live. About 80 percent of the labour force is employed in agriculture and related activities such as agro-industries.

Growth rate in the agricultural sector has noticeably declined from 7.3 percent in 2002 to 5.2 percent in 2003 and to 4.5 percent in 2004 but increased back to 7 percent in 2005. The decline in 2003 was mainly due to the deterioration in the traditional rain-fed agriculture while further decline in 2004 is attributed to the poor performance of the mechanised rain-fed agriculture. Crop production, which is dominated by cereals, is characterised by high levels of annual fluctuations mainly due to high rainfall variations. Of an estimated 84 million ha of arable land (with reasonably fertile soils), 1.89, 8.37 and 5.44 million ha respectively were under irrigated agriculture, traditional rain-fed cultivation and mechanized farming in the years 2000-2005 agricultural seasons.

Livestock form an important component of the agricultural sector, with production mainly based on traditional pastoral systems (90 percent of the livestock in the country belong to the traditional pastoral production systems). Livestock forms an increasingly important part of the agricultural economy, and has displaced cash crops as the fastest growing non-oil export sector. As a result of government encouragement (for instance, the recent and on-going rehabilitation of livestock export facilities including veterinary quarantine centres, and the policy revisions, with the help of FAO, of livestock marketing and taxation) there has been a surge in commercial livestock production, notably of camels, goats, sheep and cattle. Much of the production has been for sale abroad, with the Arab states of the Gulf (especially Saudi Arabia) showing strong demand for Sudanese output. Export growth was badly affected by an outbreak of Rift Valley Fever in 2000 in Saudi Arabia, which was linked to meat exports from East Africa and led to a blanket ban on imports from the region (including Sudan) across the Gulf. As a result, export earnings fell from US$139m in 1999 to just US$15m in 2001. However, most Gulf countries had lifted their ban on Sudanese meat imports by late 2001, and the sector has rebounded strongly since. Data from the Bank of Sudan reveal that in 2005 total livestock exports had recovered to US$154m, making it the second largest export earner after crude oil.

However, in Darfur lack of mobility and access to markets due to conflict has greatly jeopardized pastoralist livelihoods.[2] In some cases, pastoralists and their livestock are forced to change migratory patterns to less desirable destinations, exposing animals to insufficient water and pasture. Concentration of animals also leads to over-use of water and pasture resources, environmental degradation and possibly contagious diseases, prompting distress sales. New trade routes have not compensated for the loss of usual income from livestock exports to Libya and Egypt.

Sesame earned only US$119 000 from 155 000 tonnes in 2005 compared to US$179 000 from 218 000 tonnes in 2004. Gum Arabic exports recovered in 2005 earning US$108 000 from 29 000 tonnes compared to US$61 000 from 27 000 tonnes.

[2] Darfur was the main source of sheep for markets in Gulf countries before the conflict.

3. AGRICULTURAL PRODUCTION IN 2006/07

3.1 Main factors affecting cereal production in 2006

3.1.1 Agricultural finance and credit

The provision of short-term agricultural credit, through the Agricultural Bank of Sudan, for the irrigated and mechanised rainfed sectors continues to show steady but slow progress, though there is wide variation amongst the various branches with regard to performance and efficiency. Short-term credit has been much more readily available to farmers this year in northern Sudan, and not only to large farmers with obvious collateral. In Kassala, for instance, farmers with as little as 10 feddans were able to obtain loans.

The 'selem' system of loans, whereby the farmers must pay back their loans in kind at a nominal value much lower than what they could expect to get in the market, is seen as a real constraint to their getting out of the perpetual loan cycle. Farmers frequently complain that they are forced to sell their produce to traders for a price below the floor price as they have urgent cash requirements.

The National Wheat Programme offers incentives to farmers who grow wheat. Under the programme, urea, which normally retails at SD 4 500 per bag, is provided to wheat growers at SD 3 500, while diesel, which retails for approximately SD 24 000 per barrel, is provided at SD 13 000.

3.1.2 Rainfall

Average annual rainfall in Sudan ranges from almost zero in the north of the country to 1 800 mm in the southern state of Western Equatoria. Rainfall in 2006 was generally good, and mostly better than that of 2005, itself a good season. Although the rains started late in the south, this late start was followed by a very satisfactory rainy season in terms of amounts and distribution. Many parts of the north also experienced a late start, but again this was generally followed by a rainy season that was longer and wetter than usual.

Above-average rainfall was particularly evident in East Equatoria, the general area of Lakes, Warab and West Bahr-el-Ghazal, Kordofan and most parts of Darfur. Less favourable rainfall prevailed in parts of Eastern Sudan and in Upper Nile, but amounts were still near the long-term average. Some of the high-production areas towards the east of the country, such as parts of Gezira, Sennar, Gedaref and southern Kassala, reported poor spatial distribution of rainfall following a late start, with often large differences between closely neighbouring localities. Dry spells were also reported in this part of the country in July and September.

The chronically food-insecure state of Red Sea not only received good main-season rains this year but also benefited from an early start to the coastal rainy season. This most unreliable season sometimes skips a year or may be so slight that it is of negligible agricultural or rangeland use. This year however, it started early in November, by the end of which month it had delivered more than half of its optimal rainfall. Expectations were for about 90 percent satisfaction of the optimum by the end of the season.

Good rains in Eritrea and along the border with Sudan ensured a satisfactory season for the two major spate irrigation schemes of Tokar and Gash. Heavy rains in the Ethiopian highlands in September led to flooding along the banks of the Nile north of Khartoum. Parts of Nile State and the eastern part of Northern State were adversely affected, with the loss of crops, livestock and dwellings.

3.1.3 Area planted

Cereal areas have increased in all three sectors in northern Sudan in 2006 in response to the favourable rains, improved mechanisation, and increased availability of inputs and credit. In the irrigated sector, continuing rehabilitation programmes have expanded or reclaimed cultivable areas. These programmes involve mesquite removal, canal cleaning, the replacement or rehabilitation of pumps, land levelling, and in some cases, the construction of new canals. In the mechanised rainfed sector, expansion has been assisted not only by the favourable rains but also by an increase in the number of privately owned tractors and other equipment. Further expansion would appear to be limited for the time being by a continuing reliance on increasingly scarce labour for such operations as weeding and harvesting. The first of these is gradually being addressed through the increasing use of herbicides, while some farmers are now investigating the feasibility of combine-harvesting a crop as non-uniform as rainfed sorghum in the context of Sudan.

Sorghum in the irrigated sector showed an increase in area of 22 percent compared with last year. The largest increases were on Gezira scheme and in River Nile State. In the mechanised rainfed sector,

expansion has been mainly in the area under millet while the area under sorghum was, overall, only slightly larger than that of 2005. The expansion of area under millet, which was, on aggregate, more than 50 percent larger than in 2005, was consistent in all producing states, while the area under sorghum was smaller than last year in some states and larger in others.

In the traditional sector, relatively small increases in area have been registered compared with last year - 15 percent for sorghum, and 8 percent for millet. Labour is the principle constraint in this sector, and this year's relatively small expansion probably gives a good idea of where the limit of expansion is located. However, expansion is some areas is more opportunistic than elsewhere. For instance, River Nile State reported an increase of more than 700 percent under traditional sorghum. This is explained by the utilisation this year of large areas under *demira* cropping which were not used at all last year.

Although the wheat crop will not be harvested until March or April 2007, it seems likely that the harvested area will be almost 50 percent up on that of 2005/06. In Darfur, however, conflict related insecurity and displacements have significantly reduced cereal area. Before the conflict, the five year (1999/00 to 2002/03) average for cereal harvested area was about 1.8 million hectares. The harvested area estimates in 2004/05, 2005/06 and the forecast in 2006/07 are 0.9 million, 1.2 million and 1.1 milllion hectares respectively.

In southern Sudan, following Mission practices of previous years, area estimates for the traditional sector are compiled from population statistics. As stated in section 2.3, this year's calculations are based on the 2003 population by counties prepared by NSCSE for the former rebel-held areas, projected at a NGR of 2.85 percent. To these were added data from the former garrison towns, to determine the residential population in each State, as well as the preliminary OCHA figures of returnees in 2004 to 2006.

- Number of households in each county by dividing the 2006 population estimate by an average of 6 persons.
- Percentage of households in settled population, including long-term IDPs, farming in 2006 as noted by and reported to the Mission.
- Average area cropped to cereals per household this year, including home-gardens and far-fields as noted by and reported to the Mission.
- Area cultivated and production of the returnees has been considered separately as numbers are highly tentative. In estimating the percentage of returnees farming and the cropped area, it has been assumed that returnees will be able to farm only limited areas in their initial year for plots need clearing and land cultivating which takes a lot of time and/or money to employ or attract labour groups.

3.1.4 Agricultural inputs

Agricultural inputs have been more readily available in 2006 than in recent years, though some prices have risen in the past 12 months. A gallon of diesel, for instance, now costs SD 510, whereas last year it cost SD 410 - an increase of almost 25 percent. On the other hand, the price of fertilizer at about SD 4 500 has remained unchanged in most parts of the country.

This year has seen a significant increase in the use of improved seed and certified seed in the mechanised rainfed and the irrigated sectors. In Blue Nile State, for instance, it was reported that 90 percent of the mechanised rainfed area was planted with improved seed, while on the Gezira scheme, 95 percent of the sorghum seed used was improved. Improved seed was available commercially from companies such as the Arab Seed Corporation, while distributions were carried out through the SMAARI and FAO. For instance, in Kassala, the SMAARI provided 830 tonnes of seed through the Farmers Union, while FAO delivered 225 tonnes of sorghum seed to IDPs through NGOs. (Nevertheless, Kassala reported a shortage of seed for replanting areas that were hit by a dry spell in July.) Further west in South Kordofan it was estimated that about 8 percent of the seed used this year came through the SMAARI, FAO or other agencies, while in North Kordofan 10 percent of the seed used was improved. There were also distributions in Darfur. For better land preparation and in order to avoid the problems and expenses of hiring labour for weeding, many more farmers in the mechanised rainfed sector are now beginning to use herbicides (mostly 2,4-D).

Many production areas in north Sudan have reported a more acute shortage of labour for harvesting than in previous years. Reflecting this shortage, the price of labour has risen, but not as much as it did in 2005. Price increases are especially evident in the west and in parts of Central Region. Factors contributing to the shortage of labour include the return of displaced people to the south, more attractive non-agricultural labour opportunities in the fast-growing urban centres, and the increase in cropped area this year which has absorbed much of the labour that would otherwise have been available. Labour shortages are a real concern for the mechanised rainfed sector where many individual farmers still have tens of thousands of feddans of

crop waiting to be harvested. Combined with the currently very low price of sorghum, this potentially puts in jeopardy a large proportion of the crop, the return from which may not justify the cost of harvesting it.

Mechanisation has improved visibly in recent years in the higher-production areas, reflecting the country's increasing wealth. Whereas farmers used to depend very heavily on the Mechanised Farming Corporation's old, unreliable and inefficient tractors, there is now a much expanded national fleet of new, often privately owned tractors. As illustration of this, the Agricultural Bank of Sudan recently imported 90 new tractors for private sale on five-year loans in Northern State. Thirty have already been purchased.

In southern Sudan, the traditional sector depends predominantly on family labour and hand power. Animal traction is slowly being introduced in different parts of southern Sudan by several NGOs and FAO, although as yet it is too little to make a difference. No use of fertilizers, pesticides or herbicides is noted. For seeds, households overwhelmingly depend on local landraces, either farm produced and carried over from one year to the next, supplied by kinship connections or purchased in local markets. In addition, most agencies providing planting material to IDPs, returnees and vulnerable households buy and redistribute local landraces rather than exotic varieties that are often not used or perform less well than indigenous material. In 2006, FAO supported seed distributions in targeted areas were both timely and appropriate with the exception of Western Bahr-el-Ghazal where it was reported that the seeds were delivered late.

In the mechanized sector, in Renk 60 percent of the area under sorghum is noted to be under the improved varieties of *Arfagadamec* and *Wad Ahmed.* The crop stands are in good condition but remain vulnerable to attacks from migratory quelea quelea birds until the harvest in January- March. The area financed by agricultural lending banks (mainly by Agriculture Bank of Sudan and Nile Commercial Bank) in Renk in 2006 amounted to more than SD500 million for diesel and weeding costs. This compares with SD420 million in 2005. Later in the year another sum will be provided to cover harvesting costs. Tractor hire for two passes using contractors this year was SD1400 per feddan. Regarding other inputs, most commercial farmers in Renk dressed seed against sorghum smut, as the chemical treatment was available from the MOA and a few used herbicides as a cheaper alternative to hand weeding. Weeding costs in Renk are noted at SD850 per feddan. Cutting and collecting costs SD2 500 per feddan and threshing SD400 per 90kg sack.

3.1.5 Weeds, pests and diseases

The 2006 cropping season was largely pest-free over much of Sudan, and those pests that did appear, such as birds, were satisfactorily controlled through campaigns sponsored by the Government and other agencies. There were no reports of desert locusts. Several local bird species as well as *Quelea quelea*, which is classified as a national pest, can wreak devastation on a standing crop. This year, SMAARIs in vulnerable states have again successfully controlled threatening bird populations by aerial spraying of nesting sites. yet birds have seriously affected millet and sorghum crops in South Darfur state. Birds also pose a threat to wheat growers and are one of the reasons for late planting. A farmer who sows his fields before his neighbours risks losing most of the seed to birds. Farmers therefore try to delay sowing until all their neighbours have sown; no farmer wants to be the first to sow. The incidence of sorghum bug (*Agonoscelis pubescens*) increased this year in some areas in the east as a result of the prolonged rainy season. Where it posed a threat, for instance in Gedaref, the pest was satisfactorily held in check through campaigns mounted by the SMAARI. Sorghum midge, which attacks late-planted sorghum, was reported in Nile State.

In the east of Northern and the north of Nile, the parasitic weed broomrape (*Orobanche sp*) has infested substantial areas of land that are usually used for the production of faba beans and vegetables. Since this is a difficult weed to eliminate (its tiny seeds can remain viable for a number of years) it has contributed to the decision of many farmers not to grow beans this year. Green scale continues to pose a threat to date producers in Northern State. At present it appears to be essentially confined to Golid and El Ghaba schemes, but it could easily spread as there is no formal control of the movement of planting material from one scheme to another.

Watermelon bug (*Aspongopus viduatus*) can decimate a crop of watermelons. This year, however, it was again successfully controlled in the important production area of North Kordofan through WFP's Food for Bugs programme. Growers receive food in return for bugs removed manually from the crop. Growers' livelihoods have thus been enhanced through both food assistance and a greatly improved crop. Although the woody weed mesquite (*Prosopis spp.*) has been outlawed nationally as a noxious species, it persists to some extent on most irrigation schemes by virtue of its very successful survival mechanisms. Seeds from the same pod will not all germinate at the same time but may germinate at different times over the course of a number of years. Mesquite is especially problematic in the spate irrigation schemes at Tokar and Gash. Recently however, more funds have been mobilised to combat it. At Tokar, a Sudanese company is now more than halfway through a two-year contract to clear the scheme of mesquite; 20 000 feddans have been

cleared so far and the remaining 8 000 feddans are expected to be cleared to a satisfactory level by June 2007. On Gash scheme, clearance of the weed has been partially achieved under an IFAD rehabilitation programme which is set to continue till 2012. Witchweed or striga is a perennial problem for sorghum producers. Often when infestation reaches a certain threshold the farmer will switch to growing millet which is slightly less susceptible to the parasitic weed. However, striga is very difficult to get rid of as it is extremely well adapted for survival; its seeds can remain viable in the soil for twenty or more years.

3.1.6 National cereal production forecast

The year 2006/07 is forecast to produce Sudan's largest cereal harvest on record at 6.64 million tonnes. This represents a 36 percent increase on the average production of the previous five years, and an increase of 22 percent on the previous year's good crop. The largest increases were in the north of the country. Wheat is expected to show the largest increase in percentage terms, though the largest increase in absolute tonnage is due to sorghum. Production figures by State for 2006/07 and comparisons with those for 2005/06 are given in Table 3. Cereal areas, yields and production by region for the past five years are given in Table 4.

Table 3. Sudan: Cereal production forecast for 2006/07, and estimates of 2005/06 production ('000 tonnes)

State/ Scheme	Sorghum			Millet			Wheat			Total		
	2005	2006	%	2005	2006	%	2005	2006	%	2005	2006	%
Irrigated												
Northern	20	19	93	0	0	0	213	252	118	233	271	116
River Nile	47	155	330	0	0	0	50	102	204	99	257	260
Sennar	56	49	87	0	0	0	0	0	0	56	49	87
White Nile	53	68	129	0	0	0	24	49	203	77	117	152
Gezira	386	580	150	0	0	0	122	235	193	508	815	160
Rahad	85	94	111	0	0	0	0	0	0	85	94	111
Suki	27	31	116	0	0	0	0	0	0	27	31	116
New Halfa	58	94	163	0	0	0	5	4	80	63	98	155
Gash	53	70	132	0	0	0	0	0	0	53	70	132
Tokar	11	15	138	6	7	117	0	0	0	17	22	129
Kassala	5	36	720	0	0	0	0	0	0	5	36	720
N Kordofan	4	2	51	0	0	0	0	0	0	4	2	51
Upper Nile	1	0	0	0	0	0	0	0	0	1	0	0
Sub total	**808**	**1 214**	**150**	**6**	**7**	**113**	**414**	**642**	**155**	**1 228**	**1 862**	**152**
Mechanised												
Kassala	90	144	160	0	0	0	0	0	0	90	144	160
Gedaref	765	702	92	10	16	160	0	0	0	775	718	93
Blue Nile	244	256	105	5	8	160	0	0	0	249	264	106
Sennar	198	344	174	9	18	200	0	0	0	207	362	175
White Nile	163	247	151	7	25	357	0	0	0	170	272	160
N.Kordofan	16	4	28	0	0	0	0	0	0	16	4	25
S.Kordofan	249	356	143	1	2	200	0	0	0	250	358	143
Upper Nile	180	111	62	18	11	62	0	0	0	198	122	62
Sub total	**1 905**	**2 165**	**114**	**50**	**81**	**162**				**1 955**	**2 246**	**115**
Traditional												
Khartoum	6	6	101	0	0	0	0	0	0	6	6	101
Gezira	186	67	36	1	2	200	0	0	0	187	68	37
Blue Nile	27	30	111	2	2	100	0	0	0	29	32	111
Sennar	71	96	135	8	18	225	0	0	0	79	114	144
White Nile	14	158	1131	29	41	142	0	0	0	43	200	464
Kassala	22	22	98	0	0	0	0	0	0	22	22	98
River Nile	10	76	756	0	0	0	0	0	0	10	76	760
Red Sea	1	6	600	1	2	200	0	0	0	2	8	398
N.Kordofan	91	106	117	140	189	135	0	0	0	231	295	128
S.Kordofan	186	257	138	58	55	95	0	0	0	244	312	128
N.Darfur	12	7	57	69	34	49	0	0	0	81	41	50
S.Darfur	167	189	113	247	230	93	1	0.5	50	415	420	101
W.Darfur	44	50	114	54	48	88	0	0	0	98	98	100
South*	725	755	104	81	84	104	0	0	0	805	838	104
Sub total	**1 562**	**1 824**	**119**	**690**	**705**	**102**	**1**	**0.5**	**50**	**2 252**	**2 529**	**112**
GRAND TOTAL 1/	**4 275**	**5 203**	**122**	**745**	**792**	**106**	**415**	**642**	**155**	**5 435**	**6 637**	**122**

1/ Includes maize, mainly produced in southern Sudan and small amounts of rice.
Compiled from unrounded data.

Table 4: Sudan - Area, yield and production forecast by crop and region for 2006/07, compared with previous years

	Harvested area (000 ha)						Yield (t/ha)						Production (000 t)					
Region	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**	**01/02**	**02/03**	**03/04**	**04/05**	**05/06**	**06/07**
Sorghum																		
Northern	171	70	120	48	72	184	2.16	1.73	1.31	1.72	1.75	1.36	369	121	157	83	79	249
Central	1 749	1 256	2 208	960	2 009	1 940	0.99	0.83	0.94	0.95	0.73	1.02	1 732	1 010	2 065	910	1 431	1 984
Eastern	1 407	1 429	2 365	999	1 896	1 948	0.49	0.48	0.64	0.53	0.55	0.58	687	691	1 509	533	1 090	1 132
Kordofan	1 046	1 026	971	799	990	1 296	0.50	0.36	0.38	0.45	0.55	0.56	528	365	366	362	546	726
Darfur	753	591	448	224	341	334	0.64	0.41	0.58	0.46	0.65	0.73	480	241	260	102	223	246
South	799	631	969	789	1 138	1 057	0.84	0.80	0.84	0.90	0.80	0.82	673	503	824	714	906	866
Sub-total	**5 925**	**5 003**	**7 081**	**3 819**	**6 446**	**6 759**	**0.77**	**0.61**	**0.73**	**0.71**	**0.66**	**0.41**	**4 469**	**2 931**	**5 181**	**2 704**	**4 275**	**5 203**
Millet																		
Northern																		
Central	84	91	180	124	148	227	0.30	0.35	0.42	0.17	0.43	0.51	25	33	75	21	61	115
Eastern	32	23	160	21	53	63	0.47	0.39	0.61	0.31	0.30	0.40	15	9	97	6	17	25
Kordofan	1 146	863	1 049	488	1 076	1 082	0.15	0.19	0.18	0.10	0.18	0.23	177	165	189	50	199	246
Darfur	1 660	1 460	1 182	652	904	769	0.22	0.28	0.36	0.31	0.41	0.41	363	374	423	200	370	312
South	8	0	0	0	62	115	1.25	0	0	0	1.58	0.83	10	0	0	3	98	95
Sub-total	**2 930**	**2 437**	**2 570**	**1 285**	**2 243**	**2 256**	**0.20**	**0.25**	**0.30**	**0.22**	**0.33**	**0.35**	**590**	**581**	**784**	**281**	**745**	**792**
Wheat																		
Northern	60	67	77	76	90	103	2.70	2.94	2.40	2.84	2.93	3.46	162	197	185	215	263	354
Central	38	37	82	101	74	145	1.74	4.30	1.88	2.13	1.96	1.95	66	159	154	216	146	284
Eastern	2	2	8	2	3	2	7.50	2.00	1.75	1.48	1.67	1.98	15	4	14	3	5	4
Kordofan															0			
Darfur	3	3	2	1	2	0	1.00	1.00	1.33	1.00	0.5	1.24	4	4	2	1	1	1
South														0	0			
Sub-total	**103**	**109**	**169**	**180**	**169**	**250**	**2.40**	**3.34**	**2.11**	**2.42**	**2.46**	**2.57**	**247**	**364**	**356**	**435**	**415**	**642**
COUNTRY TOTAL	**8 958**	**7 549**	**9 821**	**5 282**	**8 689**	**9 015**							**5 306**	**3 876**	**6 328**	**3 420**	**5 435**	**6 637**

1/ Includes maize, mainly produced in southern Sudan and small amounts of rice.
Computed from un-rounded data.

For southern Sudan, estimates of cereal area and production in for the traditional sector are given in Table 5 which displays by state the calculated households farming, area and production statistics. It is not possible to provide separate area data for each cereal as figures for cultivated area are based on Mission and local estimates (State MOA, SSRRC) of the percentage of households actually farming and estimates of area cultivated in the areas visited or observed by the Mission during aerial transects. Overall, sorghum is estimated to make up 70 percent of the total crop, however in the Greenbelt and in central Unity State, maize is the dominant cereal.

Table 5. Southern Sudan: Traditional Sector Estimated Population, Farmers, Cereal Area and yield in 2006

State	Population 2006	Households	% Farming hhs	Farming hhs	Average ha/hh	Area (ha)	Yield (t/ha)	Production (tonnes)
Upper Nile	710 970	118 495	85	100 721	0.67	67 483	0.9	60 735
Jonglei	1 271 575	211 929	85	180 140	0.62	111 687	0.8	89 349
Unity (Liech)	587 639	97 940	85	83 249	0.58	48 284	0.82	39 593
Warrab	1 606 158	267 693	90	240 924	0.74	178 284	0.85	151 541
North Bahr el Ghazal	1 131 510	188 585	95	179 156	0.58	103 910	0.7	72 737
West Bahr el Ghazal	398 217	66 370	90	59 733	0.76	45 397	0.9	40 857
Lakes	866 824	144 471	90	130 024	0.86	111 820	0.85	95 047
West Equatoria	787 553	131 259	85	111 570	1.13	126 074	1.2	151 289
Central Equatoria (Bahr-el-Jabal)	673 899	112 317	80	89 853	0.79	70 984	1.1	78 082
East Equatoria	673 649	112 275	70	78 592	0.57	44 798	0.65	29 118
TOTAL	**8 707 995**	**1 451 334**		**1 253 962**		**908 721**		**808 350**
Returnees2004-2006	1 000 000							
Less South-South Returnees	750 000	125 000	75	93 750	0.5	46 875	0.64	30 000
GRAND TOTAL	**9 457 995**	**1 576 334**		**1 347 712**		**955 596**		**838 350**

Note: Computed from unrounded data.

A comparison of area and production of 2005 and 2006 in the traditional sector is given in Table 6. Caution is warranted in the interpretation of the comparisons of the two estimates as there were some adjustments in the returnee figures. In addition, populations figures and the composition of counties in a State are still in a flux and will only be settled once the planned comprehensive population census is carried out in 2007.

Table 6. Southern Sudan: Cereal Area and Production in Traditional Sector by State (2005 and 2006)

State	Area 2005 ha	Production 2005 tonnes	Area 2006 ha	Production 2006 tonnes
Upper Nile	55 897	48 136	67 483	60 735
Jonglei	108 374	81 259	111 687	89 349
Unity (Liech)	42 047	37 424	48 284	39 593
Warrab	171 879	162 425	178 284	151 541
North Bahr el Ghazal	95 514	56 896	103 910	72 737
West Bahr el Ghazal	41 591	38 977	45 397	40 857
Lakes	105 080	96 710	111 820	95 047
West Equatoria	119 684	154 884	126 074	151 289
Central Equatoria (Bahr el Jebel)	74 317	76 138	70 984	78 082
East Equatoria	34 541	24 861	44 798	29 118
Returnees	39 460	27 622	46 875	30 000
TOTAL	**888 383**	**805 331**	**955 596**	**838 350**

Note: Computed from unrounded data.

Cereal production in 2006 from the traditional sector in southern Sudan is, therefore, estimated at about 838 350 tonnes from 955 596 hectares. This reflects mainly a larger area cultivated, a result of increased population, both due to natural growth and returnees, and more people farming as a result of the overall improvement in security conditions. At this level, production is about 4 percent higher than the previous year's Mission estimates. The estimated production is also contingent on the rains continuing over the few weeks after the Mission's departure to support the growth and ripening of the long-maturing sorghum in

several States. It is also necessary to reiterate that this total includes all cereals harvested during the season, including those already consumed.

Regarding the mechanized sector, an average performance is anticipated in all areas.[3] Results are, however, contingent on a migratory pest free remainder of the season. Consequently, at this stage the Mission estimates a mixed cereal harvest of 122 000 tonnes from 216 000 ha of which about 90 percent is sorghum and 10 percent is bulrush millet. A production time series is given in Table 7.

Table 7. Southern Sudan: Cereal Production in the Mechanised Sector, 2002-2006

Region	2002		2003		2004		2005		2006	
	000ha	000t	000ha	000t	000ha	000	000ha	000t	000ha	000t
Renk rainfed	125	101	122	96	108	94	163	128	149	80
Renk irrigated	11	22	10	18	11	22	1	1	-	-
Wadakona	60	54	na	na	60	54	80	68	62	40
Melut rainfed	8	8	3	na	8	8	none	none	2	1
Malakal	4	4	3	2	4	4	2	1	3	1
Total	**208**	**189**	**138**	**116**	**191**	**184**	**246**	**198**	**216**	**122**

The current importance of Darfur has prompted the inclusion of production time series data showing area planted, area harvested, yield and production. These are shown in Table 8 below.

Table 8. Sudan: Coarse Grains Production in Darfur 1999-2003 (Average), 2004, 2005, 2006 (Area in 000 feddans and Production in 000 tonnes)

	Sorghum				Millet			
	Planted Area	Harvested Area	Yield kg/fedan*	Production	Planted Area	Harvested Area	Yield kg/feddan	Production
North Darfur								
1999-2003	99	52	130	7	2 081	1 218	61	74
2004	53	21	100	2	1 440	517	63	33
2005	147	65	178	12	1 530	673	112	69
2006	110	55	125	7	1 300	520	65	34
South Darfur								
1999-2003	1 043	686	261	179	2 379	1 536	128	196
2004	730	423	180	76	1 537	922	150	138
2005	937	620	270	76	2 000	1 300	190	247
2006	800	600	315	189	1 600	1 150	200	230
West Darfur								
1999-2003	529	445	291	129	647	430	236	102
2004	172	109	220	24	229	172	170	29
2005	200	127	350	44	260	180	300	54
2006	200	140	360	50	240	160	300	47

* One feddan is equivalent 0.42 ha.
Source: Federal Ministry of Agriculture.

3.2 Other crops

The area planted to sesame in 2006 was down on the previous year in reaction to the low prices obtained for the 2005 crop. The country still has large stocks from last year, and the price remains low. Although this year's crop is generally satisfactory, the combination of low price, relatively high cost of production and potentially high levels of harvest loss, means that farmers in the lower yield range may not fully recover their costs. The area under faba beans is also expected to be significantly reduced this year for a number of reasons. Seleim Basin is normally a large producer but this year the late floods prevented many farmers from planting at the optimum time of mid-November, and often persuaded them to plant wheat instead, the optimum planting time for which is slightly later. The parasitic weed broomrape (*Orobanche sp.*) is becoming increasingly troublesome in other bean-producing parts of Northern State such as Merowe Province, and the cost of faba bean seed has increased over the last 12 months.

The area under groundnuts has increased slightly this year and yields have been good. Prices, however, have fallen significantly in some producing areas. The area under cotton is similar to that of last year, and the

[3] The mechanized sector in southern Sudan is concentrated in Upper Nile (Renk, Melut and Malakal).

harvest, which began in November, looks generally satisfactory. Attempts have been made on some schemes to encourage farmers who do not wish to grow cotton, because of unsatisfactory returns, to grow sunflower instead. This has had a measure of success where production is supported by a commercial company, such as in Blue Nile. There, farmers are contracted by Safola Company, which pays for fuel, seed, weeding and harvesting, and undertakes to purchase all production. Gum arabic remains under-exploited as a consequence of poor marketing strategies and the low prices offered by the Gum Arabic Corporation. From a high of SD 26 000 per kantar in December 2005, prices in Gedaref had fallen to SD 18 000 per kantar by April 2006. Significant stocks from last year can still be found in merchants' warehouses.

3.3 Livestock

Livestock condition is good, and numbers are said to be increasing in most areas that are unaffected by security issues. Following the favourable and prolonged rains over much of the country, the condition and extent of pasture and rangeland are generally well above average. Satellite imagery shows mostly very good vegetation across the country, especially later in the season with the, often prolonged, continuation of the rains. The only areas with vegetation cover that was significantly below average were parts of North Darfur, where the delay to the season did not allow full recovery of the vegetation after the dry season, parts of northern Sennar, possibly because of flooding, and some areas in Gedaref State, particularly the south.

There are fears in some areas in the east of the country that the late rains and good pasture at the end of this year may jeopardise future pasture productivity. The late rains caused the germination of grass and other pasture seed that would otherwise have remained dormant until next year. The grazing of these new shoots before they are able to set seed themselves will lead to a depletion of the amount of viable seed in the soil for next year.

Several states have established rangeland regeneration programmes. For instance, Nile SMAARI reports reseeding 170 000 feddans this year with leguminous species from Kassala, and Red Sea State has set up several stock-proof enclosures for the production of seed of indigenous rangeland species. Fodder availability during the coming months will be further enhanced by the expansion in the area under crops, the foliage and stubble of which will later be grazed by livestock. The late continuation of the rains has also ensured the replenishment of *hafirs* to a level well above the average for the end of November.

Extensive livestock vaccination programmes have been carried out, and several states have their own mobile veterinary clinics. The common livestock diseases of haemorrhagic scepticemia, blackleg, anhrax, sheep pox and rabies have all been kept effectively under control. Even in West Darfur, where the only veterinary services available are in Zalinge town, the number of vaccinated cattle rose from 123 000 head in 2005 to 150 000 in 2006. The movement of livestock in Darfur is severely hampered by insecurity. This has led to congestion and frequent entry of cattle onto cropped land. Insecurity has also prevented plans to establish 4 600 km of fire lines in West Darfur.

4. FOOD SUPPLY SITUATION

4.1 Current market situation

4.1.1 General

As part of the CFSAM several markets in all States were visited. The main objective was to compare the current season prices and supply of major crops and livestock with those of previous season. In general, markets were supplied with food commodities, including local agricultural crops. In 2005, average grain prices, particularly for sorghum rose to record levels in response to the poor harvest of 2004. Price levels began to ease from September 2005 onwards but remained at above average levels for the first half of 2006 despite the good harvest. This could be attributed to the following reasons:

- Very low stock levels at the beginning of the current marketing year in November 2005 in all markets due to the poor harvest of the previous season.

- Relatively higher costs of production, mainly the scarcity of agricultural labour and sharp increases in wage rates. The rise in wage rates follows the decrease in the pool of labourers due to the relative peace in southern Sudan that prompted the return of thousands of people from northern Sudan; the increased demand for labour in the construction and service sectors fuelled by the country's oil sector boom; and the indirect impact of rising inflation, particularly food inflation.

- Announcement of the Government that it would buy 500 000 tonnes of sorghum through the Strategic Reserve Corporation (SRC) from farmers. However, the SRC was unable, so far, to realize the local procurement due to the prevailing above average prices and lack of financing. It seems also unlikely that the planned purchase will actually be implemented.

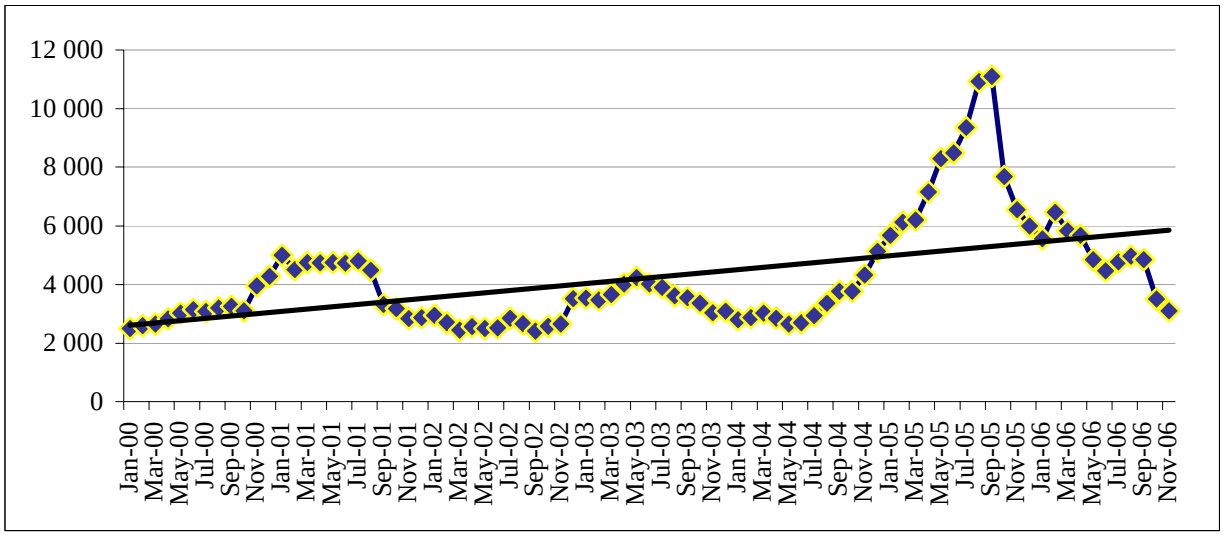
- Large quantities of sorghum bought by commercial banks during the month of February 2006 in Gedaref market.

- Expectations that WFP and other food aid organizations will buy large quantities of cereals from local markets.

- This has led to farmers and/or traders keeping higher stocks than usual (hoping that prices will go up).

Prices began to fall significantly in the latter half of 2006, contrary to the norm where prices begin to increase with the start of the lean season. Figures 1 indicates the trends in the average monthly prices of sorghum in Gedaref (a major cereals market in the country). A further fall in current price levels is potentially a cause for concern. The Mission recommends that timely local purchases by the Sudan Strategic Reserve Corporation (SRC) and for food aid programmes in order to meet food aid requirement so as to support markets and ensure locally-acceptable varieties of cereals.

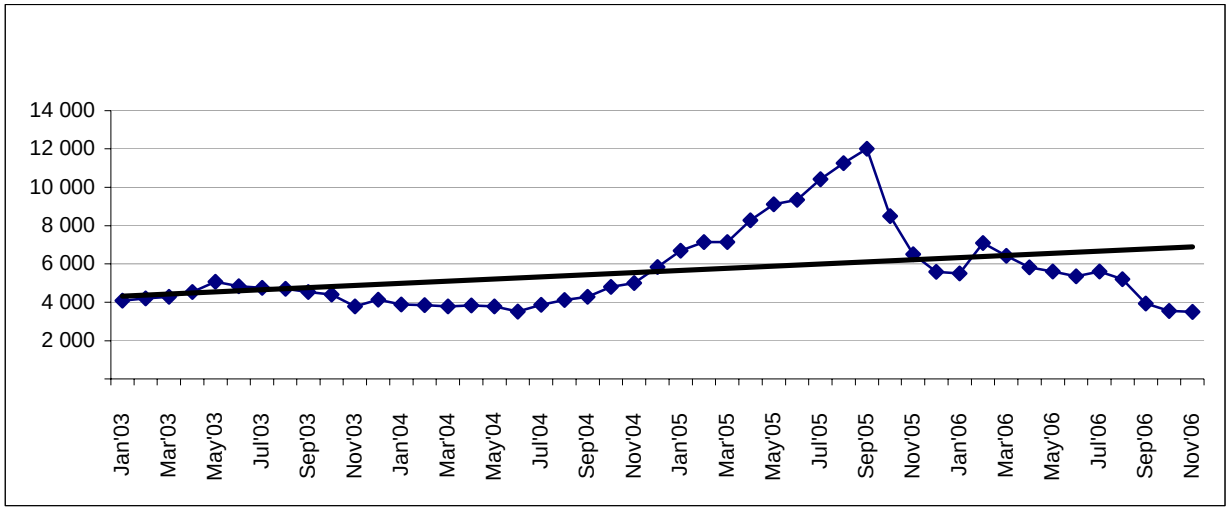
Figure 1. Sudan: Average monthly prices of sorghum in Gedaref (SD/bag) 2000-2006



Source: Sudan Strategic Reserve Corporation, WFP

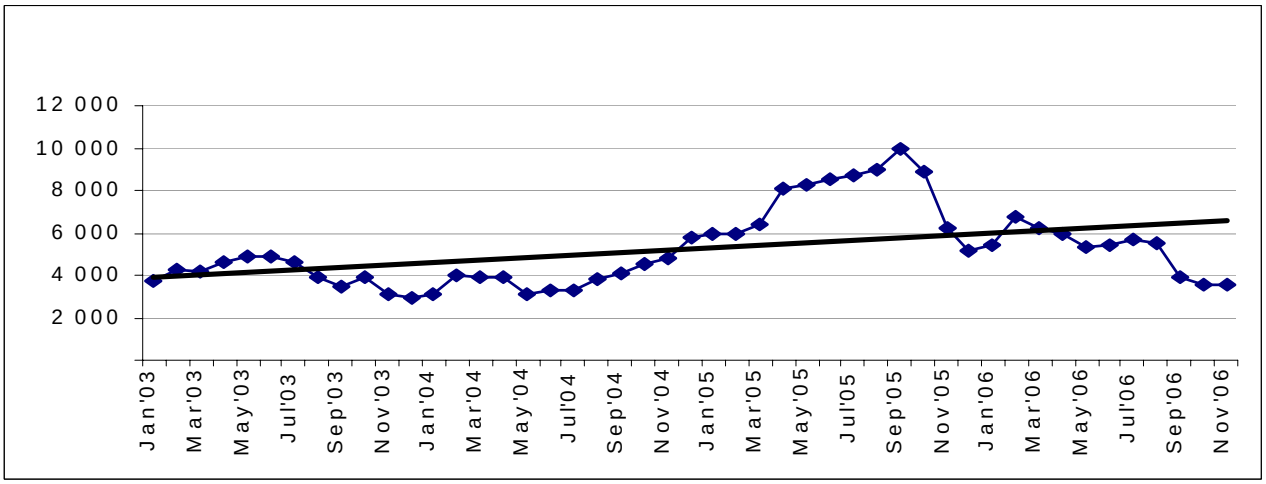
Figures 2 and 3 indicate the trends in the average monthly prices of sorghum in El-Obeid (North Kordofan) and Kassala markets with a similar price trend as for Gedaref market.

Figure 2. Sudan: Average monthly prices of sorghum in El Obeid (SD/bag) 2003-2006



Source: Sudan Strategic Reserve Corporation, WFP

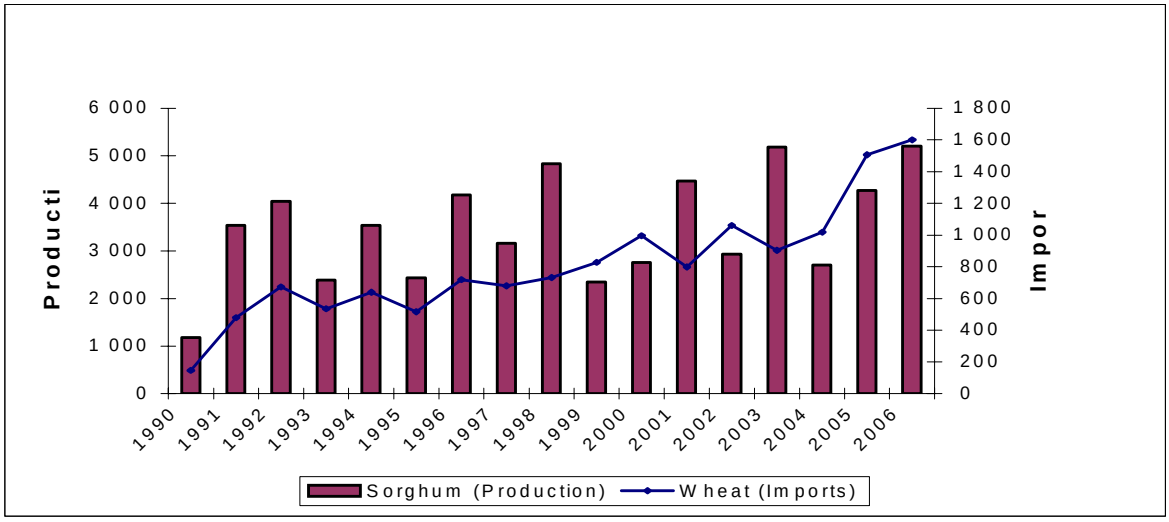
Figure 3. Sudan: Average monthly prices of sorghum in Kassala (SD/bag) 2003-2006



Source: Sudan Strategic Reserve Corporation, WFP

Markets for imported foodstuffs have risen strongly in recent years and continued in 2006. The rise is also a reflection of changing consumer taste fostered by urbanisation and income increase in some segments of society. As levels of affluence slowly rise and as the relative price of domestically-produced sorghum increases with respect to imported wheat, demand for wheat-based products (rather than those made from Sudan's staple cereal, sorghum) has picked up. Imports of wheat have risen nearly seven-fold from 1990 to 2006 (Figure 4). Note the continued upward trend in wheat imports even in the years following bumper sorghum harvest.

Figure 4: Sudan - Imports of wheat and production of sorghum, 1990-2006 ('000 tonnes)



Source: Sudan Customs Police, Department of Statistics and Federal Ministry of Agriculture

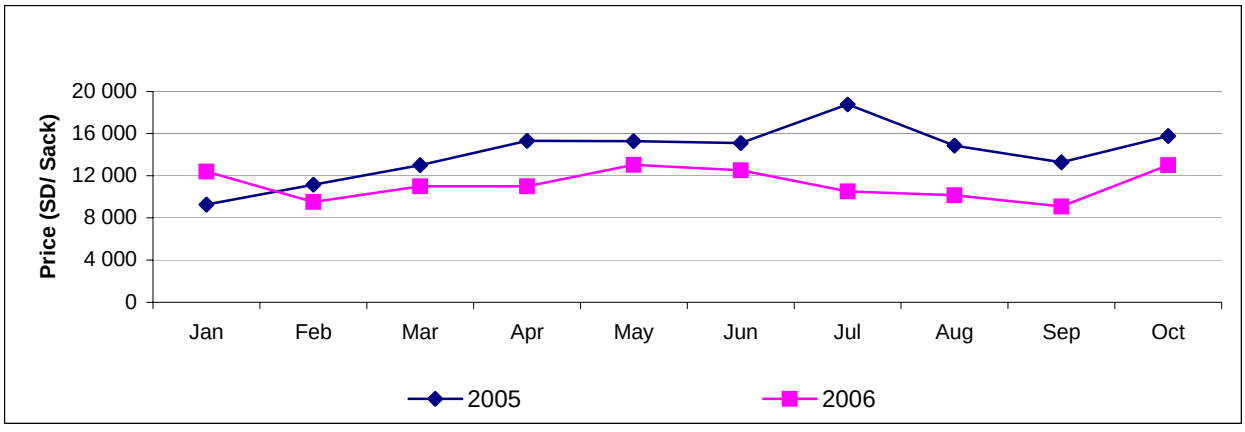
Another relatively minor but growing cereal import is rice, which increased from a mere 5 600 tonnes in 1990 to nearly 60 000 tonnes in 2006.

Overall, the increase in import expenditure reflects the ongoing rapid growth in the size of the Sudanese economy, which has continued to lift demand for foreign inputs. The surge in export revenue has also led to a rapid improvement in liquidity. This in turn has allowed the central bank to ease restrictions on import spending and permitted the commercial banks to extend more foreign currency finance for external trade purposes.

4.1.2 Market situation in southern Sudan

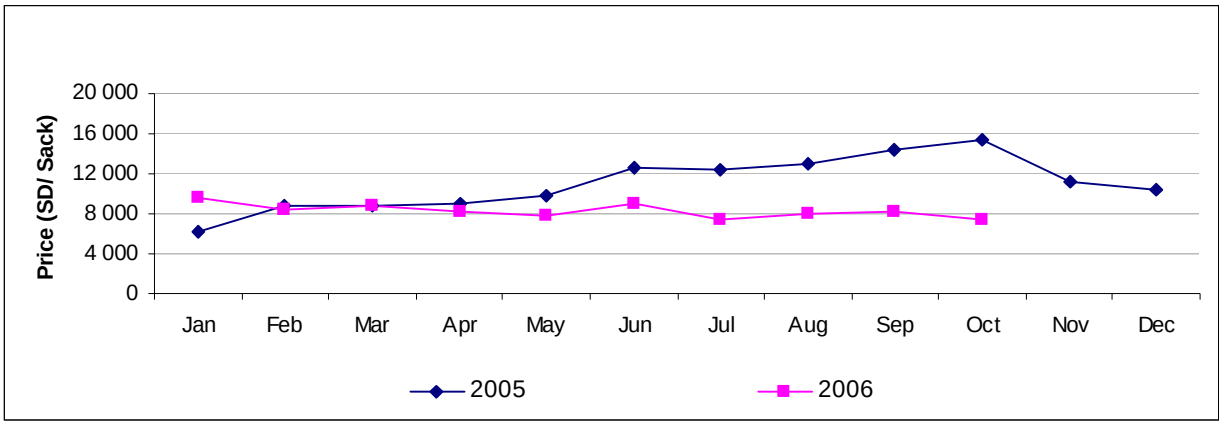
In southern Sudan, the Mission found that, in general, markets were well supplied with essential food products, in particular the main staple sorghum. Average sorghum prices were generally lower in 2006 compared to 2005. However, the level of prices varied considerably from location to location depending mainly on transport accessibility and population influx.

Figure 5. Southern Sudan: Monthly Average Prices of Sorghum in Juba in 2005 and 2006



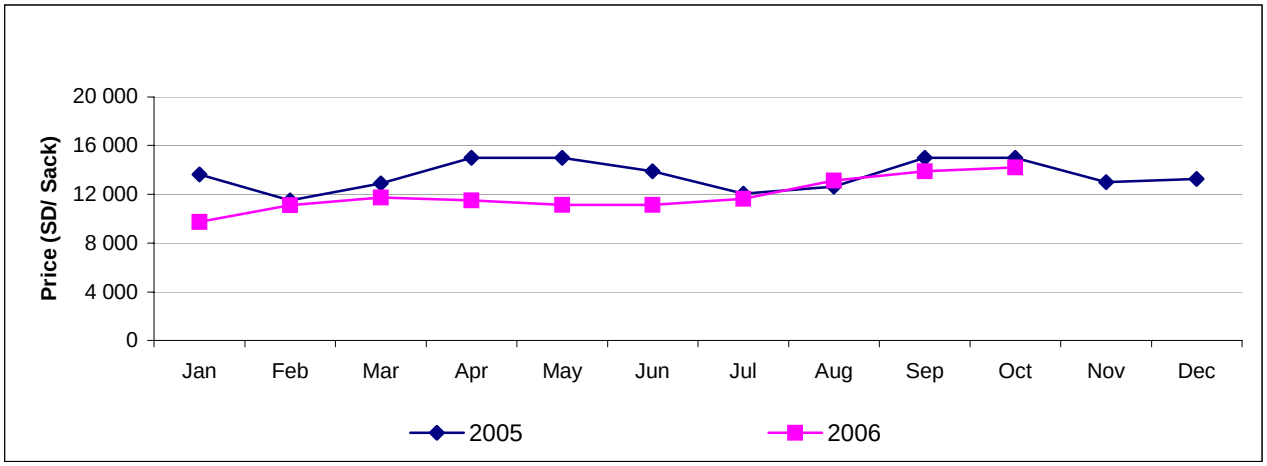
Source: WFP-VAM

Figure 6. Southern Sudan: Monthly Average Prices of Sorghum in Malakal in 2005 and 2006



Source: WFP-VAM

Figure 7. Southern Sudan: Monthly Average Prices of Sorghum in Jur River in 2005 and 2006



Source: WFP-VAM

For instance, as shown in Figure 5 to 7, prices for sorghum (the main staple) were generally lower in 2006 compared to 2005 in Juba (Central Equatoria), Malakal (Upper Nile) and Jur River (Western Bahr-el-Ghazal) Markets. However, the decline was rather limited and mixed in Jur River as compared to Juba and Malakal reflecting supply constraints due to inaccessibility, particularly during the rainy period which usually lasts for more than 6 months. Prices for sorghum in October 2006 ranged from SD 8 000/90kg in Malakal, SD 13 000/90kg in Juba to SD 14 000/90 kg in Jur River. In rural areas, where the short-cycle sorghum has already been harvested, and in nearby urban areas with access to this production, the previously tight food supply situation has eased with the arrival of the new crop. Food aid distributions to IDPs and soldiers rations, including subsidized cereal sales by the Strategic Reserve Authority, are also contributing to market supplies in these towns. However, this improvement remains limited because access to far-away large agricultural areas and large-scale trade, continue to be constrained by mines and poor conditions of roads.

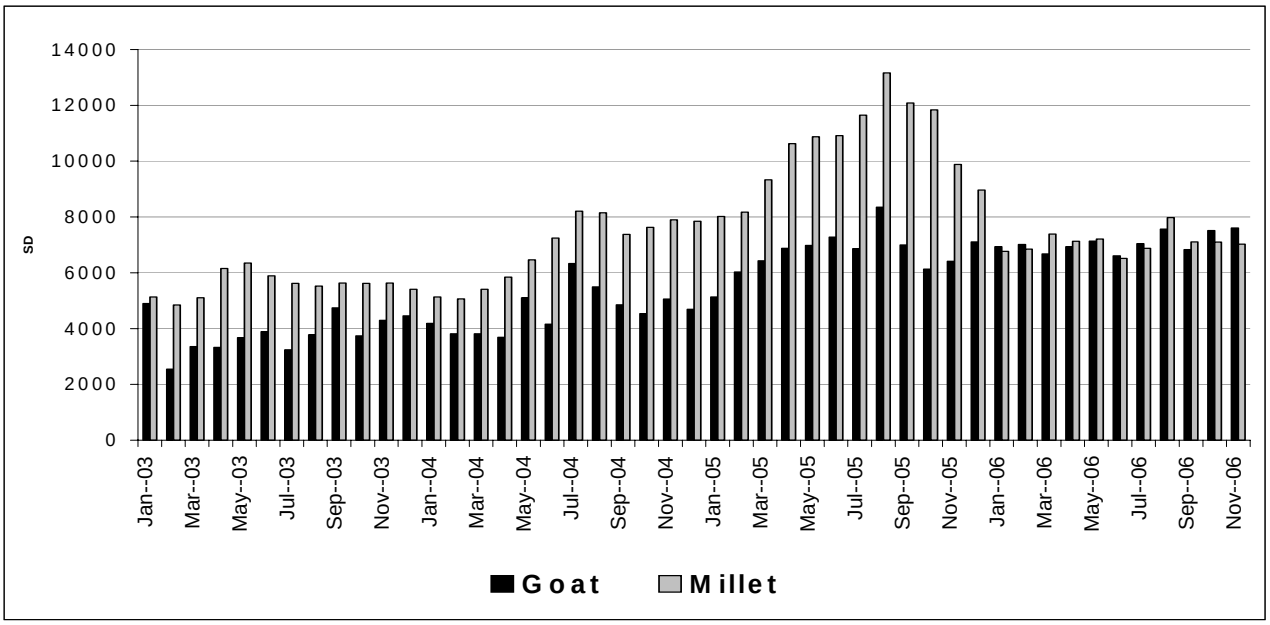
In several locations, the Mission noted that the commencement of salary payments to a large number of GOSS employees in 2006, including soldiers, has increased the demand for food and other commodities. This in turn increased prices in several markets, particularly in major towns. In addition, the continued arrival of returnees, now estimated at over one million people during 2004 to 2006, has contributed to the firmness of food prices in many areas despite a relatively good harvest in 2005 and an expected good crop in 2006. Overall, the food availability is anticipated to improve in 2007 due to better production as a result of the better security conditions that allowed more cultivation around towns by former IDPs and returnees. Exchange between towns and surrounding agricultural areas has become relatively smoother.

4.1.3 Markets in Darfur

In 2006, prices of locally produced cereals in Darfur tend to accord with the season's expectations of good production, with declining prices, as well as matching with other regional markets outside Darfur, such as El Obeid. Livestock prices, on the other hand, are generally stable indicating the adequate availability of

water and pasture. Figure 8 indicates the average monthly millet and goat prices in thee markets in Darfur which reflects an improved terms of trade pastoralists face in accessing the main staple crop in Darfur. A bag millet costing about two goats in the summer of 2005 is exchanged for one goat in 2006. The change is not so much due to increases in goat prices, which remained rather stable since last year, but due to the decline in millet prices.

Figure 8. Sudan: Average monthly millet prices (SD/100kg) Vs goat prices (SD) in the three main Darfur markets (2003-206



Source: WFP

The Mission observed that, large amounts of food aid commodities being traded in main markets in all three States of Darfur. A formalised food aid commodity market seems to have developed, particularly in El Fasher, Kass, Zalinge and Nyala. The share of the food aid commodities observed in the market in El Fasher was particularly significant followed by Nyala market. In the town of El Fasher, food aid wheat, sorghum, and vegetable oil were sold in large quantities. Food aid commodities were also sold well below the import parity price. For example, red sorghum is sold at SD1 400 per 100 kg bag, which translates to USD69.83 per tonne compared to the FOB price of US$120 per tonne. Table 9 below indicates some comparisons

Table 9. Sudan: Food Aid- Commodity Prices in El Fasher in November 2006

Commodities	Price (SD)	unit (kg)	USD/ tonnes	FOB price	% change
Wheat	1 600	100	79.80	160	-100.50
Red sorghum	1 400	100	69.83	120	- 71.86
Vegetable oil	150	4	187.03	900	-381.20
CSB	500	25	99.75	300	-200.75

Food aid beneficiaries appear to have gradually shifted their food taste by mixing three units of sorghum with one unit of millet (millet being the most preferred cereal). This is more evident among IDPs and resident population whereas the better off households mix lesser amounts of sorghum with a larger quantity of millet. Evidently, as IDPs and resident communities' requirements for non-food facilities are largely unmet including health, education, shelter, etc., they sell part of their food rations. As reported by EFSNA, and noted by the Mission, food aid beneficiaries sell some of the food to meet social and economic obligations of households including food milling. This is a normal phenomenon observed in most food aid recipient communities and might indicate that non-food demands are so exigent that families are making difficult choices. Certainly families are also seeking to acquire preferred grains (i.e. millet) rather than consume least preferred ones that are provided in the ration. Problems of targeting and excess supplies may be other factors that contribute to the substantial amounts of food aid commodities observed in Darfur markets. Further

investigation is warranted to ascertain the functioning of markets in Darfur with special attention to food aid flows and use.

In view of the continued need for a large volume of emergency food assistance, the Mission is confronted with the dilemma of the observed large quantities of food aid commodities traded within Darfur States. First, is the role of food aid expanding beyond saving lives to meeting other social service needs such as education, shelter, water, milling, medicine and other obligations imposed on the population due to the conflict? If so, is it acknowledged that food aid is a better way of delivering welfare assistance, or is it a reflection of a serious problem of service provision in the non-food sector? Secondly, is an excess of food aid commodities being channelled to the region due to inadequate data about the population including information on production, population, income and degree of vulnerability. Third, is the excess due to difficulties in targeting and monitoring due to the security constraints imposed upon humanitarian workers.

The Mission notes that there are multiple factors at play in defining the beneficiary population including multiple ration cards being distributed, cheating by families and community leaders, simple inclusion and accounting errors in estimating family size, etc. This is particularly a problem in communities and displaced population residing in and around major urban centres (El Fasher, Nyala, and Geneina). The Mission notes efforts made by WFP Offices. For example, the beneficiaries in As Salama camp reduced from 8 600 to 3 500 in a single registration exercise. In Kalma camp, the new registration came up with 90 000 beneficiaries from 160 000 IDP. It is the view of the Mission that continuous appraisal of delivery methods in consultation with partners, communities and the government, rolling assessments, and enhanced capacity for better targeting are all needed.

In sum, the Mission observed quantity of food aid commodities in the markets is cause for concern --- underlying reasons include unmatched preference taste, and possibly excess distribution of food aid. The Mission recommends that a market study be carried out to determine the extent of commodity flows, presence of markets as well as impact of food aid on agricultural production and trade. Moreover, alternatives should be identified to the inclusion of milling cost within food aid rations as this contributes to the leakage of food aid to markets. For example, cash vouchers could be used as instrument of financing in order to prevent any distortion of local markets.

4.2 Cereal supply/demand balance 2006/07

4.2.1 Southern Sudan

The better performance of cereals this year is reflected in a domestic availability from the traditional sector of 838 350 tonnes. Consumption needs for the 2007 mid-year projected population of 9.85 million people (which includes the 2004 to 2006 returnees) at an average per capita consumption levels of mixed cereals of 85 kg/annum are estimated at 839 181 tonnes. The per capita consumption figure is based on WFP's former Technical Support Unit (1998) estimates that suggested the annual cereal use of the population ranges from 60 kg to 120 kg per caput per annum given to the other available food sources like animal products, cassava, groundnut and wild foods. The average of the above figure has been used, with some adjustment at times, by earlier CFSAM missions to reflect changes in consumption patterns due to disruptions caused by the prolonged civil conflict (such as decline in livestock activities due to cattle raiding or inability to cultivate due to insecurity). In the absence of other consumption estimates, such estimates have been used again this year for determining domestic requirements. The Mission adjusted consumption of cereals presumes that other aspects to the annual food economy will be contributing as normal in all communities.

Table 10 shows a theoretical cereal deficit in the traditional sector for a settled population in the urban and rural areas projected to mid-2007, of about 85 000 tonnes. However, the actual deficit could be higher as the aggregation of the balance in seven cereal deficit states (-90 871 tonnes) and among the returnee population (-59 956 tonnes) may not fully be matched by the surpluses in the other three states (+66 159 tonnes) due mainly to lack of transport.

Table 10. Southern Sudan: Projected Population and Domestic Cereal Surplus/Deficit by State in 2007 (traditional sector)

State	Population mid-2007	Cereal Production 2006 (tonnes)	Net Cereal Production (tonnes)	Cereal Use Kg/capita	Consumption Needs t/year mid-2007	Surplus/ Deficit (tonnes)
Upper Nile	720 924	60 735	54 662	60	43 255	+11 407
Jonglei	1 289 377	89 349	80 414	70	90 256	-9 842
Unity (Liech)	595 866	39 593	35 634	60	35 752	-118
Warrab	1 628 644	151 541	136 387	90	146 578	-10 191
North Bahr el Ghazal	1 147 351	72 737	65 463	80	91 788	-26 325
West Bahr el Ghazal	403 792	40 857	36 771	110	44 417	-7 646
Lakes	878 959	95 047	85 542	90	79 106	+ 6 436
West Equatoria	798 579	151 289	136 160	110	87 844	+ 48 316
Central Equatoria (Bahr el Jebel)	683 334	78 082	70 274	110	75 167	- 4 893
East Equatoria	683 080	29 118	26 206	85	58 062	- 31 856
TOTAL	**8 829 906**	**808 350**	**727 513**	**85**	**752 225**	**-24 712**
Returnees 2004-2006	1 014 000					
Less South-South Returnees	760 500	30 000	27 000	85	64 643	- 37 643
Returnees 2007	350 000	0				
Less South-South Returnees	262 500	0	0	85	22 313	- 22 313
GRAND TOTAL	**9 852 906**	**838 350**	**754 513**	**85**	**839 181**	**- 84 668**

Note: Computed from unrounded data.

Despite the improved security and the increased movement of people and goods from north to south and within the south, the poor conditions of roads would still restrict movement of grains from surplus to deficit areas. Although extensive rehabilitation work is in progress and roads are being repaired and de-mined, still few roads have been opened to truck traffic and currently most of the transport is done by bicycles or by walking. Thus, for areas which will have significant deficit of grain such as North Bahr-el-Ghazal, East Equatoria, Warrab, and Jonglei, transport of surplus production from West Equatoria and Upper Nile states will be very limited. Although cereals from the mechanised sector could in theory easily make up the deficit identified, traditionally the bulk of the surplus is normally traded northwards, through Kosti, due to better roads and lower transport costs. Therefore, food aid assistance will continue to be necessary for vulnerable population in grain deficit areas.

4.2.2 Darfur cereal supply/demand balance

The projected local cereal balance for Darfur in 2006/07 (November/October) is given in Table 11. It is based on an estimated the population in Greater Darfur in mid-2007 of about 5.775 million.[4] Further assumptions include:

- Cereal, human consumption/cap./year of 146 kg (national average).
- Post Harvest losses of 10 percent.
- Livestock feed at 5 percent.
- Seed use of 2 percent.

Table 11. Darfur: Projected Population and Domestic Cereal Surplus/Deficit by State in 2007

	Population mid-2007 (000)	Cereal Production 2006 (000 tonnes)	Net Cereal availability (000 tonnes)	Per Capita Food Use of Cereals Kg/person/year	Consumption Needs in mid-2007 Tonnes/year	Surplus/ Deficit (000tonnes)
Scenario 1: Early cereal production forecast	5 775	557	462	146	843	- 381
Scenario 2: Lower production (less 15%)	5 775	418	347	146	843	- 496

Source: Emergency Food Security and Nutrition Assessment (EFSNA) 2006

[4] The extrapolated population figure for Greater Darfur in mid-2007, based on the CBS data, is 7.089 million. However, following provisions for the displaced within and outside Sudan, the Interagency Emergency Food Security and Nutrition Assessment (EFSNA) estimated the total population in Greater Darfur in mid-2007 at about 5.775 million.

Table 11 indicates that, given an estimated cereal output of about 557 000 (with a net availability of 462 000, after deducting for losses, feed and seed), a local cereal deficit of about 381 000 tonnes is projected. This deficit excludes any trade to and out of Darfur. However in the second scenario, with a 15 percent reduction in production due to crop losses resulting from insecurity and/or pests, the deficit amounts to about 496 000 tonnes is projected. The deficit figures in both scenarios, exclude the stock levels (both commercial and food aid) and commercial trade flow into and out of Greater Darfur).[5] The Mission's observation generally concurs with EFSNA's Scenario 1, although in some areas better crop performances were recorded.

4.2.3 National cereal supply/demand situation

Sudan's projected cereal supply/demand balance for the 2006/07 (November/October) marketing year is summarised in Table 12. It is based on cereal production estimates of 6.637 million tonnes, including a forecast of wheat production for harvest in April/May 2007. Further assumptions include:

- Opening stocks of cereals for marketing year 2006/07 are estimated at 600 000 tonnes, - consisting of relatively significant quantities held by Strategic Reserve Corporation of about 300 000 tonnes in main silos.

- Mid-year 2007 population is estimated at about 41 million, comprising 31.2 million people in northern Sudan and 9.852 million in northern Sudan (see Tables 1 and 2).

- Regional differences in diets, food production and availability, historical trends, and conditions created by ongoing civil conflicts were taken into consideration in computing total cereal requirements for the country as follows:

    - For the northern states, average per caput cereal consumption in 2006/07 is assumed to be 146 kg/annum, as for the previous year. This consists of 83 kg of sorghum, 15 kg of millet, 45 kg of wheat, 2 kg of rice and 1 kg of maize.
    - For southern Sudan an average per caput cereal consumption of cereals of 85 kg/annum is used (see section 4.2.1 above).

- Livestock feed utilisation will be greater than in previous years following 2006's good harvest and an increase in livestock numbers. For lack of any survey data, this is taken to be about 10 percent of coarse grains, based on discussions with farmers.

- Seed requirements for the next season are based on 2006's cropped areas and the following seed rates: sorghum, 7.5 kg/ha; millet, 4 kg/ha; wheat, 100 kg/ha; maize, 17 kg/ha; and rice, 75 kg/ha. These rates are based on MoA recommendations and farmers' stated practice, and are within the range of rates used in similar environments elsewhere.

- Post-harvest losses are assumed to be 5 percent for rice and 10 percent for all other cereals. No thorough study is known to have been carried out in Sudan on post-harvest crop losses for maize, sorghum, millet or wheat. However, in the light of studies carried out elsewhere (FAO 1977: Analysis of an FAO Survey of Post-harvest Crop Losses in Developing Countries (AGPP:MISC/27)), 10 percent is considered to be a reasonable estimate. The range of figures for rice post-harvest losses in the same publication is very wide- from 1 to 40 percent-and covers a variety of different situations. On-farm handling and storage losses in studies elsewhere (quoted in the same publication) generally fall in the range of 1 to 10 percent. In the absence of better data, 5 percent seems to be a not-unreasonable estimate.

- Total cereal exports are assumed to amount to 350 000 tonnes of cereals. Exports in 2007 may rise due to the expected opening up of borders between Sudan and Eritrea based on a recent warming-up of relations.

- Commercial imports of cereals in 2006/07 are projected at about 1.2 million tonnes, mainly wheat.

[5] In South Darfur, survey results from the Interagency food security and livelihood working group led by FAO and WFP may shed some light on final cereal production estimates.

Table 12. Sudan: Cereal balance sheet for 2006/07 (000 tonnes)

	Total cereals	Rice	Sorghum	Millet	Wheat	Maize
Availability	**7 237**	**35**	**5 548**	**792**	**742**	**120**
Opening stocks	600	0	500	0	100	0
Production	6 637	35	5 048	792	642	120
Utilisation	**8 467**	**65**	**5 548**	**792**	**1 942**	**120**
Food	5 387	62	3 060	536	1 649	80
Feed	595	0	500	70	0	25
Seed	106	0.5	64	13	26	2
Post-harvest losses	662	2	505	79	64	12
Export	350	0	300	50	0	0
Closing stocks	1 367	0	1 120	44	203	0
Commercial import	1 230	30	0	0	1 200	0

Note: Computed from unrounded data.

From the above, it follows that, at the national level, Sudan is able to cover all of its cereal requirements through the above-average cereal production coupled with the country's enhanced ability to import commercially any domestic shortfalls, and available food aid in stock. However, at the household level, more than two decades of war and isolation in southern Sudan and current conflict in Darfur have left millions in a precarious food situation and abysmal living conditions compromising their ability to access available food. Following the CPA, hundreds of thousands have started returning to southern and transitional areas with more expected to return in the coming months.

A cautious approach is thus warranted in relief and rehabilitation interventions. It is also highly desirable that grain be purchased locally to meet food aid requirements. This would help to support the development of more integrated local cereal markets and would provide commodities consistent with local consumption habits.

4.2.4 Retrospective look at cereal supply/demand forecast in the previous year

In CFSAM balances, estimated cereal availability is compared with cereal requirement in order to determine the likely level of deficit or surplus during the coming marketing year for the country in question. The balances are, simply put, a combination of forecasts and estimates of parameters which, for the most part, are i) not easily measured; ii) have rarely, if ever, been studied in their own right to establish the existing range of absolute values in the country; iii) where they have been studied, vary according to source; iii) may fluctuate during the year: and iv) may vary markedly from year-to-year, according to the prevailing conditions. This level of uncertainty lies at the heart of why CFSAMs were considered in the first place, why they are still required and why they are frequently requested. The foregoing notwithstanding, it behoves Missions to strive to obtain the closest possible fit between their estimates and the true values of crop performance, availability and use for the year under study.

The previous year's (2005/06) post-harvest CFSAM was conducted in late February to early March 2006. The production figure forecast by the Mission, based on figures from State Ministry's of Agriculture, was 5.49 million tonnes (final figure from the Federal Ministry of Agriculture indicate 5.43 million tonnes). Based on this production figure and assuming provisions for feed, seed and losses, an export amount of 50 000 tonnes of sorghum and a closing stock level of 310 000 tonnes (mainly wheat) were forecast. In the current Mission higher levels of opening stocks (nearly double the amount predicted in the previous year) are estimated. Higher levels of wheat were imported and the SRC retained the bulk of the sorghum obtained in the Government's storage facilities.

Specific studies that are needed to improve the level of accuracy of the balance sheets include:

- Strengthening the agricultural statistics of the Ministry of Agriculture for accurate estimates of area and production estimates (especially for rainfed agriculture).
- A periodic consumption and expenditure surveys to determine the trend and mix of cereal consumption
- Comprehensive studies on the use of cereals for feed, post harvest storage losses, seed rates, and stock levels, especially at household levels.
- Commercial trade in cereals, especially cross border trade.

The above may serve to indicate some of the work that remains to be done to obtain better understanding of cereal supply/demand in the country. Such work goes beyond adjusting the structure and content of

CFSAMs. It requires a commitment, especially from the Government, that it is only with accurate information of the different variables that meaningful plans may be laid.

4.3 Risk factors that may affect the national grain supply/demand balance in 2007

The production figures above are preliminary and made at the beginning of the harvesting season. Significant changes that have major implications on availability and thus on imports may occur. Main among the likely changes are changes in the estimated production, which impacts on availability of cereals and a large influx of returnees from neighbouring countries which increases consumption needs.

As far as the changes in production are concerned, any further escalation in hostility in Darfur may disrupt remaining harvest, damage stored output and affect marketing. From the above it is clear that there is a need to revisit the balance, preferably with a smaller CFSAM in March/April 2007.

4.4 Emergency agricultural support measures

As in earlier years, an early purchase, treatment, storage and transport of local crop seeds (sorghum, millet, maize and rice) and appropriate hand tools, for distribution to needy farmers, IDPs and returnees, in time for the main planting season, starting from April 2007. Timely provision of appropriate inputs, including hand-tools, selected appropriate crop and vegetable seeds will increase their self-reliance and reduce their dependency on food aid. Sudan's important natural fish resource is recognized to be under-utilized. The provision of fishing equipment, which has been lacking due to the long-lasting civil strife, and improvement offish-processing techniques could make fish proteins much more readily available to the most destitute households.

5. EMERGENCY FOOD SECURITY NEEDS ASSESSMENT[6]

5.1 Background of current situation

Sudan enjoyed two successive years of good production, and 2006 witnesses one of the record level cereal production. This is combined with continued expansion of seasonal income opportunities in many places, favourable cash crop production (sesame, gum Arabic, vegetables, and groundnuts), good livestock conditions, large carryover stocks of cereals from 2005/06, and low grain prices that accord with seasonal trends. Other factors that have to be taken into consideration to interpret the outcomes of 2006 record level production and its food security implications for 2007 are the following:

Two years into the implementation of the CPA, peace and security in South Sudan is holding without serious spoilers although occasional flare-ups and skirmishes are reported that cause localized humanitarian crises. The promise and expectations for large scale return of population has started to pickup in 2006 being evidenced as a measure of confidence of the peace process. According to existing reports, during the second half of 2005, some 135 000 people have returned to the Three Areas whereas 250 000 in the South. In 2006, an estimated 345 000 people have returned to the Three Areas whereas 260 000 in the South. In 2007, UNMIS RRR projects about 256 000 returnees to the Three Areas and 349 000 returnees in the South. These people return to a very weak social and economic infrastructure. The food security conditions for the returnees are compromised by landmines, land right issues and ability of the returning population to establish the skills and means of production within the agricultural sector.

In October 2006 a peace agreement was concluded between National Democratic Alliance (NDA) and the Government of Sudan ending the conflict in Eastern Sudan, Homeish-Koreib. The conflict displaced some 100 000 persons currently assisted in various IDP camps. It is anticipated that the IDPs will be assisted to return to their place of origin and/or choice of settlement.

The conditions in Western Sudan, Darfur, remain precarious despite concerted international efforts to resolving the conflict. Disruptions to lives and livelihoods continue unabated consisting of 1.5 to 2.0 million IDPs and 2.0 million conflicts affected residents[7], whereas, the actual number of people assisted is estimated at 1.3 million IDPs and some 1.7 million residents. The population in the Darfur States is unlikely to seize the full benefits of favourable rainfall and resulting pasture and crop production prospects due to the continued conflict that limits people's ability to increase crop production, and successfully harvest fields that are planted.

[6] See Annex --- for the description of assessment methodologies used in CFSAM.
[7] Darfur Humanitarian Profile No. 25, October 2006

Sudan has shown a steady economic growth propelled by a combination of increased petroleum production (over 600 000 b/d) and high world price for petroleum (see section 2). This, together with the peace agreement in the south, suggests that Sudan increasingly has own capacities to respond to food deficits, especially chronic food insecurity. The scope for national response is explicitly considered in the overall analysis and determination of food assistance requirements in this report. Moreover, special reference is made to Strategic Grain Reserve Commission that is expected to cover seasonal deficits and chronic needs in North Kordofan, Red Sea and Kassala States.

5.2 General health and nutrition status of vulnerable populations

Despite continued international assistance, two consecutive years of good harvests and increased revenues from oil exports boosting the economy, in short, ideal preconditions for ensuring basic human well-being, the health and nutrition status of a significant share of the Sudanese population remains poor and volatile.

A total of twenty-three localized surveys have been conducted by NGOs and UN agencies between December 2005 and November 2006 throughout the country, most of which have indicated malnutrition rates of above 15 percent. The MoH recently carried out a nation-wide Health and Nutrition Survey as well, preliminary findings of which were not available at the time of the CFSAM.

Results from the EFSNA in Darfur show that thanks to the strong humanitarian effort in general the overall nutritional situation has been maintained at a similar level to last year despite variations between the states and between displaced and resident populations. GAM levels rose from 11.9 percent in 2005 to 12.9 percent in 2006 and SAM from 1.4 percent in 2005 to 1.9 percent in 2006. Despite a slight increase, overall improvements achieved in the nutritional status since September 2004 must not be understated and remain substantial[8].

North Darfur tends to have the highest malnutrition rates of the three Darfurs (GAM 16 percent; SAM 2.5) which is due to the areas' very scattered population and low access to health and supplementary feeding centres. In fact, the survey found that availability of selective feeding centres has halved over the past year due to increasing insecurity which has forced several NGOs to suspend their programmes. West Darfur continues to have the lowest acute malnutrition rates, however, compared to last year September, GAM rates were found to have increased substantially from 6.2 percent to 10.3 percent. Significant differences in nutritional status (GAM) between IDPs and residents were not found, except in North Darfur where residents had a higher rate of malnutrition than IDPs[9].

According to the findings of the Darfur EFSNA, food aid alone does not appear to be sufficient to improve peoples' food consumption and protect against malnutrition; instead, there are environmental, social, economic, as well as cultural factors that also need to be addressed in order to ensure an acceptable nutritional status. The general health situation needs particular attention: although morbidity was lower compared to last year, half of all children had suffered from fever in all three states during the two weeks prior to the EFSNA, coughs affected 38 percent of children and 33 percent had suffered from diarrhoea. All three illnesses were closely associated with malnutrition. A recent measles vaccination campaign targeted approximately 67 percent of children aged 9-59 months but the EFSNA concludes that the coverage was too low to ensure protection of the entire community. The ongoing conflict has led to closure of a substantial number of supplementary feeding centres and health clinics and those still operating are often stretched to their limits and are short of medical supplies. Inadequate sanitation, including consumption of unsafe water was also identified as a crucial factor.

In Kassala and Red Sea State, two chronically food insecure states, malnutrition rates have not shown any signs of decreasing. Based on the findings of a recent MoH, UNICEF and OXFAM nutrition survey carried out in RSS in July 2006, GAM prevalence ranged from 19.7 percent in rural Port Sudan to 30.8 percent in Sinkat which indicates emergency levels of acute malnutrition across the state. And although this survey was carried out during the lean period and could be seen as biased, GAM and SAM rates have been continuously shown to be above the 15 percent level in previous years[10] clearly illustrating the long-term, chronic nature of this problem. In Kassala state the latest nutrition data dates back to GOAL's survey from

[8] The Emergency Food Security and Nutrition Assessment conducted in Darfur in 2004 found GAM to be 21.8 percent and SAM 3.9 percent

[9] Although this finding should be treated carefully, there may be a difference between conditions in the camps and those in the open population, particularly with regards to access to safe sources of water and improved waste disposal facilities. As residents were more likely to obtain their water from unsafe sources and to use traditional latrines than IDPs, this may contribute to the trends observed of higher prevalence of malnutrition among child residents compared to IDPs.

[10] SMoH/OXFAM GB, Nutrition Survey, July 2002 and December/January 2004.

November 2005 which focused on pastoral and agricultural areas[11]. The results showed GAM rates of 14.5 percent in pastoral area and 11.8 percent in agricultural area. Although the level falls below the international emergency threshold, the situation was recommended to be monitored closely since additional surveys have shown significant fluctuations around the emergency threshold[12]. With regard to the health status of the region, outbreaks of malaria, dengue, meningitis, cholera and tuberculosis all occurred in 2006 indicating that continued monitoring of the region's health status and epidemic preparedness will be an imperative in 2007.

Lack of health services appears to be a particularly big problem in Blue Nile State where the overall nutritional status fluctuates around the emergency level and in South Kordofan where the SAM among children below two years of age lies at 5.6 percent. In the latter case, inappropriate caring and feeding practices are believed to be the main causal factor, suggesting a need for education of mothers and care givers[13.] Additional factors included poor quality of drinking water and low coverage rate of vitamin A, resulting in high morbidity.

In South Sudan two recent Nutrition Surveys were conducted. Concern Worldwide conducted a survey in August in Aweil North and Aweil East Counties in Northern Bahr el Ghazal State. The rate of Global Acute Malnutrition (GAM) for children under five years was 17.4 percent (<-2 z-score W/H; CI 15.0-20.0 percent) which is above the WHO emergency threshold of 15 percent, and the rate of Severe Acute Malnutrition rate was 2.0 percent (<-3 z-score W/H, CI 1.3-3.2). These rates are slightly lower than the survey undertaken at the same time last year but with no statistically significant difference, and are the same as the results from the survey Concern conducted in March 2006. The gap in health care services was a factor in the high malnutrition rates, and Concern is aiming to address this by taking over some of the health centres that IRC closed due to disagreement with the local authorities. WFP assistance during the hunger gap likely prevented an increase in severe acute malnutrition and excess mortality, although the trends do not show a difference in acute malnutrition as the rates remain high. Households hosting returnees and internally displaced persons showed a higher risk of having malnourished children (22.1 percent GAM for those hosting returnees/IDPs compared to 15.7 percent not hosting), and only 33 percent of the households hosting returnees/IDPs were targeted by WFP food aid (GFD). These rates show the increased food stress on the community hosting returnees/IDPs and that WFP needs to better target these households.

ACF released the preliminary report of the nutrition survey conducted in Bentiu, Rob Kona, and Nhialdiu in Unity State in August 2006. The results for GAM rates using <-2 z-score for Bentiu were 16 percent (CI 13.0-19.9), Rob Kona 18.2 percent (CI 14.9-22.1), and Nhialdiu 13.6 percent (9.4-19.1). These rates are slightly lower than the survey conducted in February 2006 but do not show a significant difference. The WFP supported SFP run by ACF in Bentiu and Rob Kona has not shown significant results because of the high defaulter rate. ACF has determined that the food security situation of SFP patients was not any different than those households that did not have malnourished children, and therefore unclean water, poor sanitation, inadequate caring practices, and health care access played a larger role in the nutritional status of the children than access to food. ACF is planning to change their approach to addressing malnutrition, which should be supported by WFP in light of the failure of retaining children in the SFP. This is in line with WFP's support of an integrated approach to addressing malnutrition in South Sudan and a move towards recovery and development activities instead of focusing on emergency nutrition programmes. WFP should support monitoring the nutrition situation in this location, especially with the numbers of returnees in the area.

As indicated by the surveys above, the rather high rates of malnutrition in different parts of the country are likely caused by a variety of factors, including poor care practices, health, sanitation and food intake. Therefore the exact link between malnutrition and food insecurity is difficult to establish. However, as observed in the early days of the Darfur crisis, improved and regular access to food can dramatically alter the observed malnutrition levels. GAM rates in Greater Darfur dropped from 22% to 11% within one year after the launch of a humanitarian intervention with food as the biggest and most evenly supplied component.

Concerns have been raised that the increasing mobility of the population following the CPA, could accelerate the spread of HIV infections. White Nile is one of the favourite transit points for returnees, where the population movements might have contributed to the increasing transmission rates of TB and HIV/AIDS. There are also indications that the number of people suffering from TB and HIV/AIDS in Darfur is on the rise because of continuing displacements. Exact data is very limited and little sentinel surveillance has been done at this point. However, the UN estimates that Sudan has the highest rate of HIV infection (1.3 percent among

[11] GOAL is currently undertaking another health and nutrition survey findings of which should be out by end December 2006.
[12] Nutrition and Food Security Survey conducted by WFP, TANGO, UNICEF and MoH in February 2005 (GAM 17.7 percent; SAM 5.8 percent).
[13] WFP/UNICEF *Comprehensive Food Security and Nutrition Survey* in South Kordofan and Abyei (February 2006).

adults aged 15 – 49) in North Africa and the Middle East. The phenomenon is certainly exacerbated by the general lack of HIV/AIDS awareness among the population which UNAIDS, in partnership with Sudan National AIDS Programme, are currently trying to address. Additionally, the UN is planning a comprehensive survey in 2007 to ascertain nation-wide infection rates.

5.3 Relevant Government policies and actions on food security crisis

In Sudan, national and regional food security policies are limited and largely ad-hoc. The Strategic Reserve Commission, a parastatal cereal marketing agency, buys and stocks cereal from surplus producing regions. In theory, the SRC can play a major role of price stabilisation and serve as an effective distribution agent for food deficit regions. However, its capacity is often limited by the amounts of cash grants from the Ministry of Finance and the timeliness with which the advance is disbursed. SRC also distributes free grain to localities through State Governors (Walis). It is noted that the various distributions carried out by SRC are not coordinated with international food assistance in any meaningful manner. It appears that the SRC distributions are scattered throughout the country neither prioritising nor focusing efforts on the neediest location/population.

In 2006 (January to October) SRC distributed a total of 110 654 tonnes of cereal throughout the country. The main commodities distributed included 87 128 tonnes of sorghum, 19 331 tonnes of millet and 4 195 of wheat. It is important to note that Kassala and Red Sea were the main recipients of SRC's distribution of 10 586 tonnes and 15 109 tonnes, respectively. The share of food distribution in Darfur totalled only 17 218 tonnes.

With the assistance of the UN and Partners, the Government of Sudan participated in two important and interrelated processes in 2006 that will continue into 2007. The first includes the second Millennium Development Goal (MDG) report which is expected to be finalized at the beginning of 2007 and which will provide a strategy on how to ensure progress on the various MDG indicators in Sudan. Pilot projects will be established in two states (one in the north and one in the south), while focal points will be established with all cooperating agencies (i.e. the ministries of finance, health, education, and the statistics bodies in Khartoum and Juba) to orchestrate political and technical coordination. The second includes the formulation of a 'Poverty Reduction Strategy Paper (PRSP)', which commits the GoS to making structural reforms and address the root causes of poverty in the country, including issues of war, civil strife, environmental degradation and weak infrastructure. An underlying principle of the PRSP is the need to promote peace and reconciliation as a foundation for economic growth and poverty reduction.

Both the GoNU and GoSS have endorsed the 2007 UN work plan which covers all of Sudan and continues trying to move beyond life-saving assistance to establish sustainable recovery and development support where feasible and necessary. While certain assumptions have been made with regard to events that might evolve in the future due to the volatile security situation in the country, Government and UN strategic priorities for 2007 include the provision of protection and assistance to the most vulnerable in both camp and non-camp situations, strengthening of coping mechanisms, sustainability of 'voluntary' returns, provision of timely and comprehensive health response. The longer-term recovery programmes involve an improved geographical coverage of the delivery of basic social services, promotion of economic stability, support of the enhancement of institutional capacity at both government and community level, support to accelerate the process of sustainable reintegration in all the areas of return, amongst others.

5.4 Current vulnerability and coping status

5.4.1 Eastern Sudan

Over the last three decades, livelihood systems in Kassala State and Red Sea State (RSS) have been subject to different environmental and socioeconomic challenges. They include drought, floods and long dry spells, negatively impacting on the food security situation of the local populations. The conflict in Kassala between the GoS and the National Democratic Alliance (NDA) which led to the displacements of border populations towards more secure areas inland, and the old conflict between Eritrea and Ethiopia that forced about 85 000 people to take refuge in the eastern regions, has put particularly great stress on existing resources, particularly land, and has created competition with local populations over wage employment opportunities.

During 2006, both states experienced their second consecutive year of favourable climatic conditions. The overall rainfall this season was relatively good, resulting in an increase in cultivated areas and improved pastures for livestock despite a long dry spell in August which led to some damage of cultivated land in the north and east of Kassala. According to the MoA in RSS, if the rains continue, 80 to 90 percent of the

cultivated area this year can be expected, which is a marked improvement for a state that has been affected by chronic drought cycles since 1984. This year, a substantial portion of the rural population will benefit from better pasturelands and increased production which will help them to partially meet their food and income requirements[14]. This finding holds true in Tokar, one of the three major farming areas in RSS which, unlike the ANLA, the CFSAM was permitted to visit. Cultivation in the delta increased by 13 percent compared to last year partially due to the efforts of the Tokar Delta Corporation to improve the irrigation system and initiate a miskeet tree clearance campaign in the region.

Nevertheless, the great majority of the population continues to be affected by vulnerability to food insecurity and, as indicated in many previous assessments, underlying factors are clearly structural and cannot be attributed to any distinct seasonal crisis. Prevailing problems include chronic poverty due to eroded traditional pastoral and agro-pastoral livelihoods which contribute to continuing, even increasing rates of malnutrition. In both states, the GAM and SAM remain above the emergency level of 15 percent in all four localities[15]. People continue shifting from their traditional livelihoods to relying on different, often more than one income sources. While 49 percent of households surveyed in RSS by the ANLA reported earning income from wage labour, 52 percent reported earning some income from the sale of firewood and charcoal and only 9 percent indicated income from the sale of cereal[16]. The consequence of half the population engaging in the sale of firewood and charcoal clearly contributes to the marked depletion of natural resources which in turn has long-term, detrimental effects on people's livelihoods. Wage labour, on the other hand, is becoming increasingly difficult to find due to the increasing mechanization of the agricultural sector and the industries in Port Sudan which accommodates about 51 percent of the state population and over 90 percent of the urban population[17]. While urban migration has been increasing at high levels, depleting employment opportunities, the rural population has been dropping by about 15 percent over the last thirty years.

The way to recovery has still not been paved in RSS and more initiatives have to be put into place in order to ensure gradual and sustainable improvement in the lives and livelihoods of the people. The greatest challenges at this stage include the lack of government policy on food security, a lack of capacity and of a mandate of the state coordinating bodies, lack of partners and coordination between them. The relative peace and stability in the State is considered conducive to implementing recovery activities with a focus on the specific educational, nutritional, food security and livelihood needs of the area in order to address and tackle those deep underlying structural problems. Food assistance, while partially addressing the consequences of the underlying problems, is not a long-term solution. Consequently, a phase-out strategy will need to be developed for 2007 and it is believe that some important pre-conditions are in place, including increased production, low prices serving as a short-term band-aid for the very poor households, and most importantly, the capacity and availability of financial and in-kind resources from the GoS. In 2006 RSS received the highest amount of donations from the SRC (~ 15 000 tonnes) and similar amounts are foreseen for 2007. All in all, the GoS has to start taking a much clearer and decisive role in ensuring to improve basic social services, create employment opportunities in order to help the population rebuild their livelihoods.

In Kassala the focus of continued international assistance in the form of recovery activities should be on the IDP/refugee population with the view for WFP to completely phase out by the end of 2007. At the present, the IDPs need a continued humanitarian assistance as they lack access to land, lack assets and continue to depend on food aid. When asked about long-term support to help them re-establish their livelihoods, IDPs indicated the need to have access to land for cultivation. The recently signed peace agreement between the GoS and the National Democratic Alliance (NDA) in October 2006, is believed to encourage IDPs to return to their home of origin, including to Hamash Koreib. An IOM study carried out between July and September 2006, found that the majority of IDPs in Kassala (who are displaced within the state) refuse to return to their homes due to insecurity and lack of basic social services in the area they come from. One month after the peace deal, the CFSAM still noted great reluctance among the IDP population to return to the region and reasons did not appear to have changed: fear of continued insecurity, landmines, lack of infrastructure, access to markets and health care systems, schools, etc. all to which people now have access to in the camp they are currently living in. Unlike the CFSAM, the ANLA visited Tawait in Hamash Koreib, a locality situated 40 km north-east of Kassala town. There are a number of initiatives underway that are meant to improve the general living conditions in the area and IDPs should be informed about those in order to

[14] The Livelihood and vulnerability and nutritional assessment of rural Kassala and RSS carried out by TANGO (2005) found all surveyed households in RSS to be food deficit in terms of their own production and that all achieve food sufficiency only through additional purchase of food in the markets.
[15] UNICEF/OXFAM Nutrition Survey (July 2006)
[16] The ANLA 2005 found that slightly more than half of HHs surveyed had 3 or more income earning activities, while less than 22 percent relied on a single income source.
[17] An analysis of food security constraints and potentials in the Red Sea State and Kassala in Eastern Sudan, April 2005

encourage their return[18]. In order to get a clearer picture of the entire region from both, the food supply and food access point of view, follow up assessments are strongly recommended as soon as access is allowed.

5.4.2 Central Sudan: North Kordofan and White Nile

From a cereal production point of view North Kordofan is traditionally a chronically food deficit economy, however, the 2006 production is estimated to have increased by 28 percent over 2005. Furthermore, the State is one of the largest livestock and cash crop[19] producing regions of the country. Food aid has been provided intermittently during periods of droughts. WFP implements Country Programme activities (school feeding and hafir construction).

White Nile is endowed with plantation and mechanised agricultural production. In comparison with last year, production in 2006 increased by nearly five fold. IDPs residing around Kosti have established seasonal labour income from the surrounding sugar plantations as well as Gedarif farms.

Overall, the Mission noted very conducive rainfall throughout the growing season in central Sudan, including the traditionally arid area of Sodari. Crop production (both cash and cereal) is expected to be very good. Combined with cash crop and livestock income, the cereal production is more than sufficient to meet food security requirements of the population. Low market prices are expected to help realise better food security situation for the consumers. The Mission recommends no emergency food assistance in this region including phasing out IDP assistance as the conditions for internal displacement cease to exist.

5.4.3 Three Areas

Abyei, Blue Nile and South Kordofan have special status in the CPA, “the Transitional Areas”. In Blue Nile and South Kordofan the CPA divides the political power between the Government of Sudan and the Sudan Liberation Movement/Army (SPLM/A). Abyei’s borders are still under dispute. This division represents a huge challenge for the governance of these areas, including the delivery of social services. In South Kordofan the state legislative council has been unable to endorse the constitution since the CPA in 2005 because of continuing disputes between the two ruling parties. All three states are the areas most devastated by the conflict and are only at the starting point to recovery.

Traditionally, the sedentary inhabitants in Abyei have been herders but due to the civil war and conflicts between tribes, livestock ownership has fallen due to losses from raiding and distress sales. And with the reduction in livestock holdings, a great majority of households have had to resort to more agro-pastoral livelihoods. Nomadic herders, and nowadays an increasing number of IDPs and returnees, make up a significant portion of the population. Agricultural prospects this season are mixed. Farmers cite continuing insecurity as the main problem, combined with poor planting conditions and difficulties of clearing land. It is hoped that once conflicts are settled and younger IDPs return (although many youth have grown up in displaced camps and have no experience in farming) the area under cultivation will increase. In northern areas a variety of cash crops, including sesame, groundnuts and watermelon has become more important over the year. Sandy areas, favourable for groundnut production are prevalent in Muglad and Meiram and extend southwards in narrow areas. Northern farmers are more and more inclined to follow these areas south, however, this trend appears to contribute to disputes over land use rights in these areas.

Blue Nile is also experiencing a better agricultural season compared to last despite some localized pests and dry spells (drier than average) observed during planting which required re-planting. Farmers with small traditional plots, however, are likely to experience problems this season due to reduced usage of improved seeds and partial reliance on long maturing sorghum. Some of them have also been exposed to agro-climatic risks this season, such as irregular rainfall during planting time, early season pest attacks, weed infestation and dry spells. To compound the problem, access to markets in the south of Blue Nile as well as in South Kordofan, has been problematic. Although markets might be available, they are out of reach throughout the rainy season. This is a big concern, given that farming is the main economic activity including agricultural labour, generating food and cash income for three-quarters of the states’ population, followed by wage labour and petty trade.

The conflict in the Nuba Mountains has also had a profound social and economic impact on the lives of men and women. While men were forcefully displaced, migrated or died in the war, women stayed behind to take

[18] According to the IOM study (2006), useful information for IDPs in Kassala to help their decision whether to return to their place of origin include the potential threat of landmines, knowing of safe routes and the general condition in the area of origin. The ANLA was informed of ongoing demining programmes by the United Nations Mine Action Office (UNMAO), the construction of a secondary school, a clinic built and administered by GOAL, a rural hospital financed by the GoS, a police and a social welfare centre.

[19] including gum Arabic, sesame, karkade and ground nuts

care of the household. The proportion of female-headed households (FFH) in South Kordofan and Abyei amounting to 20.1 percent is almost twice the average in the entire country (12.0 percent)[20] and the percentage of FHH among IDPs was found to be double that of residents. Main obstacles to break the vicious cycle of poverty, food insecurity and health risks, as identified by the women themselves, included lack of education and absence of adequate health facilities.

South Kordofan used to be a surplus producing area but due to the conflict, livelihoods and productive assets were badly damaged and with that the states' capacity to fend for itself. Apart from some pockets of poor harvest in the previously SPLM held areas (i.e. Kadugli, Rashad counties), the overall food security situation this year was classified as stable by the ANLA due to a number of factors including average to good rainfall records, some increase of area cultivated due to the relatively stable security situation and the expansion of landmine clearing activities, the considerable amount of agricultural inputs distributed by FAO, NGOs and SMoA that reached at least 40 percent of the needy farmers, the absence of major pests and diseases and the drop in cereal prices of more than 45 percent from an average of 9 000SD for 90kg sack of sorghum in 2005 to 4 500SD this year. Availability of food was not a concern of the people interviewed and according to the baseline survey carried out in the state in February 2006, the malnutrition rate (GAM) of 13.4 percent was not associated with a lack of food. Instead, lack of safe drinking water, poor health facilities and inadequate education are considered the problems aggravating the overall well-being of the population.

All three states are facing similar challenges in terms of the returnee, IDP and refugee influx. The most vulnerable group are clearly the returnees and IDPs due to the lack of access to land and assets to help rebuild their livelihoods[21]. The areas south of the river Kiir in Abyei are now primarily populated by returnees or new migrants from both the north and south of the country. Many IDPs in transit to the South choose to remain in Abyei while better agricultural prospects and perceived availability of land are enticing new arrivals from Warrap and North Bahr el Ghazal. The state has seen much higher numbers of returnees than had originally been envisaged. WFP has, to-date, registered approximately 35 000 returnees, 14 000 of whom are currently resident in Abyei town, which has now grown from having an estimated 6 100 inhabitants, to having more than 20 000. The urban areas are important poles of attraction for wage labour, especially in the petroleum sector in the Defra/Nyama corridor which provides a new source of employment. However, with the increase in urban migration, labour opportunities are in continuous decline. In Abyei food consumption was found to be strongly related to people's resident status whereby 50 percent of returnees fell into the low consumption profile, followed by IDPs in the middle consumption profile and residents in the highest consumption profile. Returnees and IDPs rely mainly on their own production to meet their food requirements, unlike residents who purchase food in the market. Coping strategies of households that fell into the low food consumption category, mainly returnees, included going an entire day without eating, begging, collecting wild foods, engaging in out-migration. Those with better consumption profiles had the means to borrow or buy food on credit instead. The continuing influx, however, is also placing substantial burden on the resident community that is faced with increased competition over land and wage labour and basic social services that were already stretched to their limits prior to the new arrivals of returnees and that can hardly accommodate this population growth. These pressures have already led to some localized conflict.

5.4.4 South Sudan

South Sudan is emerging from 20 years of devastating war; it remains isolated due to poor physical and economic infrastructure. A CPA was signed in January 2005 which promised peace and stability. GOSS authorities are up against one of the biggest development deficits in Sub Saharan Africa with virtually no social, economic and physical infrastructure, threats of landmines, intermittent ethnic conflicts and market isolation. Most households rely on subsistence agriculture and livestock production for their livelihoods.

Following the CPA, a large number of people are returning to the South. At the time of the Mission's visit, it was indicated that 760 000 refugee and IDPs have returned to their place of choice during the course of 2005 and 2006. In 2007, the UN Country Team anticipates some 349 000people will return to the South.

The overall food security outlook in 2007 is expected to be favourable: the availability of food commodities will improve, due to increased crop production mainly in the traditionally food deficit areas of Greater Bahr-el-Ghazal, economic accessibility varies by population groups as well as regions. The IDPs and returnees remain the most vulnerable of the population groups while Northern Bahr-El- Ghazal, Eastern Equatoria, Jonglei and Unity States are relatively more precarious regions. The trend in food prices is indicative of the regional divide. In response to the improved crop production, prices of food crops in late 2006 have generally

[20] Central Bureau of Statistics, *Sudan in Figures 2003 – 1999*, 2004
[21] UNICEF/WFP Food Security and Nutrition Survey in South Kordofan and Abyei, February 2006

started to decline. The decline, however, is more pronounced in areas accessible to roads (Equatoria, Yei) and river transport (Malakal) as compared to where transport access is difficult (Greater Bahr-el-Ghazal). In Northern Bahr-el-Ghazal, prices have actually increased in 2006 compared to 2005. For instance, in Aweil town, the price of one Malwa (3.2kg) of sorghum in October 2006 was 300SD to 400SD as compared with 150SD to 200SD in October 2005. This increase in Northern Bahr-el-Ghazal was attributed to a supply constrained market, due to lack of adequate transport, that was unable to respond to the large increase in food demand following large number of returnees (the Sate has the largest number of returnees to southern Sudan) and the commencement of regular salary payments to large number soldiers and other local government employees.

Food aid will continue to be necessary for vulnerable populations. It was encouraging to note that most communities, Government officials and international agencies acknowledge that while food aid interventions are still necessary, large scale free food distributions may not be the most appropriate modality. Free food distributions need to be limited to the most isolated internally displaced people; returnees who need assistance in the settlement process so that they do not overburden their host communities; and the most vulnerable segments of the population —disabled, sick and elderly. The bulk of the interventions need to look into other modalities, such food for work, for appropriate projects that have community ownership - roads, waterworks, etc. Furthermore, the balance between local cereal production and consumption requirements is but one indicator and should be seen within the livelihood profiles of each area to gauge the potential impact on household food security and required interventions. Most frequent answer for questions related to community priority needs was provision of trunk and feeder roads followed by water for both human and livestock consumption and provision of drugs for livestock. Many stated that construction, repairs and de-mining of roads would continue to improve their quality of life in general and food security in particular given that both food and non-food consumables will become cheaper and accessible while incomes from sale of produce will increase.

A combination of inadequate food consumption, poor water and sanitation facilities and practices, and limited access to health care services, contributes to persistent high malnutrition rates, well above the emergency threshold in pockets of Jonglei, Upper Nile, Warrap, Northern Bahr El Ghazal and Unity states. In more productive regions of Western Equatoria, frequent instability due to LRA activities significantly hampered crop production.

5.4.5 Darfur

A volatile security situation persists in Darfur. The region hosts the largest IDP and conflict affected population in the country. Despite international desires to ending the conflict, it remains without an agreed political solution among parties to the conflict. During the Mission's visit to the three Darfur States, insecurity was pervasive and fresh population displacements occurring. Many locations were inaccessible, and the Mission was limited in its field visits and had to rely on discussions with NGOs, and interviews with UN staff and State officials. Fortunately the EFSNA report was found to provide a rich and reliable source of information in terms of determining the number beneficiaries and magnitude of vulnerability among the IDPs and resident population.

The situation in Darfur remains tense, fluid and it is difficult to predict the pattern of food security for the camp IDPs and resident communities. The Mission noted that heightened disturbances coinciding with the time of planting and harvesting affected areas cultivated and hence undermined the potential for food access from own production. This is in spite of consecutive two years' good climatic regime and average to above average estimates for crop production (see section xx for the season's performance). While some IDPs have been engaged in limited agricultural activities, the full potential for household food security diminishes due to fresh conflicts and displacements thereof. Area under crop production remains below pre-conflict period. In 2006 cultivated area slightly increased compared to 2005. Rainfall was generally favourable for most locations. Some pockets (Kulbus in the north of West Darfur, Tina and Mellit of North Darfur) reported a period of dry spell. Bird infestation in Nyala is noted to have a devastating impact on millet and sorghum harvest. Flare-ups noted during harvest period along the traditional route of nomads and in wadi areas. Overall, North Darfur recorded 49 and 57 percent of 2005 in millet and sorghum production respectively. South Darfur recorded a 12 percent increase in sorghum output while a decline of 7 percent was observed in millet production in 2006 compared to 2005. West Darfur recorded an increase of 14 percent in sorghum production and a decline of 12 percent in millet production. The food balance sheet shows a cereal deficit of 381 000 tonnes.

The Emergency Food Security and Nutrition Assessment (EFSNA) carried out in September 2006, the third in a sequence of its kind since 2004, provides a deeper understanding of the livelihood perspective in Darfur. The assessment findings point out the main sources of income for both IDPs and residents: wage labour for

45 percent of the IDPs, sales of firewood (19 percent), sales of food aid (17 percent) and petty trade (8 percent). For the residents, income sources include wage labour for 29 percent, sales of cereals (21 percent), sales of other crops (14 percent), petty trade (12 percent) and sales of firewood (11 percent). The EFSNA shows that "for some residents living in communities with a majority of IDPs, the influx of many IDPs seems to have opened up opportunities for small-scale trade activities to the residents and/or contributed to a switch of income earning opportunities in favour of petty trade against of agricultural production." The finding suggests a change in income earning profiles of the population with a significant impact on the recovery, and the future of agricultural production. EFSNA 2006 (Chapter 10) points out ".one fourth of the households had at least one migrant member. In more than half of the cases, the main reason for migrating was to look for work or to cultivate own fields. Insecurity was a major reason for migrating for IDPs living in communities where they are a minority and insecurity was also a major cause of migration for residents living in communities where IDPs are a majority...." While the prospects for cereal production are taken into consideration, the overall food aid determination continues to be informed by insecurity and uncertainty. Effective monitoring of food aid deliveries have been constrained by security considerations.

5.5 Other food assistance programmes

Emergency food assistance has continued for the past several years, throughout the conflict years, covering primarily conflict affected population and chronically food insecure ones in Eastern and Central Sudan. Other food aid programmes include the Country Programme and Protracted Relief and Recovery (PRRO) for refugee operation in eastern Sudan. WFP and the Government of Sudan launched a five-year Country Programme (CP 10105.0) for the period 2002-2006 that covers two interlinked activities: activity 1 provides educational and nutritional support to school children; and activity 2 supports food for work activities in water harvesting and rehabilitation of educational infrastructure. The programme has been extended through 2007 to be in line with the UNDAF process.

WFP assistance through the Country Programme is mainly concentrated in the chronically food-insecure and acute water-shortage areas in the north, namely Abyei area, South Kordofan, North Kordofan, Red Sea and Kassala States – which are subject to structural constraints and climatic variations that have eroded people's coping mechanisms and weakened their overall asset base.

Activity 01 covers 310 000 children attending primary school for Boys & Girls, 20 000 children from secondary for boarding girls schools and 9 000 pre-school children totalling 339 000 students. The school food ration provides dry food (Cereal, Pulses, Oil and Salt) through one-day meal for the school children in the primary education and pre-schools and two meals for the girls in the boarding secondary schools. However, WFP is currently providing school feeding to 265 000 pupils, as against a planned figure of 339 000. While this corresponds to 78 percent of the planned number of beneficiaries, actual food distributions were 68 percent of the planned quantities as of October 2006.

Activity 02, it is expected that on a yearly basis, at least 6 000 people will be provided with direct employment during the lean season when alternative income-earning opportunities are lacking. Approximately 36 000 people will have access to food during the hunger gap. These activities also provided indirect benefits to an estimated 180 000 people, through improved agricultural production resulting from investments in water harvesting schemes.

PRRO SUDAN 10122.1 was approved in February 2004 for a period of 24 Months from April 2004 to March 2006 to cover an average caseload of 85 000 refugees in the East, in close consultation with UNHCR. The overall objective of the project was to contribute towards enhanced self-reliance and livelihood skills among the refugees, with a view to repatriation and reintegration. In April 2006, the project caseload has been folded with EMOP 10503.0 with the same number of beneficiaries and similar objectives for better management of resources and programming and harmonisation of activities in the east.

In addition to WFP's food pipeline, some NGOs have their own, especially CARE and ICRC. While last years' CFSAM estimated the NGO pipelines to carry approximately 60 000 to 70 000 tonnes (including 40 000 tonnes from ICRC), 2007 are not available at this stage. ICRC indicated that they do not intend to distribute food aid in 2007.

5.6 Estimation of food aid requirements in 2007

Sudan is expecting to enjoy one of the best productions on record with some 6.6 million tonnes of cereals, an increase of 22 percent above 2005/06 season's production. National cereal balance shows surplus production of an export proportion; however, the theoretical national surplus is compromised by distribution problems resulting from physical and economic isolation of some of the populations and geographic areas;

the population affected by the conflict in Western Sudan, the Darfur States benefits little from national and regional surpluses elsewhere in the country. Food aid requirements are estimated based on the calculation of the population's food access shortfalls. This shortfall is the difference between expected food consumption requirements of people and what they can provide for themselves without adopting distress strategies[22].

In east Sudan, the Mission recommends no emergency food assistance to Red Sea State. Instead, an allocation of some 3 000 tonnes of cereal is recommended in Red Sea State to allow for an orderly international food aid exit from the area. The recommended amount of food assistance should be targeted to chronically food insecure population, together with SRC allocations. An exit strategy with benchmarks for exit from emergency food assistance should be worked out with SRC, partner NGOs and State authorities. In Kassala State, the Mission recommends emergency food assistance for the IDPs (68 000) and Refugees (85 000) for a period of 3 to 4 months to facilitate their return to places of origin or places of choice. A total of 8 800 tonnes of food aid is recommended covering the needs of IDPs and refugees. In both North Kordofan and White Nile States a total phase out of emergency food assistance is recommended.

The Three Areas (Blue Nile, Abyei, Nuba Mountains): There is a consensus that returning population, particularly the new arrivals have not fully integrated into the economy, and remain vulnerable. The Mission recommends food assistance to the already landed returnees (345 000) as well as planned returnees (299 000). The needs of returnees from earlier years (in 2005 and early in 2006) expected to be minimal as many of them started economic activities. Priority of food assistance should be given to the late arrival in 2006 and the new ones in 2007. An estimated 37 000 tonnes of food aid will be needed to support the returnees.

In the South, food aid will continue to be necessary for vulnerable populations (newly arriving returnees and those who arrived late in 2006) focusing on their recovery. There is a general consensus that food for recovery should replace general food distribution. A total of 110 000 tonnes of assorted food commodities for 350 000 planned returnees and over 760 000 already returned are recommended for the South focusing on, to extent possible, recovery activities.

In Darfur, while the good prospects for cereal production are taken into consideration, food aid requirements remain high, because of the continued insecurity and uncertainty. The number of beneficiaries and the corresponding food aid requirements identified by the EFSNA survey are confirmed by the mission. Notwithstanding this year's relatively better agricultural production, volatile security situations may necessitate varying beneficiary numbers. It should be noted that the Mission's beneficiary and food aid estimates do not include requirements for activities such as school feeding and supplementary nutritional feeding programmes. Total food aid requirements in Darfur comprise assistance to 1.65 million IDPs and up to 1 000 000 residents with variations over time. A total of some 415 000 tonnes assorted food commodities are recommended. Overall, in Sudan, a total of 4.65 million people will require varying amount food assistance with a total of approximately 575 000 tonnes.

Table 13. Sudan: Total emergency food aid beneficiaries and requirements in 2007

	Darfur	East	South	Three Areas	Total
Beneficiaries	2 650 000	220 000	1 110 000	644 000	4 624 000
Food Aid (tonnes)	415 320	11 262	110 752	37 071	574 405
Beneficiaries (%)	57	5	22	17	100
Food Aid (%)	72	2	19	7	100

5.6.1 Description of targeted populations

As has been the case over the past years, the main target groups for international relief assistance include conflict affected population in Darfur (IDPs and vulnerable residents), returnee populations to the South and Transitional areas, and vulnerable populations who are unable to meet their consumption demands during the course of the year.

Internally displaced population as a category for international relief assistance are found primarily in Darfur where continued conflict exists. The Mission also recognises the prevailing conditions in the east, Homesh-Koreib to allow an orderly return of IDPs following the signing of peace agreement.

22 See Annex 2 for a detailed explanation of how food access shortfalls are calculated, as well as for the various sources that guided the proposed recommendations for food aid interventions in the four regions.

Another important category of population qualifying for international relief is Returnees. Following the signing of the CPA, a large returnee population has been registered in South Sudan and the Transitional areas. Over the past 2 years an estimated one million people have returned to their locations. In 2007, the UN estimates that some 667 000 people will return to the South and Transitional areas. While the actual number of returnees will depend on the political, economic and humanitarian situation in their place of destination, there is a growing confidence in the CPA that 2007 will see a continued significant returnee population.

Chronically food insecure population is another category of vulnerable population in the Sudan. This category is found in many parts of the country, particularly in Eastern Sudan (Red Sea State, parts of Kassala State and North Kordofan States) and various pockets in South Sudan. The food insecurity for this category of population is caused by long-term structural problems and climatic variations such as in Red Sea State. They generally tend to be farmers and agro-pastorals with far less agricultural production to meet their entire food needs. The Mission anticipates that, based on seasonal market price analysis, most of the population in the East and Central Sudan will compensate cereal production shortfalls through markets. A significant reduction in international relief assistance is envisaged mainly for East and Central Sudan. The exit strategy for international assistance should be closely coordinated with national entities including SRC whose allocations should be targeted to protect the most vulnerable households.

Given the expected large cereal surplus at the national level, emergency food assistance programmes should be targeted to the most vulnerable groups including conflict affected people and returnees. Where applicable, food assistance should also be targeted seasonally with the view to minimise potential negative impacts on local production and markets. The mission also endorses the current practice of using variation in rations and duration of assistance as methods for targeting.

5.6.2 Strategies for assistance

Unlike in previous years, there is strong national economic evidence that the Government of Sudan has increased the capacity to assist its own population, particularly in the chronically food deficit areas outside of the conflict zone. International relief assistance continues to be necessary in conflict affected regions (Darfur) and where there is a large returnee population such as those registered in the South and Transitional Areas.

Given the volume of recommended food assistance the potential of negative effects on local production and markets requires attention. Piloting alternatives to food aid interventions should be explored in areas such as Eastern Sudan or the Three Areas where markets are well supplied with food. However, considering limited experience and proven implementation capacity these pilots may initially need to be small in order not to harm populations that have been critically depended on humanitarian assistance.

Local purchase should be considered to make use of available surpluses and add to cost-effectiveness of food delivery. Depending on available donor resources procurement levels could be well above last year's 33 000 tons and perhaps even higher than the 2004 record of over 120 000 tons. Similarly, the Government should maximize its efforts to procure and donate locally produced grain to the emergency operation.

Further to the crucial role of food aid as a life-saving instrument in Sudan, it is important that its role be clearly linked with the resumption of livelihood support programmes, through broader sectoral interventions in areas such as agriculture[23], nutrition, health and education. Such activities should include distribution of agricultural inputs, agro-forestry, pasture rehabilitation, and the restocking of poultry and small ruminants. In addition, recovery interventions aimed at restoring local agricultural production, sustainable farming systems and livestock keeping need to be strengthened to allow for a progressive reduction of the dependence on food aid and the re-establishment of sustainable livelihoods. Road repair interventions currently ongoing in the South are expected to improve the food security situation by facilitating trade and returnee movements.

5.7 Logistics implications

The logistical demand arising from the rapid economic growth and continued large volume of food aid should be noted. Port Sudan serves as the main entry point for imported goods and services including food aid for both north and south Sudan. The South is also served through the Kenyan port of Mombasa. Commodities are then moved on via rail and road to WFP's main logistics hubs in Sudan — Khartoum, El Obeid and Kosti — by road from Mombasa to Lokichoggio, or to destinations in south Sudan through Uganda. From there, the commodities are moved along secondary corridors to various hubs by commercial or WFP fleets. An overland Libya corridor, from Benghazi and through Chad, has been operational since mid 2005 and was

[23] The GOS 5 year agricultural development plan envisages a very high investment in the sector and international assistance should be coordinated with the national development efforts.

scheduled to close at the end of 2006. There is no current plan for Sudan to use this corridor in 2007 if the situation remains unchanged. The tertiary routes are more challenging due to a lack of commercial transport capacity in many parts of Sudan. Several of WFP's final distribution points are in locations that are not commercially viable for transporters. In order to meet transport needs, WFP has its own fleet of 190 trucks and five support vehicles to cover Darfur and 26 trucks for the South. Capacity in the South will need to be enhanced as WFP expands its geographic coverage.

In the south roads continue to be a major bottleneck to development. WFP's emergency road repair and mine clearance has contributed to the rehabilitation of 872 kms of roads, resulting in better road safety, increased trade, and increased mobility of people, including returnees, due to improved public transport. Secondary effects include an increase of overland transport from 800 to 2 500 tonnes per month, a 50 percent reduction in truck turn-around time, and an 80 to 50 percent reduction in the need for air transport. However, more improvements are needed in order to further reduce the need for air transport.

WFP also invested in the rehabilitation of river assets with the objective to meet an increasing demand for river transport. The barge fleet is expected to increase WFP's delivery capacity from the current 24 000 to 56 000 tonnes by end 2006, with a corresponding decrease in air operations needs. It will also support economic development, by contributing to the long-term infrastructure development of south Sudan, in particular the requirement for an effective and vibrant transport network to cope with emergency and recovery needs.

Logistics augmentation in support of the Darfur operation is being extended to allow contingency actions such as creation or expansion of storage facilities and also to remove logistics bottlenecks for instance by spot road repairs. Airdrops have been used extensively to reach otherwise inaccessible locations. Security conditions permitting, the use of this delivery mode is expected to decrease significantly as roads open in the South and the Three Areas. With more storage facilities established in those areas and in Darfur, WFP will be able to pre-position food closer to distribution points prior to the onset of the rainy season. Humanitarian air services provide services to the entire humanitarian community in Sudan.

5.8 Follow Up

A number of positive developments such as the rapid growth of the Sudanese economy and consecutive favourable productions seasons call for adjustments to food assistance programmes and improved food security monitoring. The Mission wishes to highlight the following specific recommendations for action:

- Strategy to phase down and phase out of international food assistance: It has been a long standing desire to phase out international food assistance from Eastern Sudan as was supported by various studies, notably, the 2005 TANGO baseline study. Combined with the 2006 favourable rainfall, pasture, crop and economic conditions the Mission's recommendation to exit international food aid programme. WFP, the State authorities, NGO partners and Strategic Reserve Corporation should work out a defined benchmark for exit from emergency food assistance. WFP should prepare a work plan to ensure a coordinated use of food allocation with SRC during the recommended final phase of food assistance.

- Assessments and food security monitoring system: Early warning systems should be strengthened to continue to monitor the food security situation, particularly in areas where food aid is reduced or withdrawn. Special monitoring systems including security indicators are desirable due to the fragile nature of this region. Intermittent tribal conflicts have been reported in the South which can be a spoiler to the food security status of the area. Continued rolling assessments including political monitoring should be strengthened, particularly in areas where neither CFSAM nor ANLA teams visited, such as Darfur and Homeish Koreib.

- Effective monitoring of food aid deliveries has been constrained by security consideration. Evidently, the volume of traded food aid commodities are cause for concern and the Mission recommends a market study to determine the extent of commodity flows, market functions & impact of food aid on agricultural production and domestic markets.

- Milling Cost consideration: Inclusion of milling cost within food aid ration is not cost effective and it is a potential source of leakage of food aid to the market. The Mission recommends considering other method of financing milling cost than through increased food aid ration which is at a much higher cost to financing agencies. For example, cash vouchers can be used as instrument of financing milling cost without having distortion on local markets.

- Timing of assessments and emergency document preparation: The Mission noted that the regular Annual Needs and Livelihood Assessment is conducted about the same time as that of CFSAM. CFSAM should, in principle, benefit from outcomes of such assessment. Although efforts have been made to make advantage of the ANLA by having a joint meeting with ANLA team leaders, it is important that household level data collection should feed into the CFSAM's efforts. Also, project document preparation for emergency response is supported by neither ANLA nor CFSAM. As it were in the past, WFP Sudan should reconsider altering the cycle of emergency document, i.e April to March cycle instead of the current one (January to December).

ANNEX 1

METHODOLOGY FOR CROP PRODUCTION ESTIMATES

Since locally generated production data from the SMoAs and schemes are the starting point for the CFSAM, their reliability is critical. The primary function of the CFSAM is to scrutinise these data from several different angles, including, *inter alia*, crop inspection, sample crop-cutting, farmer interviews, trader interviews, market survey, and rainfall records. The data may be accepted or, if deemed necessary in the light of other conflicting evidence, modified in consultation with the MoA. In this way a credible picture of the agricultural season and its production emerges that is in agreement and general conformity with all the information gathered by the Mission. It is acknowledged that in recent years the standard of estimation and reporting of crop areas and crop yields by the SMoAs in Sudan has been poor, largely as a result of inadequate funding. States have had their own sound methodologies but have been unable to follow them because of staff shortages or lack of transport. Conflict and insecurity have added to the difficulties of carrying out estimates, especially in Darfur over the last several years. This year, however, the situation has improved slightly, with extra resources being made available through SMAARI channels in some states and, in Darfur, assistance from FAO and other UN agencies.

At the top end of the scale of reliability come the irrigated schemes in which cultivated areas are mapped out and production is weighed. On the Gezira scheme, for instance, the cropped areas have been surveyed and mapped and the crop on each unit is recorded. In order to forecast yield during the growing period, three canals are selected in each block and three tenancies are selected from each of these canals - one at random from each of the three sections of the canal; the head, the middle and the tail. Two units out of the 14 in each tenancy are then selected, and from each of these units a 2 x 2 m quadrat of crop is cut and weighed. At harvest a scheme inspector records the actual number of bags of threshed grain harvested from each unit.

Next most reliable are the large mechanised rainfed schemes. Administrative arrangements on these schemes are much more flexible than on the irrigation schemes, but again they are mapped. However, cultivation often takes place outside the mapped ('demarcated') area and sometimes areas that are mapped are not cultivated, so there is potential for error. Managements also consider the numbers of bags of seed used and the average seed rate in their estimation of area, but several farmers use their own unregistered seed. Some managements attempt to take account of this by interviewing a random sample of farmers at the beginning of the season. The number of tractor hours is also used as an indicator of area. Yield is generally estimated by eye, ideally using a number of qualified and experienced field inspectors; questionnaires are also used on some schemes.

The most difficult to estimate, and the least reliable, is the traditional sector. The usual approach involves questionnaires administered in stratified random samples based on the three levels of locality, village and household. Interestingly, even with the recent increase in assessment activities in Darfur, no authority claims to carry out sample verification of farmers' statements regarding area cropped by measurement on the ground. Farmers' estimates are simply accepted. Yield estimates often rely on farmers' reports too, though some authorities say that their field staff carryout eye estimates during the growing period. On the rare instances when crop-cutting is used, it is likely to be with the collaboration of NGOs.

West Darfur

The poor security situation this year meant that estimates of cropped area and yields had to be based on general observations by SMoA staff and qualitative reports from NGOs and farmers.

North Darfur

The Food Security and Livelihood Working Group (FSLWG), a collaborative consortium of UN agencies, NGOs and the SMAARI, conducted a rapid assessment during the period 15 August - 7 September. Twenty sample sites were visited (1-3 from each of 18 administrative units), selected on the basis of population density, geographical characteristics and economic activities. (Insecurity prevented visits to the remainder of the planned total of 33 sites.) Household questionnaires (10 at each site) and semi-structured key-informant interviews were used to gather agricultural information, including areas planted and amounts of seed used. It was planned that 35 sites be visited for post-harvest assessment; 15 of these had been visited by the end of November.

South Darfur

The FSLWG carried out a 'two-stage stratified systematic random sampling' exercise on a sample of 500 households during the period 15 - 30 October. The term 'two-stage' refers to farmers who had received improved seed (40 percent) and those who had not. Information on cropped areas and expected yields was gathered using questionnaires.

North Kordofan

Questionnaires were administered in ten percent of villages in each locality, covering five farmers and a group in each village. Villages were randomly selected.

South Kordofan

A crop-cutting survey was due to start at the beginning of December, i.e. after the CFSAM.

White Nile

Mechanised rainfed area estimated by scheme. Yield initially estimated by eye, and followed by crop-cutting in December. Traditional-sector yields estimated by eye.

Gezira

Traditional-sector area estimated by eye and through farmer interviews. Yields estimated by two crop-cutting methods - quadrats and 100 heads in a straight line.

Irrigation scheme: areas reported by block; yields reported by agricultural inspectors and thresher operators, and backed up by crop-cutting.

Sennar

This season's estimate of the rainfed area is based on land-rent records and the impressions of farmers from the schemes. Shortage of funds precluded the SMAARI's planned survey.

Blue Nile

Area information from farmers, with endorsement by SMAARI staff in the field. Yields estimated by SMAARI staff by eye, to be verified by crop-cutting.

Gedaref

Since a shortage of funds prevented a planned survey of 500 farmers (including large and small individual farmers as well as companies) and a crop-cutting exercise, data this year are based on general observations by SMAARI's approximately 200 agricultural officers, on the amount of seed used, and on informal reports from farmers. Data will be corroborated later with the reported production from known demarcated areas.

Kassala

Area and yield estimates for the traditional sector (including the irrigated area of Gash Dai outside Gash scheme) are based on SMAARI staff observations and on informal local reports. Areas on Gash scheme are recorded by the scheme management; preliminary yield estimates, based on observation, are corroborated by production records at threshing.

Red Sea

Area and yield estimates for the traditional sector are based on SMAARI staff observations and on informal local reports. Areas on Tokar scheme are recorded by Tokar Delta management, and preliminary yield estimates, based on observation, are corroborated by production records at threshing.

River Nile

For the traditional sector, SMAARI's agricultural assistants gather area estimates from community leaders. Yields are estimated by eye and in consultation with farmers. In principle, SMAARI's Planning Unit verifies yields by crop-cutting on quadrats on a large sample of farms, but it appears that this may not always be done. Areas on the schemes are mapped; scheme yields are initially estimated by eye and later verified at harvest by numbers of bags.

Northern

Extension agents interview farmers in October and base their area estimates on comparisons with the known areas of the previous year. Yields are initially estimated by eye and later verified at harvest by the numbers of bags produced on sample farms. SMAARI acknowledges the extreme difficulty in estimating the long, narrow but nevertheless substantial areas of crop production under the *gerif* (residual moisture) system on islands and along the river banks.

ANNEX 2

REVIEW OF ASSESSMENT METHODOLOGIES (WFP)

WFP calculates food access shortfalls as the difference between expected food consumption requirements of people and what they can provide for themselves without adopting distress strategies. Alternatively, food access shortfall for households in a particular geographic area or population group is the difference between:

(i) the nutritional value of food households are able to provide for themselves without adopting distress strategies; and

(ii) (ii) the amount households need to consume to live an active and health life—global standard of 2,100 kcal/person/day – adjusted for temperature, activity level and extreme health/nutrition conditions, when necessary, and for age/sex distribution, when data are available. The food intake should also provide an appropriate proportion of calories from protein (10-12 percent) and fat (minimum 17 percent) and adequate amounts of micronutrients (vitamins and minerals).

The difference between (i) and (ii)—excluding households consuming more than 2,100 kcal/person/day—provides an estimate of the percentage of people and their average food deficit for a given location and demographic profile. The extrapolation of these estimates over similar agro-ecological zones and demographic profiles give the overall scope of the food deficits for various population groups.

Recommended emergency food needs to be met with international assistance are then calculated for the subset of the population experiencing food deficits, taking into account additional factors such as the national response capacity, changes in the economy, security improvements and levels of external assistance given during past yet similar years.

It is assumed that other national and international institutions could use their own resources and pipelines to address some of the food deficits unmet by emergency food assistance from WFP. The main examples are national institutions such as Strategic Reserve Corporation and Zakat, as well as international NGOs operating in the country.

WFP's role in this exercise was to assess the food security and vulnerability situation of the people and calculate food access shortfalls as described above. For that the CFSAM heavily relies on primary and secondary food security analyses which had been undertaken by national and international institutions within the country. The objective was to verify whether those findings are based on sound analytical methodologies and match the observations and findings of the CFSAM which were gathered through stakeholder consultations and field visits. The latter involved focus group discussions, interviews with key informants, farmers, community leaders, local/regional authorities, public health officials, market traders and NGO staff working in the different regions. Additional data and reports used for the analysis included remote sensing and data from a seasonal monitor, nutritional surveys and market information.

Two key exercises critical for the estimation of initial emergency food and non-food needs in Sudan, as well as for suggestions of most appropriate response options, included the Emergency Food Security and Nutrition Assessment (EFSNA) carried out in Darfur in August/September and the Annual Needs and Livelihood Assessment (ANLA) 2006/2007 which took place in October/November which covered all the states with ongoing WFP operations except the three Darfurs[24]. Additional data and reports such as remote sensing and seasonal monitor, nutritional surveys and market information were also reviewed. Then the mission undertook field visits to crosscheck food security information with key informants, focus groups, community leaders, local/regional authorities, public health officials, market traders and NGOs working in the region. All states in northern Sudan were surveyed (not limited to ongoing WFP operations like the ANLA) and locations for field visits were selected purposively.

[24] Other assessments include Vulnerability and Nutritional Assessment of Rural Kassala and Red Sea State, TANGO (May 2005); IMU OCHA South Sudan IDP and Refugee Return Population Projections for 2006 (September 2005); IDP Intentions Survey North Sudan 2006, IOM (September 2006); Returnees Rapid Assessment Report, WFP (July-August 2006); An Analysis of Food security constraints and potentials in the Red Sea State and Kassala States in Eastern Sudan, WFP (April 2005.

A number of methodological and process related improvements have been made this year that have resulted in a greater complementarity between assessment exercises, increased credibility and representative-ness of findings, and more transparency between all stakeholders involved. Compared to previous years, the CFSAM was able to cover wider geographic areas this time, except in Darfur where coverage was constrained due to insecurity. Limitations still include the overlap in timing of the assessment exercises, in particular that of the CFSAM and the ANLA, unreliable population numbers which constitute the main barrier to accurate needs assessments, and the continued absence of a formal surveillance system of the food security and vulnerability situation in the crisis-prone states of Sudan. For detailed information on methodologies used, improvements made, limitations to be addressed, and the way forward.

Whereas the ANLA used probability sampling for the first time, the EFSNA used purposive sampling like last year. This meant that the sampling universe consisted of locations either known to be food-insecure or likely to be food insecure given a particular event — conflict, drought, flooding etc. The sampling universe was defined through collective inputs from WFP, OCHA, UNICEF, FAO, ICRC, Government and NGO that provide vulnerable locations stratified by agro-ecological zones and population profiles — i.e. residents, internally displaced, returnees. The assessment covered crisis-affected areas of North, South and West Darfur, as defined by the humanitarian community. The sample frame included 3.74 million people out of a total population of 6.76 million in Greater Darfur. A two-stage cluster sampling was applied with selection of clusters proportional to size (about 30 per State) and random selection of households (about 25 per cluster). Data were collected from 2,155 households.

The ANLA surveyed all the states with ongoing WFP operations, as well as Sennar, Gedaref and Khartoum states, which were affected by floods this year. Its focus was the rural population (urban centres were excluded), as well as the refugee population in Kassala, Gedaref, Sennar and Gezira, who were not covered in 2005. For the first time, and unlike the EFSNA in Darfur, the ANLA 2006/2007 randomly selected its sample by state (15 locations x 20 households). Surveyed communities thereby represent different population typologies and include residents as well as IDPs, in addition to different agro-ecological zones (agricultural, pastoral and agro-pastoral). Additional locations were randomly selected and used as replacements whenever the initially chosen locations were inaccessible due to weather or insecurity. Household interviews and community focus group discussions were the two main tools used to gather information on the general food security situation of the county's population and to determine communities' food and non-food needs for the year 2007.

Survey instruments

The food security component of both exercises used a questionnaire-based approach at the community and household level to generate qualitative and quantitative information. In the EFSNA households were interviewed using a structured questionnaire to assess their socio-economic and food security situation, including household composition, migration patterns, type of water and sanitation facilities, issues related to water and firewood collection, crop and animal production, income sources, food and health expenditures, 7-day food consumption recall and food sources, coping strategies in the event of food shortages, receipt of food and non-food assistance. Specific information was collected on each mother of children under 5 years of age including their participation to income generating activities and decision-making, child feeding practices and child health.

Key informant interviews were conducted in every community, using a structured questionnaire covering topics of population movements, trends in crop and livestock production and market prices and function, access to primary schools and to health services, food aid distributions modalities, and priority requirements of both IDPs and residents. In addition, focus group discussions (FGDs) on gender issues were held with men and women separately in three clusters of each Darfur state, particularly with regard to women's participation in food aid-related decisions and other projects at community level and the impact of the crisis on men and women.

The nutrition segment of the EFSNA asked questions of each mother with a child 6 to 59 months of age regarding breastfeeding practice, pregnancy, mother's enrolment in supplementary feeding, night-blindness during the most recent pregnancy and illness in the two weeks prior to the survey. Data was also collected on each child between 6 and 59 months regarding their enrolment in selective feeding programs (therapeutic and supplementary), vitamin A supplementation and measles vaccination and recent illness. Anthropometric measurements were taken on mothers (mid-upper arm circumference) and children under 5 years of age (mid-upper arm circumference, weight and height) to assess their nutritional status.

The ANLA household and community surveys covered the following key aspects of the food security and livelihood situation in the rural areas: household demographics, residence status (IDPs, residents, refugees),

productive asset and livestock ownership, agricultural production, access to credit/debt burden, access to water, firewood and sanitation, main income sources, food and non-food expenditure, food consumption and dietary diversity, coping strategies, receipt of food aid and utilization, receipt of non-food assistance, priority interventions. Data collection on refugee populations was done with the standard survey instrument plus a supplemental refugee-specific questionnaire, as per the WFP-UNHCR Joint Assessment Guidelines.

In addition to the analysis of average meal intake over the last 24 hours and dietary frequency and diversity, the ANLA exercise also collected seasonally adjusted expected consumption data for major food commodities and their likely source. The food deficits were calculated as the difference between the international caloric requirement of 2100 Kcal and the expected access to seasonally adjusted food resources in 2007. On average, food assistance through various modalities was recommended in cases where the annual food deficit was estimated to be at least 15 percent—two months. The underlying assumption is that in expectation of food assistance, individuals do not reveal their exact food resources. The extent of a community's ability to meet its deficits through its own resources was estimated by an analysis of additional factors such as security, agricultural production, pasture and livestock conditions and access to other income opportunities that may be available. Furthermore, a trend analysis was undertaken to identify a similar year and the corresponding level of recommended and actual delivered food assistance to establish an indicative level of minimum and maximum emergency food assistance parameters.

Limitations

The EFSNA applied a purposive sample—food-insecure or potentially food-insecure locations and populations—therefore the results cannot be generalised to wider population groups. Hence the survey provides only the lower bound estimate of food-insecure people. However, since the ANLA made use of probability sampling, its findings could be generalized to the wider population. Hence the ANLA nicely complements the results of the Darfur survey and can guide the design of responses for the coming year. An ongoing caveat in this regard is the absence of any formal food security surveillance systems in the country that could help capture the seasonality effect in terms of food consumption, dietary diversity and frequency and thereby ensure increased reliability. In 2006 the issue of seasonality was addressed with two rolling assessments (timing) and a post-harvest CFSAM carried out in May. All contributed to operational adjustments at critical times such as just before the beginning and before the end of the hunger season. Nevertheless, food security monitoring systems will be a priority for 2007.

The lack of available and reliable baseline data has also had crucial bearings on the accuracy of assessments, and the quality of demographic information is perhaps the most important factor. Uncertainty over population figures, in particular, continues and constitutes one of the main barriers to accurate needs assessments. In Sudan, there is significant variation in estimates of population size, compounded by problems in distinguishing between different groups, such as internally displaced people and host communities. The last countrywide census dates back to 1993 but the next one is currently being prepared and should be carried out in 2007. Unmonitored population growth, the war-related death toll, large population displacements, highly mobile populations and impeded access, all render population estimates highly debatable at this stage. This variation in the 'denominator' could definitely have affected the calculation of resource requirements. Furthermore, the locations assessed do not vary substantially from year to year, which creates assessment fatigue as well as an inherent bias since respondents have a clear incentive to withhold positive information. CFSAM key informant interviews, as well as focus groups discussions were predominantly carried out with men. The data collected is therefore likely to be biased and lacks women's perspectives on issues related to food security, nutrition, income and food transfers,

Positive developments

The ANLA is an expensive and data-intensive undertaking in which donors and agencies have invested considerable funds and human resources. This multi-agency approach has definitely gone some way towards countering institutional biases and so may have greater potential to produce credible, reliable and objective results. Main contributing agencies this year included FAO, UNICEF, NGOs (in their areas of concern), MoA (at state and national level), HAC, SRRC (transitional areas), etc. In response to last years criticism of WFP dominance during the data analysis, FAO and UNICEF not only substantially contributed to the design of the questionnaire this year but were also actively involved in the final data analysis. This has led to a broader approach of the assessment, providing the necessary grounds to include the collection of non-food related data. Regarding the overall process, collaboration between all stakeholders and inputs provided by the individual participating agencies was noted to have been much more evident this year. Transportation and other logistical support were also shared and due to better collaboration overall, the entire process was considered more transparent compared to previous years.

From the point of view of the CFSAM, which has the objective to verify and audit the findings and conclusions of the ANLA, the survey was carried out at a very late stage. In fact, data collection was still ongoing while the CFSAM was conducting its fieldwork. One of the reasons for the delay was the timing of Ramadan (3rd week September to 3rd week October). However, before the CFSAM left the country, mission members and all ANLA state coordinators found sufficient time to compare, share and discuss preliminary findings and impressions with one another which has greatly contributed to the complementarity of the two exercises.

Way forward

Although valuable and valued, the ANLA should evolve into a lighter, more iterative process once comprehensive food security and nutrition baseline surveys have been completed in a given region. To date, a comprehensive baseline was carried out in Eastern Sudan in 2005[25], a comprehensive food security and nutrition survey was carried out in Kordofan in January/February 2006 and a CFSVA has been completed in Southern Sudan in 2006. The GoS conducted a detailed household survey in the North (April/May) and the South (May/Aug), the data of which is still being analyzed. WFP plans to perform a CFSVA-type analysis once the data is made available. This analysis will then help to develop baseline food security profiles for each state.

In order to build on the knowledge gained through these exercises, it would be extremely useful to establish monthly food security and nutrition surveillance systems in these regions. This would not only allow stakeholders to better capture seasonal variations in food security and nutrition but would also address some of the inherent bias associated with the ANLA and assessment fatigue. The generous funding of WFP's Vulnerability Analysis and Mapping unit by EC and USAID has allowed it to adequately resource its food security staff at both the Country Office and Sub-Office level. Discussions have started for the development of a formal Food Security Monitoring System for Darfur which should lead to action in the form of a pilot in 2007. It will be necessary to strengthen collaboration between UN agencies, NGOs and national institutions on food security and nutrition surveillance. A joint effort would enable the common results to be shared and used among the participants – and would provide each with a broader range of information than if it had acted on its own. A series of parallel surveillance activities, carried out by the individual agencies would increase the complementarities if conducted in a well-coordinated manner. A combination of the two approaches will contribute to the increase in efficiency and transparency of emergency needs assessments. A food security monitoring system is planned to be implemented in Darfur in 2007. There is currently a loose surveillance system in place (with participants from NGOs, UNICEF and FAO) which reports on nutrition data and since recently also food security related information in the form of the *Darfur Nutrition Update* on a monthly basis.

This joint effort could also be used as a vehicle for developing monitoring information for food-security purposes. In the context of chronic vulnerability to food insecurity, due to conflict or poverty, ongoing surveillance aimed at revealing and tracking trends and 'hotspots' may be more appropriate than periodic surveys alone – and can help to determine the need for more comprehensive surveys to address specific issues and concerns. The two forms of assessment should be considered as complementary, not as alternatives. Such systems may be costly to establish and run, in terms of time and money, and are often set up as part of a collaborative effort between agencies. But establishing (for example) sentinel sites may be both the most effective and most efficient way to gauge changes in critical variables, as compared to the use of repeat surveys. Because of the fast-evolving situations, assessments depend as much on preliminary assumptions, best-guess estimates and predictions based on extrapolation as they do on observed fact. The checking of these assumptions and estimates against the changing reality should be considered essential. Monitoring of the external environment and the changing nature of the risks this creates should be considered as a key priority for the coming months. Although the following figures are based on our best assumptions, it is critical to periodically review and adjust programming for general food distribution, by reviewing the locations to be assisted, following population movements and by carefully monitoring the scale of actual harvest and prices of commodities. It is recommended that a monitoring exercise aiming at validating the few assumptions leading to the conclusions of this report take place in February/ March 2007.

[25] A livelihood Vulnerability and Nutritional Assessment of Rural Kassala and Red Sea State, Tango, May 2005.

ANNEX 3

AGRICULTURAL SITUATION BY REGION/STATE

Northern Sudan

Northern Region (Northern, Nile)

The population of Northern Region, which comprises Northern and River Nile States, is predominantly settled along the banks of the River Nile. Except towards the south of the region, where rainfall supplements wadi flooding, cereal production depends entirely on irrigation. Maize and sorghum are produced in the summer, and wheat is grown during the winter months. Various methods of irrigation are used, including river diversion to flood large areas during the period of high water in August and September (Seleim Scheme); small riverbank pumps; large pump stations serving schemes; residual moisture along the riverbanks and on the islands following the summer floods (*gerif*); pumped groundwater in the high-terrace areas; residual moisture following the flooding of wadis (*demira*); and recently, centre-pivot sprinkler systems in a few locations (38 in Nile and at least 15 in Northern, each covering about 200 fd).

This year, unusually high floods in September damaged significant areas of agricultural land, especially in parts of Nile State such as Metema, Shendi and Abu Hamad provinces; damage was also reported in Merowe province in the east of Northern State. In Nile State it was estimated that a total (including both agricultural and non-agricultural land) of about 350 000 fd was affected, and some schemes suffered damage to pumps and canals. There were also reports of some loss of human life, livestock and dwellings.

Regarding agricultural production, the adverse effects of these late floods included the loss of substantial areas of alfalfa, fodder sorghum and maize, with the result that fodder prices registered a temporary fourfold increase; fodder prices were returning to normal by the end of November. On the credit side, the good rains associated with the high river levels also flooded many wadis, allowing a substantial expansion in the area under *demira* production in Nile State.

Sorghum yields in Northern State are similar to last year's, but those in Nile State, where sorghum yields are usually lower, are expected to be on a par with Northern following this year's good growing conditions.

High temperatures in May and June and the resulting increase in the cost of production due to the increased irrigation requirement, dissuaded many farmers from growing maize this year. This, and the subsequent loss of much of the standing crop in the September floods, meant that the total area was only about half of that of last year. However, with the reduced area, the average yield was slightly higher than that of last year.

The National Wheat Programme has set a target this year of 450 000 fd of wheat for Northern Region (250 000 fd in Northern and 200 000 fd in Nile). In Northern, 116 000 fd had been prepared by 25 November, while in Nile, 20 000 fd had been sown. Planting in Northern lags behind, largely because farmers are unwilling to plant before their neighbours, since fields that are sown before others are especially susceptible to loss of seed to birds. It is expected that planting will continue up to late December or even early January and that a total of 265 000 fd will be achieved for the region. Wheat production is encouraged by government subsidies on fertilizer and diesel (for wheat production only) and by a better-than-usual availability of seed and other inputs. The Farm Mechanisation Corporation of Northern now has more than 120 tractors, and the Agricultural Bank of Sudan has recently imported 90 tractors for purchase against 5-year loans. (Only about 25 of these have so far been taken.) In Northern, the SMoA distributed 50 pumps free of charge.

By the end of November, temperatures appeared favourable for wheat production. At Hudeiba Research Station in Nile State, the maximum and minimum temperatures recorded during the last ten days of November were 31 ^{o}C and 16 ^{o}C. These compare very favourably with the maximum of 37.3 ^{o}C and minimum of 22.8 ^{o}C recorded for the same period last year. If these low temperatures continue, good yields may be expected.

The region is relatively free of insect pests and diseases of cereals, though sorghum midge can be a problem on late-planted sorghum. Birds are a perennial problem both at sowing and at maturation. Mesquite is present in a number of schemes, but increasing availability of government funding means that clearance campaigns are continuing. Broomrape (*Orobanche* sp) is becoming an increasing problem in bean fields, especially in Merowe Province. Green scale insects continue to kill off date palms in Golid and Al Ghaba schemes, leading to fears that the pest could spread elsewhere.

The area under faba beans (sown from early November) is considerably smaller than last year for various reasons. Late floods delayed sowing beyond the optimal time; the price of seed was high; the incidence of broomrape is increasing in certain areas; and farmers who achieved low yields last year because of the relatively high temperatures, were dissuaded from planting this year.

Livestock condition is good and numbers of cattle are said to be increasing. Fodder availability in Northern is recovering from the September floods, and pastures in Nile, where the MoA has a 170 000 fd rangeland re-seeding campaign, are better than usual. Most hafirs in Nile are more than half full, which is very good for this time of year.

Eastern Region (Gedaref, Kassala, Red Sea)

Eastern Region includes one major irrigation scheme (New Halfa), 45 percent of another (Rahad), two spate irrigation schemes (Gash in Kassala State and Tokar in Red Sea State), and the largest mechanised rainfed farming area in the country (Gedaref).

This year, the relative adequacy of rainfall in the region increased from south to north. Rainfall in Gedaref ranged from about 400 to 800 mm and was poorest in the south. Elsewhere in the state, geographical distribution was patchy, with some areas experiencing dry spells in August and September, and others receiving fairly good rains into October. Further north in Kassala, the rainfall situation was more consistent apart from a dry spell during July. There the rains started early and continued into October with a satisfactory distribution. This year, Red Sea State has seen its best summer rains for several years in terms of amount and distribution. The regular summer rains in the hinterland were very satisfactory, and the coastal rains started early in November. By mid-November the state had already received about 60 percent of its optimal coastal rainfall and if, as appeared at the end of November, the rains were to continue, it was expected that between 80 and 90 percent of the optimum might be achieved. This year, however, unusually high rainfall at the Ethiopian and Eritrean plateaus has caused serious floods during September in Tokar and Gash Deltas that threaten basic services and led to localised displacement. Areas of horticultural gardens along the gash stream in Kassala State, has reported significant damaged to areas cultivated areas in general and those cultivated by onions, in particular, which together with the onions areas damaged in River Nile areas has resulted in acute shortage of onion supply in the country as the whole. In Tokar area the flood led to displacement of about 5 430 destitute households, who lost their basic assets and shelters and fled to the suburbs of Tokar town.

For various reasons - the rapidly changing consumption patterns in the country from sorghum to wheat, the reduced demand for concentrates following concerns about avian flu, and most of all, the misguided speculation on over-priced grain early in the year - the siloes and most traders' warehouses in Gedaref town were still full of last year's sorghum crop by the second half of November. With current market prices at not much more than half of the original purchase price, investors were holding on to their stocks in the hope that prices might rise. However, this over-supply and the fact that a satisfactory harvest is expected are keeping prices low. This, in turn, is a strong disincentive to farmers to harvest cropped areas where the expected return might not justify the relatively high cost of harvesting. The MoA fears that if prices do not rise substantially before the end of January 2007 (as a result, about 35 percent of the planted area of sorghum may remain un-harvested. This may be an extreme scenario, but farmers at present are setting a high threshold on the yield level that it will be worth harvesting. Larger farmers with, say, 5 000 or more fd are inclined to set a higher threshold (perhaps 225 kg/fd or 2.5 bags/fd) than smaller farmers, although heavy debts incurred in planting are an incentive to harvest very close to the financial break-even point.

The area of sesame this year is significantly smaller than last year, especially in Kassala which reported a reduction from 150 000 fd to 15 000 fd (Gedaref is down from 749 000 fd to 632 000 fd). The main reasons for this reduction are the high cost of production and the poor prices prevailing after last year's harvest. Current sesame prices remain low at between SD4 000 and SD5 000/kantar (50 kg). Yields of about 80 kg/fd are expected.

Central Region (Gezira, Sennar, Blue Nile, White Nile)

Central is the most important grain-producing region of the country. In 2006, the rains were fair to favourable. Although their onset was late over much of the region (especially in the more northerly parts such as Gezira and Sennar), and some localities experienced dry spells in July and September, amounts and distribution were generally adequate to secure an average to above-average rainfed crop.

The area under sorghum was similar to that of last year, but the area under millet showed a significant increase. Production, however, was substantially higher than last year. Overall cereal production saw an

increase of more than 40 percent, accounted for by increases of 34 percent in sorghum, 88 percent in millet, and an expected 94 percent in wheat.

On the Gezira Scheme, there was a 28 percent increase in the area under sorghum; combined with good yields, this translated into a production increase of 50 percent. 95 percent of sorghum seed used this year on the scheme was improved (40 percent 'Tabet', 40 percent 'Wad Ahmed', and 15 percent hybrids). The irrigation situation this year was good, with few areas suffering from water shortage or flooding. The prospects for wheat are promising, with 300 000 fd already prepared by the end of November, of which 195 000 fd had already been sown; finance is provided completely by the Agricultural Bank of Sudan on *salem* basis. Despite the fact that Gezira, because of its warmer winters, cannot match the wheat yields of Northern and River Nile States, it is expected, with its larger area, to contribute more than 35 percent of the country's total wheat production this year.

In White Nile, more than 90 percent of seed used in the irrigated sector was improved, while in the mechanised rainfed sector there was an increase in the use of both improved seed and herbicide. A reduction in the mechanised rainfed area was compensated for by better yields resulting in an overall increase in production (sorghum and millet) of 60 percent. The state's area of traditional cropping more than doubled this year, and good yields meant that production increased almost five-fold compared with last year. All in all, this year's crop production is regarded as the best for at least ten years.

It was estimated that 90 percent of seed used in the mechanised rainfed sector in Blue Nile was improved, Although the rainfed cropped areas (mechanised and traditional, sorghum and millet) were slightly larger than last year and yields were good, the increase in production compared with last year was less spectacular than that registered in White Nile. Problems included striga infestation, grasshoppers attacking seedlings, and, in some areas, late planting caused by excessive rainfall early in the season; there were also some areas that experienced a dry spell in July and others that experienced a dry spell in September.

Sennar saw a reduction in the area under irrigation this year. Crop establishment is rainfall-dependent since many areas cannot be irrigated until the dam gates are closed in September, and this year the rains started late. However, good late rains and 100 percent use of improved seed compensated to a certain extent and production was only slightly down on last year. In the rainfed sector (both mechanised and traditional) production was up significantly, due partly to area expansion but rather more to good yields.

The area under sesame was significantly smaller than last year in response to the low price and the relatively high cost of production. Cotton has done well (250 000 fd on the Gezira Scheme), and sunflower production in Blue Nile (under contract with the Safola Company) has been expanding. Gezira Scheme has produced more than 160 000 fd of groundnuts this year.

Kordofan (North and South)

This year, the rains started in May in both North and South Kordofan and continued until October, finishing slightly earlier in the north than in the south. Rains in the south were regarded as some of the best ever, though they triggered excessive weed growth in Habilla. In the north, rainfall distribution was generally good, despite the fact that some areas experienced a dry spell of about three weeks in September.

In North Kordofan, the SMAARI estimates that about 10 percent of cereal seed used was improved. Seed availability in South Kordofan was considered adequate, with approximately 8 percent of the state's requirements being met by the SMAARI, FAO and other agencies. The mechanised rainfed sector in the south made increasing use of the herbicide 2,4-D.

The mechanised rainfed sorghum area in South Kordofan showed an increase of 23 percent over last year, while the relatively small area of mechanised rainfed millet also increased significantly. Traditional sorghum yields in South Kordofan reflected the excellent rainfall, averaging more than 4 bags per feddan. The raditional sorghum area of North Kordofan almost doubled compared with last year but, as is usual, yields were much lower than in the south. Millet, which is more important in the drier north, covered a similar area to last year. The region's sesame area declined substantially this year in response to the low prices that have now prevailed for more than 12 months. Other crops hit by low prices include groundnuts and gum arabic.

Pasture and livestock conditions are generally good to very good. Prices of livestock and livestock products are high.

Darfur (North, South and West)

Apart from some northerly and north-westerly parts of North Darfur, rainfall in the Darfur region was generally good this year in terms of amount and distribution.

As well as hampering the collection of reliable production data, insecurity in the region continues to have a severe impact on agricultural activities and production. For instance, in West Darfur, the SMAARI estimates that only about one quarter of the pre-conflict agricultural area is now cultivated. The movement of the Mission was very restricted and a great deal of reliance had therefore to be placed on reports from SMAARI various NGOs and other local organisations without any field verification.

According to the ESFNA report, cereal production was down by about 6 percent in 2006 compared with 2005. The main contributor was North Darfur which registered a 50 percent decrease; West Darfur's production was similar to last year's. Millet production in the region fell by 24 percent while sorghum production rose by 10 percent.

Pasture condition is good in the south and east of West Darfur but poor in the centre and the north. There is apparently some movement of cattle into West Darfur from neighbouring Chad which may cause over-grazing. In the current insecure environment, over-grazing is one of the principle problems facing livestock owners. Under normal circumstances, cattle herds follow the rains and pastures but over most of the region this has now become hazardous or impossible. A planned rangeland regeneration programme in North Darfur could not be implemented because of security constraints.

Upper Nile

Upper Nile State is located in Nile-Sobat Corridor and is comprised of Melut, Renk, Maban, Tonga, Fashoda, Malakal, Sobat, Ulang, Maiwut, Luakpiny, Longechuk and Guornyang counties. The Nile and Sobat Rivers livelihood zone encompasses the land surrounding three main rivers, namely the Nile, Sobat and Pibor rivers. Most of the land surrounding the rivers is low lying and contains soils with high clay content, making it susceptible to flooding. The zone receives between 700-1 300 mm of rainfall annually. This zone is distinct from the Eastern and Western Flood Plains zones in that local livelihoods are far more dependent on the rivers, which harbour the most productive fishing and water lily harvesting areas in southern Sudan.

Continued insecurity, related to the disarmament process and presence of armed militia, has persisted in the State since the beginning of 2006. The conflict was mainly concentrated in the south of the State, but has now spread towards the northeast in the form of inter-ethnic conflict. In the south, the conflict exacerbated tensions over available pasture and severely constrained access to food gathering and farming activities. Thousands of households were reported to have been displaced.

Seasonal rainfall in 2006 began in early to mid May, with amounts of 20-30mm across the southern half of the state decreasing northwards. The progress of the rainy season was characterised fairly dry conditions till mid-June, a wet late-June and early-July, followed by a pronounced drier than average period during the last 20 days of July. August and September were very wet across the state which provided favourable growing conditions for crops, but also caused localised flooding which mainly affected smallholder farms.

In the State, there are large mechanized rainfed sorghum production areas around Malakal - Mohammed El Jak farms, Shilluk Kingdom farms and John Awot farms (a new area opened in 2005) - and the Renk mechanized irrigated and rainfed sorghum production areas. Visits to the mechanized farms revealed that in 2006, the area cultivated in Mohamed El Jack amounted to 7 500 feddans (3 150 ha). The main crop is the local long maturing sorghum (Agona) followed by maize and cow peas. The expected Yield for sorghum is about 2 sacks of 90 kgs per feddan (about 0.43 tonnes/ha).

In Renk, satellite based images reveal planting activities to have taken place in mid to late July. No major rainfall related problems had affected development until mid September, though rainfall in the second half of September was well below average.

No significant pests or diseases were reported in both the mechanized and traditional sectors, except for few grasshoppers, beetles and American bull worms. However, the late maturing traditional crops remain subject to *quelea quelea* attack until harvest time that extends into January 2007.

Unity State (Liech State)

Unity (Liech) State is divided into nine Counties namely Ruweng, Leer, Mayendit, Koch, Panyijiar, Guit, Mayom, NhialDiu and Alor. It is surrounded by two major rivers and streams mainly Bahr el Ghazal Rivers and the Nile. Most of the areas in the State have flood plains soil with high clay content. Similar to Upper Nile State, local livelihoods are far more dependent on the main rivers passing through the state, for fishing. The agro-ecology of the State provides a growing season varying from 130-150 days per annum in the north to 280-300 days in the south-west. Agricultural production is, for the most part based on small, hand-cultivated units. No Animal traction has been introduced in the areas. The 2006 cropping season started with early showers at the beginning of April followed by a dry gap until early May. Farmers began cultivating their fields from around mid-May and planted both Maize and Sorghum in July – 2006.

In 2006, Unity State experienced better rains compared to the previous year. However, localised floods in Leer, Panyijiar, Mayendit, Koch and Ruweng Counties, and a dry spell in Mayom county have resulted in crop damage.

In the mechanized farms of the state, the State Ministry of Agriculture and Animal resources planned to cultivate about 40 000 feddans (1 feddan = 0.42 ha) of cereals (maize and sorghum) in 2006. However, the plan was not fulfilled due to the late start of cultivation (end of July) as a result of delayed arrival of inputs. Heavy rains in August disrupted ploughing. The agricultural Inputs delivered by the Ministry in 2006 included: 39 tractors, 26 wide level plough discs, 15 harrows, 10 small discs, 2 maize planters, 4 fuel tankers, 100 tonnes of sorghum seeds (Wad Ahmad) and 40 tonnes of maize seeds. Grass hopper attack of the sorghum crop was reported in August in Ruweng County and dry spells in June and July affected crops.

The overall food security situation in the Sate is rather stable with adequate availability of food products in markets. Food prices declined compared to the same time the previous year. New roads are being constructed between Bentiu and Warrap State, and Bentiu-Rumbek, Bentiu–Leer, Bentiu–Mayom, and Bentiu–Parieng.

Jonglei State

Jonglei State is made up of North and South Bor, Ayod, Zeraf, Atar, Nyirol, Waat, Wuror, Diror, Pibor, Akobo and Pochalla. The central parts of the State form part of the eastern flood plains livelihood zone while the northern tip forms part of the Nile-Sobat River livelihood zone. The southeast forms part of the arid pastoral livelihood zone where households practice a nearly pure form of pastoralism and there is almost exclusive reliance on livestock and livestock trade for food. Seasonal migrations in search of both water and pasture provide opportunities for substantial trade and exchange with neighbouring communities.

The onset of rains in the 2006 cropping season was generally early, in April. Heavy rains in May flooded cultivated area and affected the germination of seeds. The month of June recorded a long dry spell. Re-sowing took place in July, however, heavy rains in late July, August and September caused flooding and affected crops. At the time of the Mission, the Eastern section of Akobo was completely under water and large number of households is reported to have been displaced. No cereal production is expected from the eastern section of the County and little is expected from the western section, if any. In addition, floods also caused serious damage to assets and livestock in Pibor County. In Padak county, however, rains started late in mid May 2006 and in June a two week dry spell, which affected crops was experienced. Rains were fairly good in July, August and September but no rains were recorded since the beginning of October.

In the farming areas of the State, source of seeds are generally from own stock. The main type of sorghum sown is the local medium maturing variety, planted in May/June and harvested in September/October. Average size of holdings is about one feddan. Usually, crop area is fenced before cultivation as animals are a big problem for farms. Fencing is one limiting factor for large area cultivation. In the flood affected areas of the State, an increased incidence of livestock diseases was reported mainly black quarter and water heart diseases.

North Bahr el Ghazal State

Northern Bahr el Ghazal State is divided into five Counties namely Aweil North, Aweil East, Aweil West, Aweil Centre and Aweil South. Most of the State forms part of the western flood plains livelihood zone. The population is primarily ago-pastoral although the dependence on fishing and wild foods is also significant. Seasonal migration of households to northern Sudan for labour and petty trade is also important. The state

was one of the areas most severely affected by the long civil war and thus the displacements, loss of assets and livelihoods have contributed to persistent food shortages and food insecurity.

In the 2006 agricultural season, rains started in May with some dry spells in June and July followed by good rains in August and September. Area cultivated increased as people were able to access more land, particularly around former garrison towns. However, the slow clearance of land mines from around these towns inhibited further expansion of cultivated area. While relatively richer households secured their seeds from own sources, poorer and returnee households secured seeds through FAO and partner agencies. Kinship support also played a big role. The traditional short term sorghum was planted on time and the yield was good compared to the previous year. Few farmers reported to have planted the sorghum variety "Wad Ahmed" and found it very encouraging. The long-maturing sorghum variety, normally harvested in December/January, may still be affected by birds and other factors and needs close monitoring.

No unusual pest and disease were reported, but the usual non-migratory pests were present including birds, sorghum bug, ants, stem borer and African bollworm. Striga, a pernicious plant parasite, remains a perennial weed problem in areas where shifting cultivation has been discontinued.

For the last two years, State ministry of Agriculture, Forestry and Fisheries of Northern Bahr El Ghazal have faced difficulties in obtaining financing to cultivate the 336 feddans (142 ha) of rice in Aweil town. The Ministry uses the farm to keep the seeds for the future cultivation in the big Aweil Rice Scheme which was abandoned since 1985 due to the civil war. This year, the planned area for rice cultivation was 70 feddans but the Ministry managed to cover 50 feddans. The diesel used to pump water for irrigation was noted to be too expensive. Digging a dam and repairing the irrigation canals seems a lot cheaper, as there is enough water availability. In the private rice farms of Malualkon, the Mission noted that the technical support offered to rice farmers by Tearfund (with FAO's technical support) was discontinued. This may have contributed to the decline in the number of farmers growing rice in Malualkon areas as compare to the previous year. Production of groundnuts and sesame is expected to increase slightly compared to the previous year due to expansion in area cultivated.

Overall food prices (and other consumables) were observed to be too high, especially for poorer sections of the community. For instance, the price of one Malwa (3.2kg) of sorghum is SD 300 – 400 in October 2006 compared to SD 150 – 200 in October last year, despite the sale of some subsidized sorghum (at SD 7 500 per 90 kg sack) through central Government. Such high levels of commodity prices were attributed to several factors including, the large number of returnees to the state (preliminary figures indicate that the largest number of returnees in southern Sudan have gone to Northern Bahr-el-Ghazal); the commencement of regular salary payments to soldiers and local government employees which stretched the supply constrained markets; and lack of adequate transport for the market to respond to the large increase in food demand.

West Bahr el Ghazal State

The south-eastern part of the State (including Wau) forms part of the Ironstone Plateau Livelihood Zone where crop cultivation, wild plant and honey collection, and game hunting are the main food sources. Livestock production is limited by the presence of tsetse fly in many parts of the region. Despite the zone's high agricultural potential, drought often affects local crop yields. The soils, high in ironstone, have low water retention capacity, and water shortages are a chronic problem during the dry season. Bordered by the surplus crop-producing Greenbelt Zone to the south, the Ironstone Plateau depends on exchange relations with its more agriculturally suited neighbour. Large amounts of commercially viable shea butter oil, fruit and honey production occur in this zone, and sale of these products constitutes an important component of cash income. Improving road and market links with the Greenbelt and credit availability could be the quickest way of improving access to food all year round, as well as promoting opportunities for paid employment. Improved links with the Western Flood Plains could also increase market opportunities, especially if the railway network is revived and expanded.

In 2006, the three counties of Western Bahr-el-Ghazal which include Wau, Jur River and Raja experienced good rains. Although the onset of the rainfall season was late in parts and there were dry spells in June in Raja, the amount and distribution of rainfall was good. Generally crops enjoyed optimum conditions for growth and suffered no constraints from deficits in water. Increases in area planted were accompanied with increases in yield. Farmers continued to rehabilitate their cassava fields, destroyed during the conflict and returnees, encouraged by improved security, were noted to have started re-establishing their farms Assistance is sought by Government authorities in the Sate to bring source material back to levels needed to cater for local expansion of cassava.

Seed availability was generally adequate, but in 2006 seed provision by FAO and other NGOs was reported to have been late for optimal planting. Local agricultural committees led by farmers were noted to have great potential in accessing inputs as well as markets for their produce. FAO's assistance in seeds, tools, and innovative activities such as the provision of training on animal traction through partners like SRC are encouraging and well appreciated by the community.

The main pests and diseases reported were local birds, rodents, monkeys and termites. Striga is a major problem where sorghum was continuously cultivated without crop rotation. With accessibility to new agricultural lands, use of transplanted sorghum and sowing of guar with sorghum is expected to reduce the effect of striga, however capacity building of the farmers is required for the success of the intervention. Wau farmers and IDPs did not cultivate rice as well this year due to poor organization, lack of adequate number of tractors, high cost of fuel (SD 40 000 per 200 litre drum) and lack of adequate seeds.

Lakes State

Lakes State is comprised of Rumbek Central, Rumbek East, Rumbek North, Yirol East, Yirol West, Cueibet, Awerial and Wulu. The northern and eastern parts of Lakes State form part of the western flood plains livelihood zone where the population is primarily ago-pastoral although the dependence on fishing and wild foods is also significant. The south-western part of State forms part of the Ironstone Plateau Livelihood Zone where crop cultivation, wild plant and honey collection, and game hunting are the main food sources. This gives the State a highly diversified farming system where crop and livestock production play equal roles in the food economy. Fishing also plays an important role due to the presence of many rivers and lakes.

In 2006, although the onset of rainfall was early - late March, the growing season started about two weeks later than average due to dry conditions in April and early May. With the exception of some dry spells, experienced in mid-June and the second half of July that affected crop growth in some areas, above average rainfall was recorded for most of June, July and August. September saw average amounts of rainfall.

FAO has been working with partners to offer inputs support to returnees, IDPs and vulnerable host communities. This was well appreciated by the beneficiaries as well as the authorities. At the time of the Mission, harvesting was going-on for early maturing varieties (matuet) of sorghum and groundnuts which were noted to have performed well benefiting from the good rains this year with yields of 1.7 tonnes per ha in places. The long maturing landrace *kec* is also expected to do good, throughout the zone, but needed more rainfall. No significant pest and diseases were reported in the State

Livestock is an important component of the populations' livelihood and livestock population is in the State is among the highest in southern Sudan. In Yirol overstocking was reported and is a concern. Heavy rains and floods in parts affected some animals and at the time of the Mission the cattle were reported to have been moved to higher ground around Rumbek centre. On the positive side, these same heavy rains have a positive impact on pasture and water availability with average to above-average vegetation indices indicated by remote sensed products. Increased demand for livestock and livestock products has pushed prices higher than average benefiting livestock owners but continued tensions resulting from cattle rustling and raiding has affected many households.

Although prices of sorghum have started to fall in October, the main sorghum harvest was yet to occur and supplies to the market were relatively low.

Warrab State

Warrab state encompasses the six counties of Twic, Gogrial East, Gogrial West, Tonj North, Tonj South and Tonj East. The state is yet to recover from scars of the war as rehabilitation of infrastructure and other community facilities is taking place at a slower pace. The state lies in the Western Flood Plain Livelihood Zone where the population is depends on livestock and agriculture, supplemented by fish and wild foods, are the main food sources.

Rainfall in the 2006 agricultural season was slightly above 2005. However, rains started a month late in May and were interrupted in July. In the following two months of August and September heavy rains were received which in some areas caused localized flooding and crop damage. Given that agriculture in the state is exclusively rain fed and shorter rain seasons have been experienced in recent years, FAO and some NGOs in partnership with the State Ministry of Agriculture are introducing new farming techniques to counter the water supply problem. One of them is the use of shallow wells where farmers are able to grow other crops like vegetables during the dry season. In addition to supplying farmers with improved seeds, Farm Africa has initiated an outreach programme to start educating farmers sorghum transplanting. The technique

would enable farmers to transplant seedlings to the field timely at on-set of rains, be able to plant twice a year with short-term varieties.

Major crops grown in Warrab are Sorghum, Groundnuts and Sesame. Cassava, beans and other vegetables are also grown but on a smaller scale. Productivity is still very low averaging between 1.2 to 1.6 tonnes of sorghum per hectare. Average cultivated land per household in the state ranges from 0.7 to 1.0 hectare. Productivity in the crop sector is mainly kept low by poor farming practices, plant pests, fungal diseases (that attack sorghum leaves and heads at milking stage) and common weeds like Striga. Lack of access to pesticides and herbicides by the majority of farmers further exacerbates the situation. A combination of improved rains during 2006, relative peace and increased numbers of returnees to the area, the size of agricultural area planted is estimated to have increase by at least 20 percent on 2005. The increase would have been much higher had it not been for the interruption in rains during July. To increase both production and productivity, FAO together with NGOs and the Ministry of Agriculture have began the training in the use of ox-ploughs and were already carried out in three counties of the state. With adequate rains, the adoption of ox-plough use is expected to significantly increase the production and productivity of crops.

At the time of the Mission's visit, the average price of sorghum in some isolated areas was about SD 1 000 per Malwa compared to SD 750 per Malwa at the same time last year. This is equivalent to SD 330 (USD 1.53) per kilogram. Interviewed groups indicated that without food aid, prices could have been even much higher. The mission was informed that at certain occasions, subsidized sorghum, paying only for the transport cost, was made available by the Government to ease price levels. But the transport cost itself was very high for most of the population. The road infrastructure is poor throughout the State. Only one access road to Tonj town in south Warab from Rumbek in Lakes State has been reconstructed. More roads need to be reconstructed to improve access to all counties of the state. Due to poor infrastructure the cost of delivering goods to the state is very high thereby contributing to higher consumer prices. Other factors mentioned for the high food commodity prices were commencement of salary payments and rapid increased in resident population due to the returnees. Pasture and water conditions were generally adequate and prices of livestock and meat were high tilting the livestock-cereal terms of trade in favour of pastoralists.

Being among the frontline areas during the civil conflict, a significant number of returnees have returned and are expected in 2007, mainly from northern Sudan. Most of the returnees during 2006 settled in urban areas to be able to access the marginal public services and infrastructure that are virtually non-existent in rural areas.

Central Equatoria (Bahr el Jabel) State

Central equatorial is now divided into – Juba, Yei River, Morobo, Lainya, kajokeji, and Terekeka counties. It includes the green belt livelihood zone to the west, ironstone plateau and the hills and mountains livelihood zones to the north and east respectively. Households in the wetter south-western areas of the Greenbelt Zone rely almost exclusively on agriculture to meet their food needs. Here, surplus production is common and households cope with dry years by increasing their dependence on root crops and exchange. Households in the Ironstone Plateau Zone are heavily dependent on crop production and are well placed to access surpluses in the neighbouring Greenbelt. The Hills and Mountains Zone, on the other hand, falls somewhere between these two extremes (agriculture and pastoralism), with reliance on cattle, trade and root crops increased in difficult years. The main food crops grown in the county are sorghum, cassava and finger millet, while the cash crops are groundnuts and sesame. Cassava is the predominant crop that should not be missed at home. In terms of production, Lainya County produces the most cassava and most household plant 3-5 feddans of cassava. The main sorghum varieties include *Gaya, Godo* and *Serena* sorghum.

In 2006, seasonal rains were marked with some irregularity. The onset of rainfall was observed with a good start in early March but was followed by a much drier than average April that affected the early vegetation. An above average rainfall in May allowed for a good recovery of vegetation but was followed by a drier than normal periods in early June and the latter half of July. The dry spell in June entailed the re-sowing of some areas with groundnut, which is normally cultivated in May. August and September were wetter than average with some heavy rains causing localized floods.

At the height of the planting season, insecurity caused by the Lords Resistance Army (LRA) in parts of the State, disrupted agricultural activities. The Mission was informed of some reduction in cultivated area due to the activities of the LRA. Similar disruptions were reported in October which may have affected some harvesting. No migratory pests and diseases were reported but the substantial prevalence of Striga in Yei, Lainya and Morobo Counties is a serious concern. Green grasshoppers, which usually appear in late October and November, are also another concern. For the cassava crop the Mosaic virus is a major problem and is aggravated by the mixing of cassava stocks from different areas.

There's a general increase in commodity prices due mainly to the increase in demand following the opening of the Juba-Yei road which has increased commodity outflows to Juba and by returnees from The Democratic Republic of Congo (DRC) and Uganda. The outflow of Cassava was mainly to Juba, Congo, Maridi and Uganda while Sesame was to Juba, Uganda, DRC, Bahr-el-Ghazal and Maize was sent to DRC, Yei and Morobo. For instance, the average price of sorghum in October 2006 was about 9 000 Uganda Shillings (Ugsh)/kg compared to 4 000 in October 2005. Similarly, shelled groundnut was selling at 2000 Uganda Shillings (Ugsh)/kg in October 2006 compared to 1000 Ugsh/kg in October 2005. The deterioration of the roads between several main commercial centres like Yei, Kaya and Yambio was also an additional factor in the price increase.

East Equatoria State

East Equatoria State encompasses the counties of Budi, Ikotos, Kapoeta East, Kapoeta North, Kapoeta South, Lopa, Magwi, and Torit. The western part of the State lies in the Hills and Mountains Livelihood Zone which is characterised by mountains, plains and valleys, which provide a variety of strategies for its residents to cope with drought and flood conditions. Mixed seasons (two seasons in the highlands and one in the lowlands) enable rural households to minimise the risks associated with agro-climatic variations and crop failures. In the highlands, the first season is from April to July and the second from September to December. The plains have one growing season, from April to July. Most households tend to cultivate and keep livestock in both the hills and plains. The eastern part of the State lies in the Arid Livelihood Zone, which occupies the south-eastern tip of the country. Here, households practice a nearly pure form of pastoralism and there is almost exclusive reliance on livestock and livestock trade for food. Seasonal migrations in search of both water and pasture provide opportunities for substantial trade and exchange with neighbouring communities.

In 2006, an early March rainfall, in western parts of the state, was followed by a drier than average April. May was wetter than average at twice the average amount in places. A dry early June and dry second half of July affected crops but the rest of the season was marked by much above average rainfall, specially in August. Agricultural activities were affected by LRA movements in parts of the State during the months of May to July 2006 and have had a negative impact on the extent of area cultivated. However, the generally favourable rains are expected to boost yields. In the last two years no seeds were distributed by any agency and farmers mainly relied on their own sources. The sorghum varieties sown are the short maturing Keli and the long maturing ladoka (both local varieties).

No migratory pests and diseases were reported but common pests like quelea quelea and other local birds, monkeys, grass hoppers, rodents and the ever menacing striga were prevalent. No chemical controls were used except limited quantities of zinc phosphate distributed to farmers to control rats at the start of the season. Generally pasture and livestock conditions are good and no serious contagious diseases is reported, except foot and mouth diseases.

There's a general increase in commodity prices. The average price of sorghum in October 2006 was about SD 9 000/sack compared to SD 6 000/sack in October 2005. Similarly, for the same periods, the price of maize doubled to SD 12 000/sack from SD 6 000/sack. Prices of livestock were generally stable with no much change since last year.

The road to juba is maintained and open and connects the State to the capital with regular buses and vans operating at frequent intervals. Roads to Kenya are also functioning with imports of ample food and non-food commodities. Markets in the State are expanding rapidly compared to earlier years.

West Equatoria State

Western Equatoria State is composed of 10 counties, namely Yambio, Nzara, Ezo, Tambura, Nagero, Iba, Maridi, Mundri West, Mundri East and Manvolo. The State lies in the Greenbelt Livelihood Zone and households rely almost exclusively on agriculture to meet their food needs. With seasonal rainfall reaching 1400mm and more, it is the rainiest region in Sudan and enjoys a very long growing period (March to December) and has a very wide diversity of crops and multiple cropping cycles. Here, surplus production is common and households cope with dry years by increasing their dependence on root crops and exchange.

In the 2006 agricultural season the onset of rainfall was from March, with some small amounts received in February. April brought an unusual dryness followed by above average rainfall in May. Some dry spells were witnessed in mid June, mid and late July and late August, particularly in the areas bordering Central Equatoria. Main crops in the State include, maize, groundnut, cassava, rice and finger millet.

One of the main problems encountered by farmers this agricultural season was the disruptive LRA activities which affected Bangasu and Gangura, the most productive payams of Yambio County. LRA attacks were experienced between April-June when farmers were planting and weeding and they were forced to abandon their farms. In addition food and other household assets were looted and households displaced. According to SSRRC, about 1 550 households were affected in Bangasu and 1 199 households in Gangura. High cost of transportation due to bad roads was mentioned by farmers as an impediment to the marketing of their surplus production. Common pests and diseases mentioned by farmers include, monkeys, rodents, beetles affecting maize and cassava Mosaic virus.

Increased job opportunities and the commencement of salary payments to large number of Government employees have generally increased the cost of living which in turn increased the cost of labour to farmers. For instance, in 2005 the wage rate to cultivate one feddan was 210 000 UgShs while in 2006, the wage rate for the same was 300 000, a jump of nearly 43 percent. Similarly, market prices of crops have generally increased in 2006 compared to the previous year. Difficult roads conditions which hiked the transport cost are also partly responsible to general increase in commodity prices.