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This report has been prepared by Shukri Ahmed, Liliana Balbi, Ian Robison, Swithun Goodbody, Arif Husain, Sylvie Montembault, William Nall and Rogerio Bonifacio, under the responsibility of the FAO and WFP Secretariats with information from official and other sources. Since conditions may change rapidly, please contact the undersigned for further information if required.

Henri Josserand
Chief, GIEWS, FAO
Fax: 0039-06-5705-4495
E-mail: giews1@fao.org

Ramiro Lopes da Silva
Regional Director and Representative, WFP Sudan
Fax: +249 83 248003
E-mail: Ramiro.lopesdasilva@wfp.org

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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
EFSNS	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
SSCSE	Southern Sudan Centre for 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

- Aggregate 2005/06 cereal production in Sudan is forecast at 5.29 million tonnes, about 55 percent higher than the previous year's very poor crop and 17 percent above the average of the previous five years.
- Favourable rainfall over most of the country, a low incidence of pests and diseases, improved security in southern Sudan and slightly improved security at planting time in Darfur accounted for the increase in cultivated areas. However, delays in harvest in parts of the country may affect final figures of harvested production.
- Livestock and pasture conditions are good over most of the country, resulting in generally stable livestock prices.
- Cereal prices, which reached record levels during summer 2005, are now falling in response to the expected good harvest. However, delayed harvests are still keeping cereal prices at significantly higher levels than at the same time in previous years.
- Increased export earnings from oil have continued to boost overall economic activity, rising to US$5.8 billion in 2005, nearly double the amount of 2004.
- The overall food situation in Sudan, is therefore, expected to be favourable. At the aggregate level, the country 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.
- However, the highly skewed income and food distribution system within the country, and the problems of physical and financial access to food due to war, displacement, poor infrastructure, weak marketing system and economic isolation render millions of vulnerable people dependent on food assistance for their survival.
- Therefore, despite the expected above average crop and rapid growth in the economy, about 6.7 million Internally Displaced Persons (IDPs), returnees, and other vulnerable people will need targeted food assistance during 2006.The total food aid needs are estimated at about 800 000 tonnes.
- In view of the good domestic cereal production, carefully designed local purchases for food aid requirements by both the Government and donors should be considered to support markets and ensure locally acceptable varieties of cereals.
- In addition, timely assistance is urgently 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. In addition support is required to vulnerable pastoralists through community-based interventions for natural resources recovery and better management. The emergency support should include early provision of appropriate seeds, hand tools and fishing equipment.

1. OVERVIEW

An FAO/WFP Crop and Food Supply Assessment Mission visited southern Sudan from 8 to 27 October 2005 and northern Sudan from 12 November to 6 December 2005 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 2005/06 (November-October). The Mission in both northern and southern Sudan received the full cooperation of the Federal Ministry of Agriculture Humanitarian Aid Commission (HAC), Sudan Relief and Rehabilitation Commission (SRRC) and South Sudan Centre for Statistic and Evaluation (SSCSE), all assigned senior members of staff to accompany it. The Mission was accompanied by EC observers and benefited from a wide range of discussions with both national and international stakeholders. Discussion on assessment methodologies are given in Annexes 1 and 2.

In **northern Sudan**, the Mission was joined by two members of staff of the Strategic Reserve Corporation, three EC observers and a member of staff of the JRC. Pre-harvest estimates of area and yield were provided by the State Ministries of Agriculture and the various irrigation schemes. The Mission discussed and cross-checked 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). Location-specific information was provided by CARE International, the Danish Refugee Council, the International Committee of the Red Cross (ICRC), the International Fund for Agricultural Development (IFAD), the Jebel Marra Project, and the United Methodist Committee for Relief (UMCOR) (S Darfur).

In **southern Sudan**, the Mission team included, in addition to representatives from the Federal Ministry of Agriculture and HAC, members of staff of the Government of South Sudan (GoSS) Ministry of Agriculture and Forestry and a member of staff of the EU Joint Research Center (JRC). Location-specific information was provided by several NGOs including Action Contre la Faim (ACF), CARE International, Oxfam-UK, the

ICRC, Islamic Africa Relief Agency (IARA), International Rescue Committee (IRC), SudanAid, Swedish Free Mission (SFM), Women's Self Help, Catholic Relief Services (CRS), Bahr El Gazhal Youth Development Agency (BYDA), CONCERN, Tearfund (TF), Vétérinaires sans Frontières (VSF)-Belgium. 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 main effect of the progress made so far since the signing of the Comprehensive Peace Agreement (CPA) in January 2005, 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. As a result, in 2005, area cultivated is estimated to have increased from 2004 due to more people farming and yields are also up due to favourable rainfall and a migratory pest-free year. The positive effects of timely rains, with few significant breaks, are apparent in all areas except northern regions of North Bahr el Ghazal State and Kapoeta in East Equatoria State. There were adequate seed supplies among the settled farmers, and IDPs, returnees and host families benefited from FAO-supported improved seed distributions that were both timely and appropriate. In 2005, only in limited areas was insecurity threatening the well-being of the rural population. In particular, the atrocities committed by the Lord's Resistance Army in the south/southeast remain a real and continuing threat to any return to normal living. Elsewhere, significant disruption to the annual farming cycle in late June/early July was noted on the east bank near Malakal due to marauding militia; in *payams* in Yirol, due to internecine clashes related to county boundary changes and in areas where the Falata Mborroro (nomads) have temporarily relocated due to shifts in grazing patterns resulting from the effects of the conflict in Darfur and are clashing with the indigenous farmers and pastoralists.

In northern Sudan, the cropped areas in all three sectors-irrigated, mechanised rainfed, and traditional-increased significantly in 2005, and yields were generally better than in 2004. Aggregate production across the three sectors is considerably better than the previous year's poor performance and is above the long-term average. However, insecurity in Darfur, though less pronounced during the planting season, continues to seriously hamper harvest in that region.

Overall, the Mission estimates the total cereal production from the whole of Sudan for 2005/06 at about 5.29 million tonnes, comprising 4.07 million tonnes of sorghum, 663 000 tonnes of millet, 120 000 tonnes of maize, 35 000 tonnes of rice and a forecast of 400 000 tonnes of wheat (to be harvested in April/May 2006). This represents an increase of 55 percent over the previous year's poor crop and about 17 percent over the average for the previous five years. In anticipation of an adequate harvest, cereal prices throughout the country began to fall significantly in November from the record high prices reached during the summer months of 2005 are now about 50 percent below the peak levels. Still in many States prices are almost double the long-term monthly average. Pasture and water supplies are satisfactory over most of the country and livestock health is good. Livestock prices have begun to rise slightly in response to the favourable conditions.

Current improvements in road and river links in southern Sudan herald the re-establishment of commercial interchanges between agro-ecological zones. Better security and road rehabilitation work is already allowing traders to shift agricultural surpluses by bicycle and to a limited extent by truck, from where they are produced to the towns where the population has the cash to access the products. On a larger scale, trade is noted to be increasing between Uganda and Bahr-El Jebel following the opening of the Yei-Juba road in late September. Similarly, in East Equatoria, the opening of the road Kapoeta-Torit is leading to steady trading from Kenya. Repairs of the worst sections of the Kaja-Rumbek road, carried out by WFP as emergency repair project, have resulted in a decline in transport time and costs increasing commercial traffic from Uganda to Lakes and facilitating the movement of relief aid. Trade links are also expanding to the north with increased frequency of barges from Kosti to Malakal and Juba. These developments have generally contributed to a decline in commodity prices in many urban centres of southern Sudan.

Despite these very positive developments, key roads remain impassable and the present conditions still do not allow the required large-scale commercial exchange of agricultural surplus between the south-west "green belt" and deficit areas in the north and south-east. As a result, the overall socio-economic situation remains much as described in previous years. Communities in the lower-rainfall zones predominantly of the north and south-east still depend, ultimately, on humanitarian aid for food security. With the exception of the oil-industry in Bentiu (Unity State) and the minor boom in support services to GOSS and international agencies establishing themselves in Juba (and Rumbek), few opportunities for income generation other than the manual exploitation of natural resources are apparent for the time being. In addition, although the situation in Darfur shows some improvement since the peak of the conflict with the installation of AMIS,

insecurity is still a significant constraint to agricultural production and to the free movement of agricultural produce.

Increased export earnings from oil have continued to boost overall economic activity. Oil exports rose from zero in 1998 to US$3 billion in 2004 and nearly doubled to US$5.8 billion in 2005, accounting for more than 85 percent of exports. In 2006, as a result of oil-export earnings, the current account is expected to move to a surplus for the first time since 1985. Real GDP growth accelerated to reach an average of 7.3 percent and 7.7 percent in 2004 and 2005 respectively. In 2006 GDP growth is forecast at 9 percent. Foreign exchange reserves nearly doubled to US$1.6 billion in 2004 compared to 2003 and rose to US$1.8 billion in first quarter of 2005. This is an all-time high for Sudan - during the two decades before the development of the country's oil export sector reserves averaged at just US$75m - and has done much to increase its resilience to external shocks. These factors have also led to the appreciation of the Sudanese dinar.

The overall food situation in Sudan, is therefore, favourable. At the aggregate level, the country is able to cover all of its cereal requirements following the above-average cereal production and the country's enhanced ability to import commercially to cover any domestic shortfalls. However, the highly skewed income and food distribution within the country and the problems of physical and financial access to food due to war, displacement, economic isolation and limited purchasing power render millions of vulnerable people dependent on food assistance for their survival. More than two decades of war in southern Sudan, the current conflict in Darfur and insecurity in other parts have left millions in a precarious food situation and abysmal living conditions. As a result, for the various interventions in Sudan the Mission estimates that a total of about 800 000 tonnes of mixed food aid commodities, including 555 000 tonnes of cereals, will be required as emergency food aid during 2006 in order to meet the needs of 6.71 million people — about 10 percent of the total cereal requirements for human consumption of the country covering partial food requirements of about 15 percent of the total population.

ICRC (Greater Darfur) and some NGOs (CARE International in Khartoum; NPA and CRS in South Sudan, ADRA in White Nile, OXFAM in Red Sea) have independent food aid pipelines and primarily work in locations where WFP does not operate. It is expected that they will provide an additional 60 000 to 70 000 tonnes towards the total food aid requirement. As in previous years, careful planning of food aid related relief and rehabilitation activities will be necessary to ensure not only that the locations needing assistance are adequately covered amongst various partners but also that duplication of food assistance is avoided in States where several partners - including national institutions such as SRC - may be operating. The complex situation described above requires a cautious approach in designing both relief and rehabilitation interventions. On the one hand, steps should be taken to build on the positive developments by enhancing more medium to longer-term interventions. On the other hand, continued relief assistance is needed for IDPs, returnees and other vulnerable groups affected by the protracted conflict. In light of these factors, food assistance programmes in the country should, where feasible, attempt to purchase cereals from local sources. This is expected to encourage local production and promote the development of markets while providing commodities that are consistent with local consumption habits. In early December 2005, the Strategic Reserve Corporation announced its willingness to purchase a maximum of 500 000 tonnes of grains locally and had set the floor price at SD5 000/90 kg bag. This is encouraging but such announcements would have to be made early enough, before planting, to allow farmers to make informed decision. Furthermore, the current structure of coarse grain production and trading in Sudan is such that domestic prices are much higher than the prevailing world market price, which makes it difficult for international organizations to justify local procurement. This is so except where local purchases and deliveries are "protected" by high transportation costs, compared to world market supply prices. Also, the current situation is unlike that in 2004, when WFP alone purchased over 100 000 tonnes of cereals—about four times the average of local purchases in the previous five years. The 2005/06 harvest is an improvement over the previous year but not at the level of the 2003-04 bumper harvest.

The "real" increase in cereal prices could also have a significant impact particularly on the fixed income segment of the population who may not necessarily benefit from the boom in the labour market while absorbing the current inflationary pressures.

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).

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.

Another volatile region is in Eastern Sudan where opposition forces from the National Democratic Alliance (NDA) control of pockets of territory, including most of the Hamesh Koreib province on the Eritrean border. According to the terms of the CPA, the SPLA is to hand over control of the area to the Government of National Unity (GoNU) by 9 January 2006. However, continued opposition to GoNU by eastern movements presents a potential for renewed conflicts in the region.

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 12 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 the men are often away with their cattle. As a result, population estimates for southern Sudan differ enormously, ranging from 5 to 10 million.

In previous years, the most commonly used population estimate for southern Sudan was based on information from the 2002 and 2003 WHO/UNICEF Polio Immunization Days (NDIs)[1]. The publication of the NSCSE/UNICEF report “Towards a Baseline: Best estimates of social indicators for Southern Sudan” in 2004 provided new population estimates based on a comprehensive review of available demographic indicators, migration assumptions, and the review of the WHO/NDIs based population estimate. The NSCSE estimates the population as of 2003 at 7.5 million, with a natural growth rate (NGR) of 2.85 percent. 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 in 2004 and 2005.

The NSCSE estimate covers only the former rebel-held areas and does not include population in the towns previously controlled by the government. Figures for these populations were not available at the National Statistic Bureau in Khartoum, either, but estimates vary from 500 000 to over 1 million people.

Taking account of these separate sets of population estimates, Table 1 and Table 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 estimate.

[1] Population estimates were derived from the assumption that the under-five population is on average 21 percent of the total population.

Table 1: Sudan - Population estimates in Northern Sudan and three areas, 2004 and 2005 (CBS)

State	Estimated population ('000) 2004	Annual Growth Rate (%) 2003-2008	Forecast Population ('000) 2005
Northern	624	1.58	634
Nile	972	1.81	990
Red Sea	734	0.30	736
Kessela	1 625	2.51	1 666
Gadarif	1 674	3.19	1 727
Khartoum	5 553	3.67	5 757
Gazira	3 797	2.79	3 903
Sinnar	1 301	2.53	1 334
White Nile	1 636	2.47	1 676
Blue Nile	716	2.92	737
North Kordofan	1 578	1.52	1 602
West Kordofan	1 203	1.33	1 219
South Kordofan	1 174	1.38	1 190
North Darfur	1 655	3.16	1 707
West Darfur	1 734	2.37	1 775
South Darfur	3 171	3.41	3 279
Total Northern Sudan	**29 147**	**2.72**	**29 932**

Source: CBS 2004 and Mission forecast.

In estimating population data for southern Sudan, the following considerations/assumptions have been made:

- The year 2003 has been adopted as baseline because it is the latest year for which a single set of statistics showing population by county is available. NSCSE population projections for 2004 are available only for some counties.
- The administrative division of Southern Sudan shown in Table 2 on population does not reflect changes in county boundaries subsequent to 2003. (Border of counties and *payams* were still changing at the time of the Mission).
- An annual average growth rate of 2.85 percent has been used for all counties/states, as no disaggregated information by state was available.
- Population data from the towns excluded from the NSCSE analysis (the former "garrison towns") has been added taking information provided to the previous year's Mission by the State Ministries of Agriculture, projected into 2006 at the average growth rate.
- Preliminary estimates of the number of returnees, generated by OCHA, (2004: 532 650 people, 2005: 296 008 people) have been added. In the absence of better information on the family composition of the returnee population, this subset of population was also projected to grow at the same NGR as the rest of the population.
- The 2006 population refers to the mid-year settled population. Expected further returns to Southern Sudan (excluding the transitional areas and the South-south IDP returnees), estimated by OCHA between 231 000 and 632 000, have not been included.

Accordingly, Sudan's total population in 2005 is estimated at about 39.2 million, comprising of 29.9 million in northern Sudan and about 9.3 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. In March 2005, UNFPA began planning for a comprehensive population census in Sudan at an expected cost of about US$60 million. A population census, to be completed within the first two years of the interim period, is required under the provisions of the Comprehensive Peace Agreement signed by the Government of Sudan and the Sudan Peoples Liberation Movement (SPLM).

Table 2: Sudan - Population and household estimates in Southern Sudan, 2003 and 2005

State/ County	Population 2003 NSCSE	Population 2005	Households
Upper Nile			
Renk	18 948	20 043	3 341
Fashoda	47 433	50 175	8 363
Tonga	31 014	32 087	5 348
Sobat	40 000	42 312	7 052
Latjor	419 548	443 803	73 967
Malakal Town		102 850	17 142
Total		**691 270**	
Jonglei			
Old Fangak	173 000	183 002	30 500
Atar	41 190	43 571	7 262
Nyirol	109 567	115 901	19 317
Ayod	176 295	186 487	31 081
Waat	77 671	82 161	13 694
Wuror	49 429	52 287	8 715
Diror	43 662	46 186	7 698
N.Bor	110 929	117 342	19 557
S.Bor	121 314	128 327	21 388
Bor Town		20 570	3 428
Pibor	150 243	158 929	26 488
Akobo	72 381	76 566	12 761
Pochalla	23 643	25 010	4 168
Total		**1 236 339**	
Unity			
Ruweng	44 169	46 723	7 787
Bentiu Town		61 710	10 285
Rubkoana	50 253	53 158	8 860
Mayom	57 667	61 001	10 167
Guit	49 143	51 984	8 664
Koch	114 924	121 568	20 261
Leer	72 978	77 197	12 866
Panyijar	92 657	98 014	16 336
Total		**571 355**	
Warab			
Twic	392 662	415 363	69 227
Gogrial	498 305	527 113	87 852
Gogrial Town		20 570	3 428
Tonj	565 890	598 605	99 768
Total		**1 561 651**	

State/ County	Population 2003 NSCSE	Population 2005	House -holds
N Bel G			
Aweil W	268 819	284 360	47 393
Aweil N	181 405	191 892	31 982
Aweil E	353 633	374 077	62 346
Aweil S	213 810	226 171	37 695
Aweil Town		23 656	3 943
Total		**1 100 156**	
W Bel G			
Raja	34 190	36 167	6 028
Raja Town		57 596	9 599
Wau	199 600	211 139	35 190
Wau Town		82 280	13 713
Total		**387 182**	
Lakes			
Cuibet	155 469	164 457	27 410
Rumbek	300 621	318 001	53 000
Yirol	252 876	267 495	44 583
Awerial	87 776	92 851	15 475
Total		**842 804**	
West Equat.			
Tambura	86 705	91 718	15 286
Yambio	229 638	242 914	40 486
Ezo	65 357	69 135	11 523
Maridi	159 571	168 796	28 133
Mundri	182 610	193 167	32 195
Total		**765 730**	
B el Jebel			
Juba	63 257	66 914	11 152
Juba Town		102 850	17 142
Yei	262 652	277 837	46 306
Kajo-Keji	126 829	134 161	22 360
Magwi	109 533	115 865	19 311
Terekeka	69 448	73 463	12 244
Total		**771 090**	
East Equat.			
Torit	164 043	173 527	28 921
Budi	140 443	148 562	24 760
Kapoeta	205 167	217 028	36 171
Total		**539 117**	
TOTAL	**7 558 367**	**8 466 694**	**1 411 118**
Returnees 2004-2005		789 191	131 532
GRAND TOTAL		**9 255 885**	**1 542 650**

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

2.3 Macro-economic situation

Real GDP growth accelerated to reach an average of 7.3 percent and 7.7 percent in 2004 and 2005 respectively. In 2006 GDP growth is forecast at 9 percent. The GDP sectoral composition in 2004 indicate the continued dominance of the agricultural sector at 44.5 percent followed by the service sector at 30.1 percent and the manufacturing sector at 24.4 percent.

Exports of oil have given a significant boost to Sudan's economy and triggered large changes in the macro-economic environment. Oil exports rose from zero in 1998 to US$3 billion in 2004, and then nearly doubled – to US$5.8 billion – in 2005. They now account for more than 85 percent of exports. As a result, the current account is expected to move to a surplus position in 2006, for the first time since 1985. The surplus is projected to amount to US$310 million (0.8 percent of GDP) in 2006, as compared to a deficit of about US$720 million (2.6 percent of GDP) in 2005.

The narrowness of Sudan's export position is an emerging structural weakness that may become a concern over the long term, given the historical volatility of international oil markets. However, in the short term the concentration has been of benefit as prices have hit record highs, and strong earnings offset the weakness of the non-oil sector in the first quarter. On the other hand, the relative importance of agricultural exports has declined dramatically. In 2004, agricultural exports accounted for about 17 percent of total exports, as compared to more than 90 percent in the early 1990s. In 2005, not only the relative importance but also the amount of revenue from agricultural exports declined. In the first six months of 2005 agricultural exports revenue declined by nearly 25 percent relative to the same period in 2004. This largely reflects the combined impacts of the poor 2004/05 agricultural season and conflict in the Darfur region, which has historically been one of the main sources of livestock for export.

Foreign exchange reserves nearly doubled in 2004, to US$1.6 billion, and rose to US$1.8 billion in first quarter of 2005.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 2003 and 2004 the exchange rate averaged SD261:US$1 and SD258:US$1 respectively. In December 2005 the dinar stood at SD231:US$1, compared with SD250:US$1 in the first quarter of 2005 and SD248:US$1 in the second quarter. The appreciation has been made possible by the open auctions and wider daily trading bands that the reformed currency regime allows.

The real appreciation is even greater than the nominal appreciation of close to 7 percent in 2005, and must have begun to undermine the competitiveness of Sudan's non-oil export base. The strength of the currency will also serve to further fuel rapid growth in demand for imported goods, which have become significantly cheaper in inflation-adjusted local-currency terms.

Average inflation in 2004 was 8.5 percent, up from an annual average of 7.8 percent in 2003, and is estimated at 11 percent in 2005. Consumer prices will be subject to greater upward pressures during the post-conflict era, as domestic demand strengthens and the cost of imports grows. As a result, in 2006 inflation is projected to increase further to 12.5 percent. Although these rates are higher than the government's target of 5 percent, inflation is expected to remain much below the rates in the 1990s.

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 44.5 percent of the GDP in 2004, of which 24.7 percent was from crop production while 19.8 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. 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 2000-2004 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). FAO estimates the camel, cattle, sheep and goat population in 2004 at 3.3, 38.3, 48.0 and 42.0 million head, respectively. At this level, Sudan has one of the largest livestock populations in Africa. Livestock are raised mainly by pastoral and agro-pastoral groups, with the former dependent on livestock and the latter on both livestock and cultivation. The herd size may vary from below fifty head to a few thousands per household. Pastoral herds are mainly semi-nomadic, as is the case in western Sudan and southern Blue Nile where traditional movements occur between wet and dry-season grazing areas. Systems range from those in southern Sudan that sell a few head of cattle to full commercial sales by pastoralists, agro-pastoralists and commercial producers in the north. Income from the sale of livestock is used to meet household food requirements, market goods, drugs, vaccines, salt, feeds and to pay water fees and tax.

With 8 million head of cattle and 8 million head of small ruminants estimated to be kept in southern Sudan the contribution of animals to household food economies is considerable. Cattle raiding may have altered local distribution patterns in Jonglei, Upper Nile, East Equatoria and Bahr el Jebel, but there is not thought to have been any significant migration out of the country, except for normal transhumance and movement of slaughter stock.

2.5 Poverty and food insecurity

Poverty research at the national level in Sudan has tended to make use of data supplied as a by-product of surveys, carried out at different times, whose principal objectives were not poverty-specific in either focus or design. These include the 1992 Household Survey (CBS 1992, mainly for northern Sudan; the Safe Motherhood Survey (1999), carried out by the Central Bureau of Statistics (CBS) in collaboration with UNFPA, and the 2000 Multiple Indicator Cluster Survey (MICS) carried out in collaboration with UNICEF. All these surveys were confined to northern Sudan and, at best, some areas under Government control in the south.

Notwithstanding the recent promising economic growth in Sudan, widespread poverty, skewed income distribution, and inadequate delivery of social services remain serious problems. Sudan is a least developed country with very poor socio-economic indicators: UNDP's 2005 human development report ranked Sudan 141st out of 177 countries. Despite data limitations, coverage, and eventually controversies, proxy national-level data estimates tell more about conditions of endemic hunger. Nutrition data from the federal Ministry of Health show that the global acute malnutrition rate (GAM) in 1997-2001 was 26 percent – 19.5 percent for the north and 32.4 percent for the south (a rate above 15 percent is globally considered an emergency situation and requires immediate intervention).

Statistics by the New Sudan Centre for Statistics and Evaluation (NSCSE) and UNICEF provides dire information about socio-economic conditions, which put southern Sudan among the poorest regions in the world. The Gross National Income per capita in 2001 was estimated to be less than US$90 per year, some four times lower than the level of the rest of Sudan and one of the lowest in the world. The proportion of the population earning less than one dollar a day is estimated at around 90 percent. Southern Sudan has the least access to primary education in the world (2002) and, in terms of adult literacy rate (24 percent), the region is one of the lowest in the world. High rates of infant mortality results in one out of every four newborns dying before the age of five (2001-2003), and the prevalence of severe malnutrition (21 percent) among the children under-five is close to the extreme values.

Several factors have contributed to the high incidence of poverty in Sudan in spite of recent economic growth, including internal conflict; ill-conceived development policies that neglected rural development; and natural disasters – mainly drought – that led to conflict over resources. The main constraints to poverty reduction have been a near absence of investment in the social sectors and rural development along with consequent conflicts in the South and, recently, in Darfur. These conflicts have affected all aspects of life and caused massive displacement and migration of people from conflict-stricken area, to major urban centres in the northern and central parts of the country and to neighbouring countries. This exodus has further eroded the capacities of the already weak and vulnerable host communities and led to increased levels of deprivation. Poverty has also been exacerbated by environmental factors. Since the mid-1980's, erratic rainfall and increased occurrence of drought, localized or otherwise, compounded the suffering of large numbers of farmers and agro-pastoral herders.

For Sudan to escape the poverty trap and ensure security and stability, ongoing conflicts must be speedily resolved and the root causes of conflict must be addressed. Though peace is a necessary pre-condition for the reduction of poverty and improvement of food security it is not the only one. The consolidation of the

peace process might be the starting point for the achievement of sustainable food security in Sudan, progress towards recovery and development is unlikely to be linear. Emergency, recovery and development situations are likely to coexist in Sudan for many years to come. In order to pre-empt conflict, priority strategic objectives should include increasing access to food, credit, jobs, markets and basic services, and achieving a more equitable geographical and sectoral allocation of public resources, as well as reducing chronic and transitory food insecurity. Improvements in agriculture – including both crop and livestock production – will be central to achieving broad-based improvements in well-being

The level of investment needed for the reconstruction and development of the country is enormous and, despite increases in government revenues, will require external financing[2]. Due to the state of protracted crisis that has characterised Sudan, external assistance has been mostly of a humanitarian nature (with food aid representing over 50 percent of the total value).

Table 3: Sudan - Food aid deliveries in cereal equivalent ('000 tonnes)

1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
82.4	108.3	114.4	201.00	293.5	182.4	202.8	149.4	256.1	388.8

Source: WFP, '2004 Food Aid Flows' Interfais 2005

Several new initiatives are being planned in agriculture and food security, both in the North and the South, mainly managed by the World Bank, in collaboration with several development partners.

3. AGRICULTURAL PRODUCTION IN 2005/06

3.1 Main factors affecting cereal production in 2005

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. For instance, in River Nile State 22 percent of field crops were financed by the ABS, whereas in Northern the corresponding figure was only 10 percent. In White Nile State a large number of farmers received sorghum seed that they were told was 'Tabet' variety, through the ABS in Kosti. It turned out to be a poor-quality heterogeneous mix, but this was not recognised until the crop was well established in the field. Litigation is pending.

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. At least two states in the North (White Nile and River Nile) commissioned local groups of farmers to produce seed but were unable to buy the seeds produced because of lack of funding. In White Nile, irrigation started much later than intended because funds were not available to buy fuel for the scheme pumps. 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.

Credit and finance for traditional agriculture remains, understandably, at a very low level, with problems of non-viable collateral, small loan levels, geographical distance and the logistics of recovery. Attempts have been made to form cooperatives but few have had any success. The national credit situation may soon improve with the recent initiation, following the signing of the north-south peace agreement, of a microfinance project involving the World Bank, the Ministry of Finance and the Central Bank, and a sum of USD 269 million over a period of six years. This will be aimed in part at the traditional sector.

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. The seasonal maximum Normalised Difference Vegetation Index (NDVI) reveals that in the 2005 season a pattern of above-average vegetation development dominated across most of Sudan. Areas where conditions have been consistently better than average through 2005 include areas of South Darfur, parts of West Kordofan, South Kordofan, northern Upper Nile, Blue Nile, Unity and western Jonglei. Other areas of improved performance include West Darfur, North Darfur, upper West

[2] Sudan is currently classified as a Highly Indebted Poor Country, with a unsustainable debt burden. This represents a significant constraint on the resources available domestically, and on access to international capital.

Kordofan, North Kordofan, Sennar, Gedaref and Kassala. This was generally borne out by field visits and farmer interviews. Figures 1 to 8 indicate the dekadal rainfall performance of selected sites throughout the country.

Light rains started in early May in South Darfur, South Kordofan, White Nile and Blue Nile States and extended northwards over the next two months. July and August brought good, well-distributed rains to most agricultural areas although there were some important inconsistencies; part of Gedaref, the country's largest rainfed mechanised area, and northern White Nile State reported poor, irregular rains during this period. In North Darfur, there was some flooding in August which necessitated re-planting. The chronically food-insecure parts of Red Sea State got some benefit from 2005's better rains and registered a slight increase in main-season production; the coastal winter rains were still awaited at the end of November.

Figure 1: Sudan - Dekadal rainfall and vegetation in Gedaref in 2005 compared to average

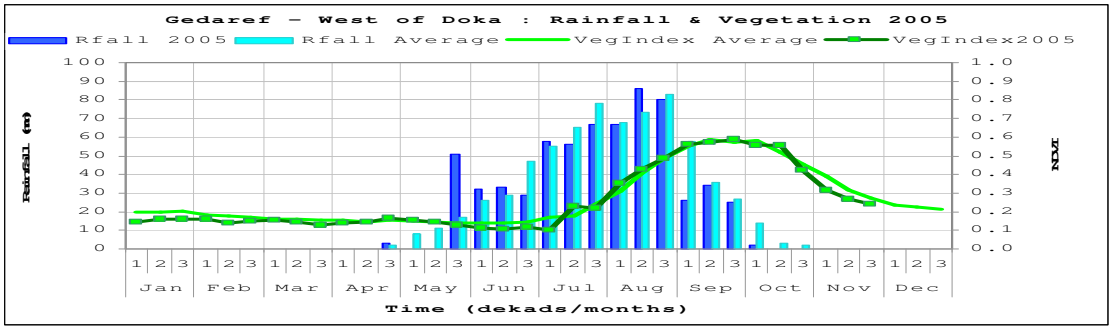
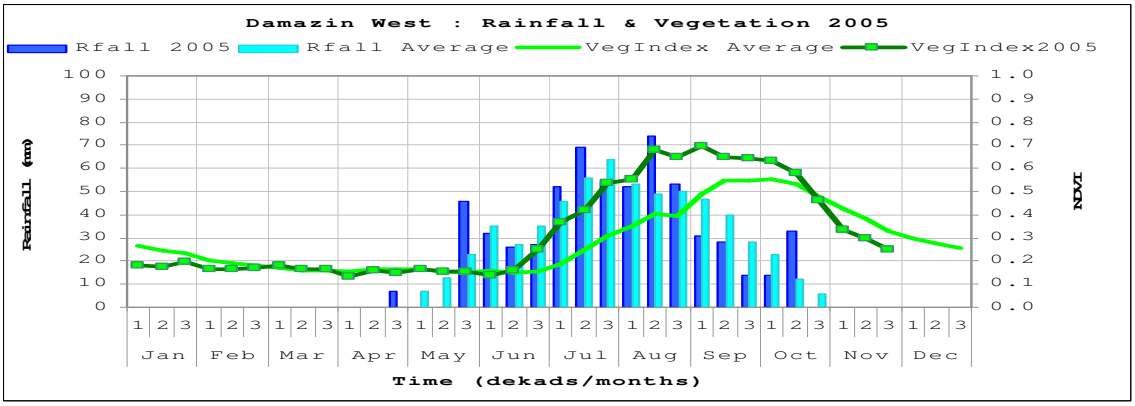


Figure 2: Sudan - Dekadal rainfall and vegetation in Damazin in 2005 compared to average



While many areas in the north of the country received some rain into early October, others, such as parts of South and West Darfur experienced a sudden cessation or a substantial diminution in early September. Several farmers there, tempted by the very promising impression given by the August rains, planted late and were rewarded with good vegetative growth but poor grain-filling. Following 2005's better rains, river levels were, and continue to be, satisfactory for irrigation. The *demira* crop was satisfactory, and in River Nile State the heavy rains during August allowed the expansion of residual-moisture sorghum into large areas of land that had not been cultivated for fifteen years. In eastern Sudan, Tokar spate irrigation scheme recorded 24 flushes throughout the season, and the situation in Gash was said to be similarly productive.

Figure 3: Sudan - Dekadal rainfall and vegetation in Nyala in 2005 compared to average

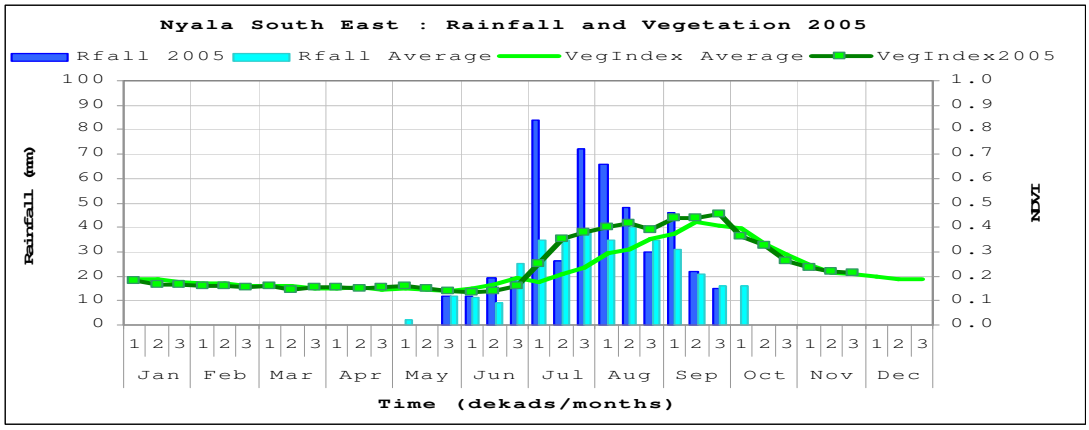


Figure 4: Sudan - Dekadal rainfall and vegetation in El-Fasher in 2005 compared to average

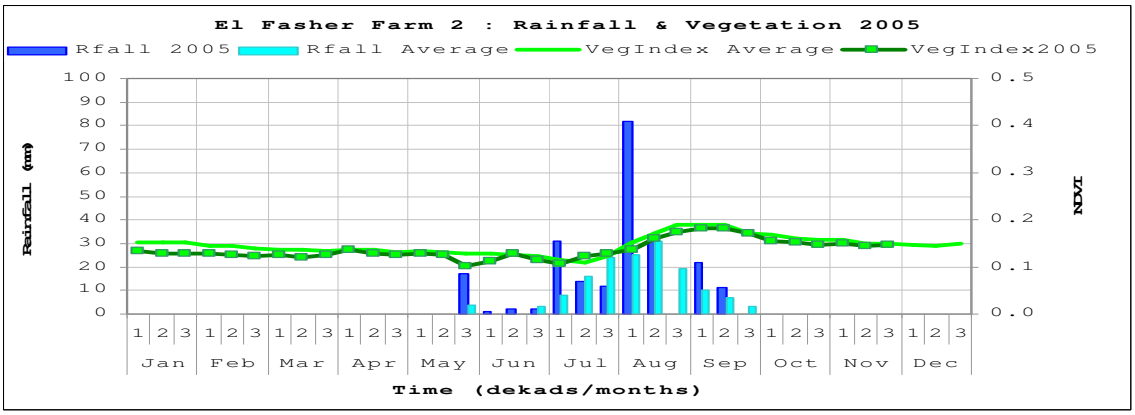
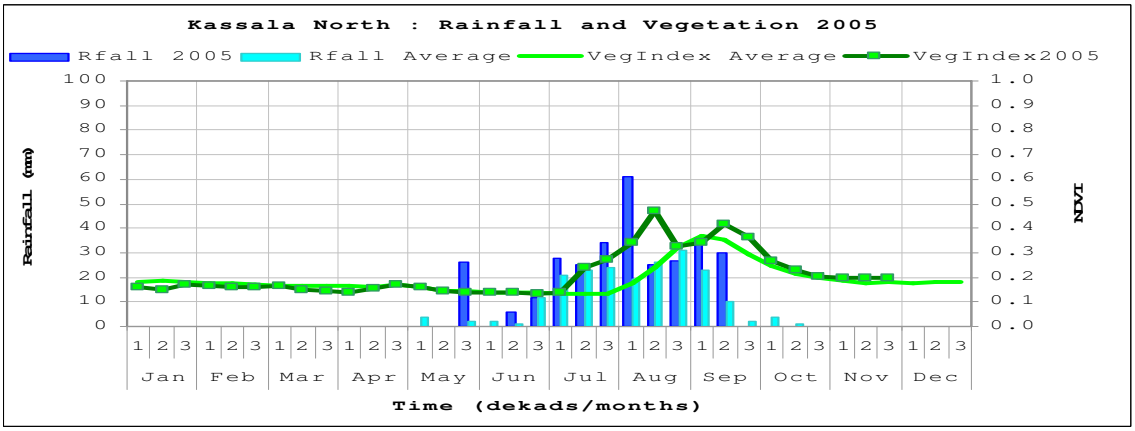


Figure 5: Sudan - Dekadal rainfall and vegetation in Kassala in 2005 compared to average



In southern Sudan, annual rainfall usually increases from north to south and from east to west, ranging from less than 300 mm in the dry lands of Eastern Equatoria to 1 800 mm in the Greenbelt. During 2005, satellite imagery suggested a basic pattern across the south that was, for the most part, far better than the previous year, with rains starting at the expected time and continuing less erratically than the previous year, albeit with some dry spells, usually of less than 10 days, in late June/early July and in September. There were some exceptions to this general pattern, such as northern North Bahr el Ghazal and eastern East Equatoria.

Figure 6: Sudan - Dekadal rainfall and vegetation in Aweil in 2005 compared to average

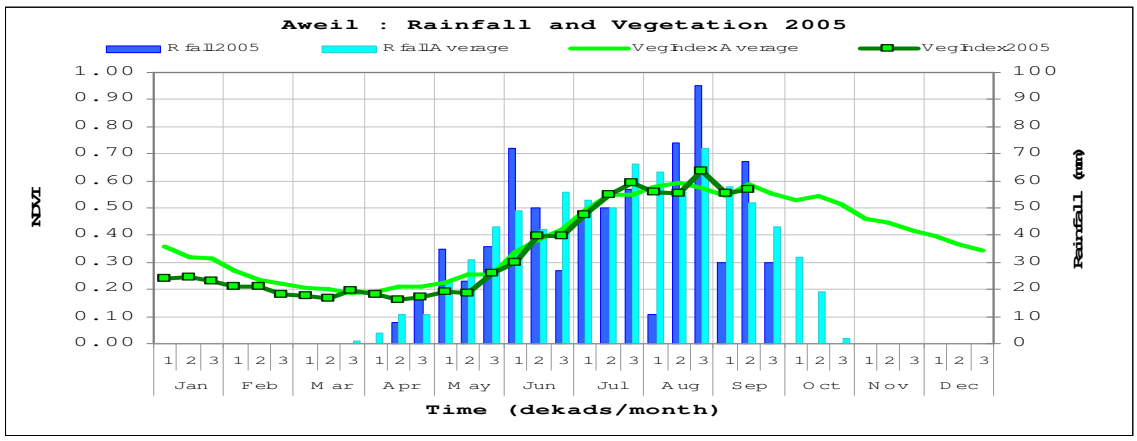


Figure 7: Sudan - Dekadal rainfall and vegetation in Torit in 2005 compared to average

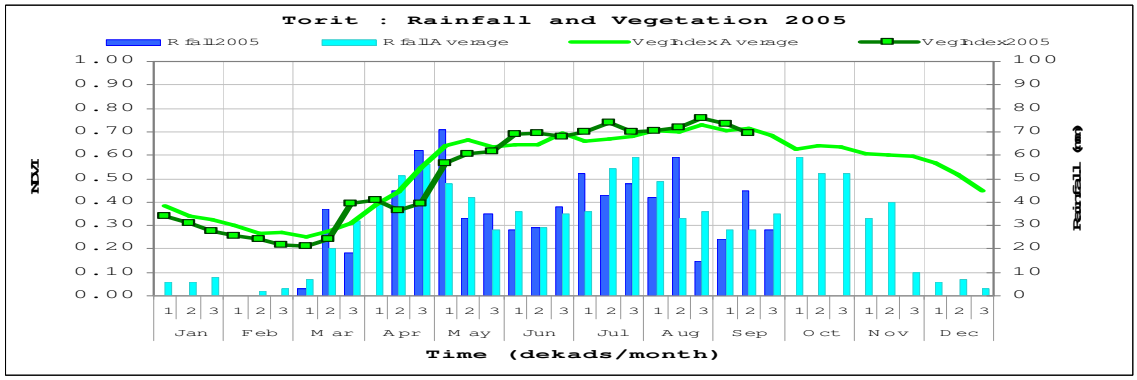
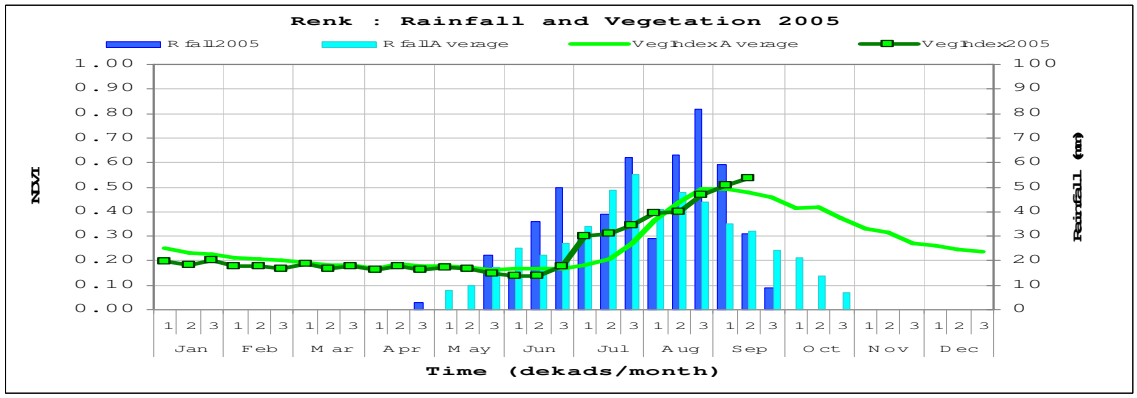


Figure 8: Sudan - Dekadal rainfall and vegetation in Renk in 2005 compared to average



The quantity of precipitation over the year was within the normal range for most areas, resulting in an average or better-than-average vegetation index in all but the two localities noted above. However, in all cases, the rains were reported to be better than the previous year. This resulted in

- a much better performance of the early planted, short-cycle sorghums and early planted maize in Upper Nile, West Bahr el Ghazal, and Lakes, but a similar performance to the previous year's poor crop in northern parts of North Bahr el Ghazal and Kapoeta.
- extended planting of middle-cycle sorghums in all areas and an improved crop performance to date over the previous year in all localities, except for the two noted above.
- extended planting of long-cycle sorghums in all areas and an improved performance to date over the previous year in all localities where such crops are regularly grown.
- a slow start to the season in West Equatoria.

3.1.3 Area planted

A larger area of cereal crop was planted in 2005 than in 2004, both north and south, and in all three sectors- irrigated, mechanised rainfed and traditional. Several factors contributed to this expansion. Firstly, the rains were better than the previous year. Secondly, because the poor rains of the previous year resulted in a poor harvest, cereal prices reached very high levels, encouraging farmers to grow more in 2005. Thirdly, security was greatly improved in the south and slightly improved in Darfur, meaning that more land could be prepared, weeded and if the situation continued, harvested in safety. There was 47 percent more land planted under cereals in Greater Darfur in 2005 than there was the previous year. Over the whole country, north and south, there was a year-on-year increase of 57 percent. The greatest increase was seen in the traditional sector which grew by 68 percent. This was followed by the mechanised rainfed sector which grew by 54 percent. The irrigated sector registered a modest expansion of 11 percent. Tokar and Gash irrigation schemes especially benefited from the good rains and covered an extra 34 000 feddans between them in 2005 compared to the previous season. New Halfa scheme saw a 46 percent increase in area, largely as a result of canal maintenance work and of clearing the invasive mesquite shrub from a large part of the scheme.

3.1.4 Agricultural inputs

There was generally good provision of crop and vegetable seed in 2005 from a variety of sources including the Federal Ministry of Agriculture (MoA), FAO and a number of NGOs. Some were distributed free of charge to traditional farmers; for instance, FAO provided more than 1 500 tonnes, 239 tonnes and 314 tonnes of crop seeds in Darfur, eastern Sudan and South Kordofan respectively. MoA provided crop seeds amounting to 239 tonnes, 668 tonnes, and 731 tonnes in South Darfur, North Kordofan and Kassala. In the other sectors, seeds were provided as loans. The varieties available were, with few exceptions, appropriate to the intended environment, and included 'Tabet', 'Wad Ahmed' and 'Arfa Gadamek'. The use of improved seed in the irrigated and mechanised rainfed sectors appears to be on the increase.

In southern Sudan, there remains a firm reliance 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. Support in 2005 includes the provision by FAO of 284 tonnes of sorghum, 137 tonnes of groundnuts, 59 tonnes of maize/rice, 29.8 tonnes of sesame seed and 35 800 kits of assorted vegetable seeds through various agencies; and through projects organised by the Tearfund NGO, a recycling of locally grown rice seeds in Bahr el Ghazal.

Large numbers of hand-tools were distributed in 2005 to traditional farmers, especially in conflict-affected areas, in order to rehabilitate productive capacity. In West Darfur, for instance, 84 000 items were distributed as well as 2 470 donkey ploughs, while in South Darfur FAO distributed 98 000 hand-tools and 2 270 donkey ploughs. In southern Sudan, 177 000 hand tools were distributed to some 109 000 beneficiary households

Fuel for tractors and irrigation pumps continues to be subsidised, thus mitigating the increases in the cost of production occasioned by other factors. The national tractor fleet remains seriously inefficient because of poor maintenance, shortage of spare parts and simple age. However, some schemes have invested in new machinery and implements such as seed drills; with Government assistance to the agricultural sector, such as the removal of import taxes for essential items, this trend could continue. Some irrigation schemes have acquired new pumps.

In southern Sudan, animal traction, introduced in Yei, Lakes and Bahr el Ghazal, can make a difference at household level, more than doubling the area that can be farmed by an individual household. This potential may not be fully realized, however, as manpower is still required for weeding and in good rainfall years the cost of labour becomes a constraint. This, coupled with a reported lack of spare parts and the full cost-recovery approach adopted by the NGOs – requiring either cash payment or hefty deposits and complete reimbursement in the first year - is reducing uptake of plough technology. Training programmes have ceased in the sample sites visited and the few local initiatives to maintain the impetus of uptake of the technology are noted. Only in Ikotos (CRS), Yirol (BYDA) and Malualakon (Tear fund) were small sale programmes evident. Closer to the towns and in the GOS areas tractors are the preferred option for agricultural expansion. So far, only 5 000 ploughs are estimated to have been distributed in Lakes/ Bahr el Ghazal since the programmes began in the middle nineties. (Figures for Yei are not included).

The rapidly rising cost of labour across the country is of concern to all but subsistence farmers. In some cases, especially near urban centres, wage rates have risen threefold in the last 12 months. There are

several reasons for this increase, including the increased level of inflation, the movement of displaced southerners back to the south (diminishing the available labour pool in high production areas); the cultivation of their own plots by erstwhile members of the labour pool in response to increased security and better rains; the increasing popularity of gum arabic collection which offers a more pleasant and more lucrative source of income than farm labour; and the movement of labourers into urban centres where, with the country's increasing oil wealth, there are now more job opportunities in the construction industry. Partly as a response to high labour costs, increasing numbers of farmers, especially in the mechanised rainfed sector are starting to use 2,4-D for the control of broadleaved weeds in their cereal crops. The chemical is often provided by scheme management at cost.

3.1.5 Weeds, pests and diseases

The 2005 cropping season was a largely pest-free year over most of Sudan. In the North, some effective campaigns were carried out by SMOAs to control local birds and Quelea quelea, sorghum bug (*Agonoscelis pubescens*) and grasshoppers. *Quelea* is classified as a national pest and, as such, its control is the responsibility of the federal MOA; in 2005, however, numbers were relatively small. Desert locust control was carried out in some states; in South Darfur for instance a spraying campaign covered an area of 8 000 hectares and in North Darfur 4 000 hectares were sprayed out of a total of 27 000 surveyed. Sorghum midge and stem borers were reported from Kassala. In the drier parts of North Darfur, millet headworm (*Heliocheilus albipunctella*) caused significant local damage. Closed smut is common on the sorghum crop, but levels have generally been low in 2005.

Watermelon bug (*Aspongopus viduatus*) caused extensive damage in the west of North Kordofan whereas in the north and east it was controlled manually through a WFP food-for-work programme. Date palms in Northern and River Nile States are an important source of income for a very large number of families. In recent years they have been attacked by green scales which are thought to have been brought from South Africa. About one million palms are thought to be infested in Northern State alone. The scales severely limit production and may eventually kill their hosts. Cultural practices and the systemic insecticide Konfidor have been identified as an effective treatment, but the Konfidor is expensive.

Striga is a perennial problem for sorghum producers. Often when infestation reaches a certain threshold the farmer will switch to millet which is less susceptible to the parasitic weed. Another parasitic weed, *Orobanche*, is reported to be becoming increasingly troublesome on irrigated fields in the north, especially amongst beans and other horticultural crops. With the high cost of labour for weeding, mechanised farmers are increasingly turning to the use of 2,4-D for the control of broad-leaved weeds amongst their cereal crops. A programme to remove the thorny weed mesquite from New Halfa has achieved clearance of 75 percent of its area of coverage. The weed remains an invasive problem in other irrigation schemes.

Pest levels in the South were also low in 2005. At Renk, sorghum-bug sites were aerial-sprayed before the beginning of the season in April and May, and spraying was carried out against migratory *Quelea quelea* in two or three nesting locations in October. In a good rainfall year local grasses that invade continuously must be kept under control. Weeding was carried out up to three times in the traditional sector and at least once in the mechanised schemes in Renk. Striga was of less concern in 2005 with greater security permitting the avoidance of infested land. Where farmers have continued to cultivate exhausted plots the weed remains a problem. The major plant diseases-rosette virus and leaf spot of groundnuts, mosaic virus of cassava and sorghum smut-remain the same as the previous year.

3.1.6 National cereal production forecast

Total national cereal production for Sudan in 2005/06 is forecast at 5.29 million tonnes, comprising 4.1 million tonnes of sorghum, 663 000 tonnes of millet, 400 000 tonnes of wheat (to be harvested in April/May 2006), 120 000 tonnes of maize, and 35 000 tonnes of rice. Total cereal production will be about 55 percent above that of the previous year and 17 percent above the average for the preceding five years. Production from the traditional sector in the South is estimated to have increased by more than 30 percent in 2005. Production figures by state for 2005/06, and comparisons with those for 2004/05, are given in Table 4. Cereal areas, yields and production by region for the last five years are given in Table 5. Note the year-to-year fluctuations in the level of production, largely attributable to rainfall variations. These correlate well with the corresponding year-to-year fluctuations in cereal prices, suggesting a role for production and market stabilisation mechanisms.

Table 4: Sudan - Cereal production forecast for 2005/06, and estimates of 2004/05 production ('000 tonnes)

	Sorghum		Millet		Wheat		Total		
State / Scheme	**2004**	**2005**	**2004**	**2005**	**2004**	**2005**	**2004**	**2005**	**%**
Irrigated									
Northern	11	12	0	0	168	169	179	181	101
River Nile	67	116	0	0	47	59	114	175	153
Sennar	57	56	0	0	0	0	57	56	98
White Nile	70	48	0	0	23	22	93	70	75
Gezira	379	423	0	0	193	144	572	567	99
Rahad	86	85	0	0	0	0	86	85	99
Suki	27	27	0	0	0	0	27	27	100
New Halfa	29	58	0	0	3	5	32	64	197
Gash	38	53	0	0	0	0	38	53	139
Tokar	2	11	2	6	0	0	4	17	425
Kassala	1	5	0	0	0	0	1	5	500
N Kordofan	5	4	0	0	0	0	5	4	80
Upper Nile	3	1	0	0	0	0	3	1	33
Sub total	775	899	2	6	434	399	1 211	1 304	108
Mechanised									
Kassala	54	90	0	0	0	0	54	90	167
Gedaref	367	579	4	10	0	0	371	589	159
Blue Nile	107	143	3	5	0	0	110	148	135
Sennar	98	180	1	9	0	0	99	189	191
White Nile	59	129	1	7	0	0	60	136	227
N.Kordofan	6	16	0	0	0	0	6	16	267
S.Kordofan	159	230	0	1	0	0	159	231	145
Upper Nile	124	245	3	50	0	0	127	295	232
Sub total	974	1 612	12	83	0	0	986	1 694	172
Traditional									
Khartoum	4	6	0	0	0	0	4	6	150
Gezira	5	186	0	1	0	0	5	187	3 740
Blue Nile	25	52	1	2	0	0	26	54	207
Sennar	26	103	3	8	0	0	29	110	380
White Nile	6	80	12	29	0	0	18	109	605
Kassala	2	22	0	0	0	0	2	22	1 100
River Nile	5	2	0	0	0	0	5	2	40
Red Sea	1	1	0	0	0	0	1	2	200
N.Kordofan	30	66	41	120	0	0	71	186	262
S.Kordofan	162	175	9	58	0	0	171	233	136
N.Darfur	2	8	33	56	0	0	35	64	183
S.Darfur	76	167	138	247	1	1	215	415	193
W.Darfur	24	44	29	54	0	0	53	98	186
South	587	805	0	0	0	0	587	805	137
Sub total	955	1 717	266	575	1	1	1 222	2 293	187
GRAND TOTAL 1/	2 704	4 228	281	663	435	400	3 420	5 291	155

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

Table 5: Sudan - Area, yield and production forecast by crop and region for 2005/06, compared with previous years

Region	Harvested area ('000 ha)						Yield (t/ha)						Production ('000 t)					
	00/01	01/02	02/03	03/04	04/05	05/06	00/01	01/02	02/03	03/04	04/05	05/06	00/01	01/02	02/03	03/04	04/05	05/06
Sorghum																		
Northern	58	171	70	120	48	66	2.52	2.16	1.51	1.31	1.72	1.96	146	369	121	157	83	130
Central	1 084	1 749	1 256	2 208	960	1 910	0.85	0.99	0.83	0.94	0.95	0.77	920	1 732	1 010	2 065	910	1 479
Eastern	1 431	1 407	1 429	2 365	999	1 613	0.50	0.49	0.42	0.64	0.53	0.53	734	687	691	1509	533	858
Kordofan	1 003	1 046	1 026	971	799	909	0.20	0.50	0.36	0.38	0.45	0.54	196	528	365	366	362	490
Darfur	193	753	591	448	224	329	1.22	0.64	0.47	0.58	0.46	0.67	236	480	241	260	102	220
South	768	799	631	969	789	1 148	0.57	1.00	1.20	0.84	0.90	0.92	529	673	503	824	714	1 051
Sub-total	4 537	5 925	5 003	7 081	3 819	5 975	0.59	0.77	0.61	0.73	0.71	0.71	2 761	4 469	2 931	5 181	2 704	4 228
Millet																		
Northern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Central	76	84	91	180	124	148	0.36	0.30	0.35	0.42	0.17	0.41	27	25	33	75	21	61
Eastern	34	32	23	160	21	53	0.47	0.47	0.39	0.61	0.31	0.31	16	15	9	97	6	16
Kordofan	775	1 146	863	1 049	488	943	0.16	0.15	0.19	0.18	0.10	0.19	123	177	165	189	50	179
Darfur	1 197	1 660	1 460	1 182	652	902	0.27	0.22	0.28	0.36	0.31	0.40	328	363	374	423	200	357
South	5	15	0	0	0	86	0.60	0.66	0	0	0	0.58	3	10	0	0	3	50
Sub-total	2 087	2 922	2 437	2 570	1 285	2 132	0.24	0.20	0.25	0.30	0.22	0.31	497	590	581	784	281	663
Wheat																		
Northern	92	60	67	77	76	79	2.80	2.87	2.39	2.70	2.84	2.88	262	162	197	185	215	228
Central	31	38	37	82	101	78	2.00	1.21	1.71	1.74	2.13	2.14	51	66	159	154	216	166
Eastern	11	2	2	8	2	3	1.00	7.50	2.00	1.75	1.48	1.61	17	15	4	14	3	5
Kordofan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Darfur	4	3	3	2	1	1	1.00	1.33	1.33	1.00	1.00	1.00	4	4	4	2	1	1
South	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	138	103	109	169	180	161	2.42	2.40	3.34	2.10	2.42	2.49	334	247	364	356	435	400
TOTAL 1/	6 762	8 950	7 549	9 821	5 282	8 267							3 592	5 306	3 876	6 328	3 420	5 291

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

For southern Sudan, a time series of production estimates over the past 5 years is given in Table 6 but it is difficult to interpret at sub-national level as county/state combinations vary from year to year. Upper Nile shows a big increase in area due to revised population figures for the zone. The estimated production is also contingent on the rains continuing over the next few weeks to support the growth of immature sorghum in Upper Nile, Lakes and parts of Jonglei including the growth and development of the second crop, recently planted in Pochalla. It is also necessary to reiterate that this total includes all cereals harvested during the season, including those already consumed.

Table 6: Cereal area, yield and production in traditional sector in Southern Sudan, 2005/06

State/ County	Population 2005	Households	% farmers	Farmers	Average ha/hh	Area (ha)	Yield (t/ha)	Production (tonnes)
Upper Nile								
Renk	20 043	3 341	**38**	1 269	2	2 539	1.1	2 793
Fashoda	50 175	8 363	90	7 526	0.84	6 322	1.1	6 954
Tonga	32 087	5 348	90	4 813	0.84	4 043	0.9	3 639
Sobat	42 312	7 052	80	5 642	0.63	3 554	0.9	3 199
Latjor	443 803	73 967	80	59 174	0.63	37 279	0.8	29 824
Malakal Town	102 850	17 142	30	5 143	0.42	2 160	0.8	1 728
Total Jonglei	**691 270**			**83 567**	**0.67**	**55 897**		**48 136**
Old Fangak	183 002	30 500	90	27 450	0.63	17 294	0.77	13 316
Atar	43 571	7 262	90	6 536	0.63	4 117	0.77	3 170
Nyirol	115 901	19 317	90	17 385	0.63	10 953	0.77	8 434
Ayod	186 487	31 081	90	27 973	0.63	17 623	0.65	11 455
Waat	82 161	13 694	90	12 324	0.63	7 764	0.65	5 047
Wuror	52 287	8 715	90	7 843	0.63	4 941	0.65	3 212
Diror	46 186	7 698	90	6 928	0.63	4 365	0.65	2 837
N.Bor	117 342	19 557	80	15 646	0.63	9 857	0.8	7 885
S.Bor	128 327	21 388	80	17 110	0.63	10 779	0.8	8 624
Bor Town	20 570	3 428	80	2 743	0.3	823	0.8	658
Pibor	158 929	26 488	75	19 866	0.63	12 516	0.8	10 013
Akobo	76 566	12 761	75	9 571	0.63	6 030	0.9	5 427
Pochalla	25 010	4 168	50	2 084	0.63	1 313	0.9	1 182
Total Unity	**1 236 339**			**173 459**	**0.62**	**108 374**		**81 259**
Ruweng	46 723	7 787	70	5 451	0.63	3 434	0.75	2 576
Bentiu Town	61 710	10 285	30	3 086	0.42	1 296	0.7	907
Rubkoana	53 158	8 860	40	3 544	0.42	1 488	0.4	595
Mayom	61 001	10 167	80	8 133	0.42	3 416	0.8	2 733
Guit	51 984	8 664	80	6 931	0.63	4 367	0.8	3 493
Koch	121 568	20 261	90	18 235	0.63	11 488	1	11 488
Leer	77 197	12 866	90	11 580	0.63	7 295	1	7 295
Panyijar	98 014	16 336	90	14 702	0.63	9 262	0.9	8 336
Total Warab	**571 355**			**71 662**	**0.59**	**42 047**		**37 424**
Twic	415 363	69 227	95	65 766	0.7	46 036	0.8	36 829
Gogrial	527 113	87 852	80	70 282	0.7	49 197	1	49 197
Gogrial Town	20 570	3 428	30	1 029	0.8	823	0.7	576
Tonj	598 605	99 768	95	94 779	0.8	75 823	1	75 823
Total N Bel G	**1 561 651**			**231 855**	**0.74**	**171 879**		**162 425**
Aweil W	284 360	47 393	95	45 024	0.55	24 763	0.7	17 334
Aweil N	191 892	31 982	95	30 383	0.55	16 711	0.5	8 355
Aweil E	374 077	62 346	95	59 229	0.55	32 576	0.5	16 288
Aweil S	226 171	37 695	80	30 156	0.7	21 109	0.7	14 777
Aweil Town	23 656	3 943	30	1 183	0.3	355	0.4	142
Total W Bel G	**1 100 156**			**165 974**	**0.58**	**95 514**		**56 896**
Raja	36 167	6 028	90	5 425	0.84	4 557	1	4 557
Raja Town	57 596	9 599	80	7 679	0.63	4 838	0.8	3 870
Wau	211 139	35 190	95	33 430	0.84	28 081	1	28 081
Wau Town	82 280	13 713	60	8 228	0.5	4 114	0.6	2 468
Total Lakes	**387 182**			**54 763**	**0.76**	**41 591**		**38 977**
Cuibet	164 457	27 410	95	26 039	0.8	20 831	1	20 831
Rumbek	318 001	53 000	80	42 400	1	42 400	1	42 400
Yirol	267 495	44 583	90	40 124	0.8	32 099	0.8	25 680
Awerial	92 851	15 475	90	13 928	0.7	9 749	0.8	7 799
Total West Equat.	**842 804**			**122 491**	**0.86**	**105 080**		**96 710**
Tambura	91 718	15 286	85	12 993	1.3	16 891	1.3	21 959
Yambio	242 914	40 486	85	34 413	1.3	44 737	1.5	67 105

State/ County	Population 2005	Households	% farmers	Farmers	Average ha/hh	Area (ha)	Yield (t/ha)	Production (tonnes)
Ezo	69 135	11 523	85	9 794	1	9 794	1.3	12 732
Maridi	168 796	28 133	80	22 506	1	22 506	1.1	24 757
Mundri	193 167	32 195	80	25 756	1	25 756	1.1	28 331
Total B el Jebel	**765 730**			**105 462**	**1.13**	**119 684**		**154 884**
Juba	66 914	11 152	80	8 922	0.84	7 494	1	7 494
Juba Town	102 850	17 142	30	5 143	0.63	3 240	0.8	2 592
Yei	277 837	46 306	70	32 414	0.84	27 228	1.1	29 951
Kajo-Keji	134 161	22 360	90	20 124	0.84	16 904	1.1	18 595
Magwi	115 865	19 311	90	17 380	0.7	12 166	0.9	10 949
Terekeka	73 463	12 244	85	10 407	0.7	7 285	0.9	6 557
Total East Equat.	**771 090**			**94 390**	**0.79**	**74 317**		**76 138**
Torit	173 527	28 921	75	21 691	0.63	13 665	0.9	12 299
Budi	148 562	24 760	90	22 284	0.63	14 039	0.7	9 827
Kapoeta	217 028	36 171	45	16 277	0.42	6 836	0.4	2 735
Total	**539 117**			**60 252**	**0.57**	**34 541**		**24 861**
TOTAL	**8 466 694**	**1 411 116**		**1 163 875**		**848 924**		**777 709**
Returnees 2004-2005	789 191	131 532	75	98 649	0.4	39 460	0.7	27 622
GRAND TOTAL	**9 255 885**	**1 542 648**		**1 262 524**		**888 383**		**805 331**

Computed from un-rounded data

Table 7: Cereal area and production in traditional sector in Southern Sudan (2001-2005)

Zones	2001		2002		2003		2004		2005	
	Area 000 ha	Prod. 000 t	Area 000 ha	Prod. 000 t	Area 000 ha	Prod 000 t	Area 000 ha	Prod 000 t	Area 000 ha	Prod 000 t
Upper Nile Nile/Sobat Corridor	**111**	**92**	**132**	**73**	**106**	**82**	**134**	**82**	**206**	**167**
Upper Nile	47	41	88	41	53	42	89	48	56	48
Unity	40	32	13	8	16	12	31	22	42	37
Jonglei	24	19	31	24	38	27	18	12	108	81
Bahr el Ghazal Flood Plains, Ironstone plat.	**286**	**195**	**312**	**162**	**402**	**306**	**451**	**306**	**415**	**355**
North	180	109	208	83	243	185	295	195	96	57
West	26	21	31	23	46	34	37	26	42	39
Lakes	80	65	73	56	113	87	119	85	105	97
Warab									172	162
Equatoria Greenbelt, hills and Mountains	**261**	**242**	**185**	**187**	**250**	**247**	**217**	**200**	**228**	**256**
Bahr el Jebel	102	87	72	60	102	84	79	66	74	76
East	45	22	13	7	44	31	32	20	34	25
West	114	133	100	120	100	132	107	113	120	155
TOTAL	**658**	**528**	**629**	**422**	**758**	**635**	**802**	**588**	**849**	**778**

NB Population adjustment and area inclusion differences between years make comparison from year to year difficult.
In 2005 production data for returnees is not included for ease of comparison.
Computed from un-rounded data.

Regarding the mechanized sector, a better performance is anticipated in all areas. 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 296 000 tonnes from 346 000 ha of which 83 percent is sorghum and 17 percent is bulrush millet. A time series is given in Table 8.

Table 8: Cereal production in the mechanised sector in Southern Sudan (2001-2005)

Region	2001		2002		2003		2004		2005	
	Area 000ha	Prod. 000t	Area 000ha	Prod. 000t	Area 000ha	Prod. 000t	Area 000ha	Prod 000t	Area 000ha	Prod. 000t
Renk (rainfed)	122	96	125	101	122	96	108	94	263	226
Renk (irrigated)	na	na	11	22	10	18	11	22	1	1
Wadakona	na	na	60	54	na	na	60	54	80	68
Melut (rainfed)	na	na	8	8	3	na	8	8	none	none
Malakal	3	3	4	4	3	2	4	4	2	1
Total	**125**	**99**	**208**	**189**	**138**	**116**	**191**	**182**	**346**	**296**

r=rainfed; ir=irrigated

3.2 Other crops

The area under sesame increased in 2005 but financial returns will be disappointing. With large stocks left over from the previous year's harvest following the downturn in exports, the value of 2005's crop will be low. Groundnuts have done well in 2005 in many parts of the North. There has been an expansion in area, and with the good rains and low levels of pests and diseases, production is very satisfactory. However, prices are lower than might have been hoped. Watermelon production is an important source of livelihood for many, given its multiple uses (including water content for human consumption, residue for livestock consumption and seeds for exports, largely for the international cosmetic industry) and the fact that it can be a significant source of income in years when the cereal crop is disappointing. Production of watermelon seed in North Kordofan (where WFP ran a food-for-work campaign to control the watermelon bug) reached record levels in 2005. The whole state normally produces about 2 000 tonnes per year, but in 2005 14 000 tonnes were recorded from the Barra area alone. The broad bean crop in Northern and River Nile is very good in 2005, despite the increasing incidence of the parasitic weed *Orobanche.* Cowpea has also done well in the drier west, often giving satisfactory yields in fields where millet was adversely affected by an early stop to the rains. Date palms in Northern and River Nile are contending with an infestation of green scale insects, which has burgeoned in recent years. Karkade, which is extensively grown in Kordofan and Darfur, looks very promising. Prices for gum arabic have revived recently and collection has increased accordingly.

In southern Sudan, households farming on the sandier soils in North Bahr el Ghazal, grow groundnuts as both a shorter-cycle, later alternative to sorghum, as cash crop and as a supplementary food crop. In 2005, the area under groundnuts was extended and yields were significantly better then the previous year. In Lakes and Equatoria including Bahr el Jebel, the earlier planted crop had already been harvested and later season plantings were seen to be in good condition. Cassava yields of 5.8 kg to 11.6 kg per plant at 2m centres were recorded in 2005 in Wau suggesting a fresh weight harvest of 15 tonnes (2 year) to 30 tonnes (3 year) per hectare. In Raja, an equivalent field sample yielded about 18 tonnes (2 year) per hectare. Such yields are likely to be achieved in all the main cassava-growing areas. Cassava in Raja is in the process of re-establishment in many areas following the removal of all stocks during the consecutive occupations of the area by two warring armed forces from 2000 to 2002. Planting material is still in short supply; therefore the indigenous food safety net of the area is still not yet complete. The absence of planting material should be seen as an opportunity to introduce mosaic-resistant plants to a community highly experienced in cassava propagation.

3.3 Livestock

With 2005's satisfactory rainfall, pasture is plentiful in most areas and livestock condition is good but harvested water in these areas may not be enough to allow optimum utilization of available pasture. Vaccination programmes have been carried out in the principal livestock regions. In South Darfur, programmes to protect against haemorrhagic septicaemia, blackleg, anthrax, sheep pox and rabies were conducted. In West Darfur, half a million cattle were vaccinated, testifying to the slight improvement in security earlier in 2005. Not all states had made as many fire-lines as they considered necessary, raising concerns about the risk of loss of pasture to fire. Some of the agreed migratory cattle routes in Darfur have already been marked out, thus reducing the tension between herders and pastoralists. By the end of November, livestock prices had started to rise in response to the favourable pasture conditions, good animal health and the expectation of a satisfactory cereal harvest. The price of sheep in particular was rising in anticipation of demand for the approaching 'Id el Adha.

In southern Sudan, animal body condition was good in 2005 and the disease profile, with the exception of black quarter and lumpy skin disease is lower for the second consecutive year. Free vaccination for endemic diseases is presently being offered and is the subject of a growing debate regarding the means whereby Community Animal Health Workers (CAHW) may draw their incentives, if no charges for the service are

levied. Pasture and water are presently in plentiful supply in all areas as noted by the average or better-than-average vegetation indices in all areas. However, tension is rising in a number of localities in West Bahr el Ghazal and Lakes due to the unprecedented numbers of Falata Mborroro herds apparently displaced from their normal transhumance by the problems in Darfur.

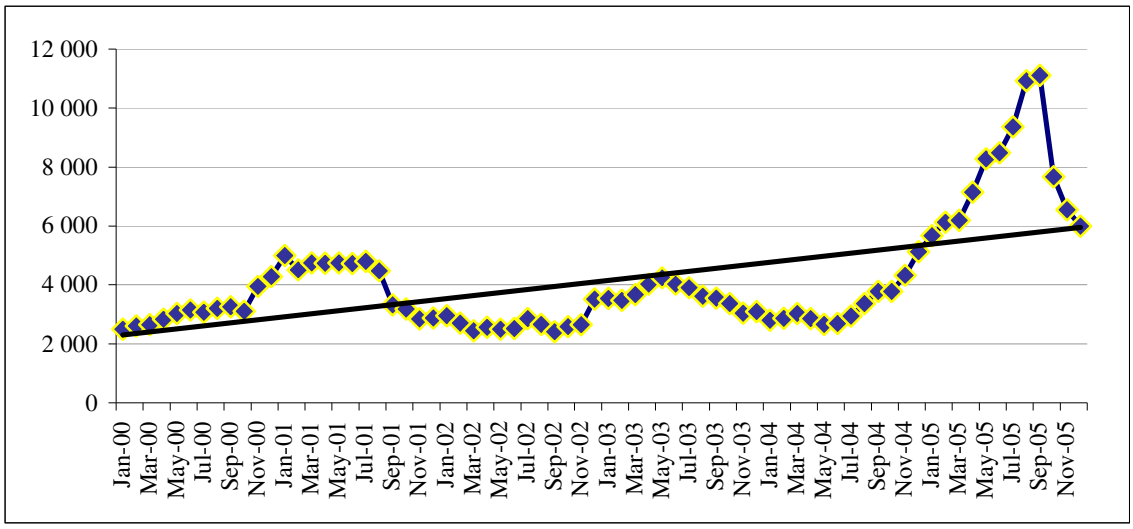
4. FOOD SUPPLY SITUATION

4.1 Current market situation

4.1.1 General

In 2005, grain prices, particularly for sorghum rose to record levels while wage rates increased by up to 300 percent. Figure 9 indicates the price of sorghum in Gedaref (a major cereals market in the country) over a five-year period (1999-2005). Average monthly prices in 2005 are shown to be much higher than in the previous years, reaching record levels in response to the poor harvest of 2004. However, price levels began to ease from September 2005 in response to the expected above-average crop. Similar trends were observed in all major markets in the country.

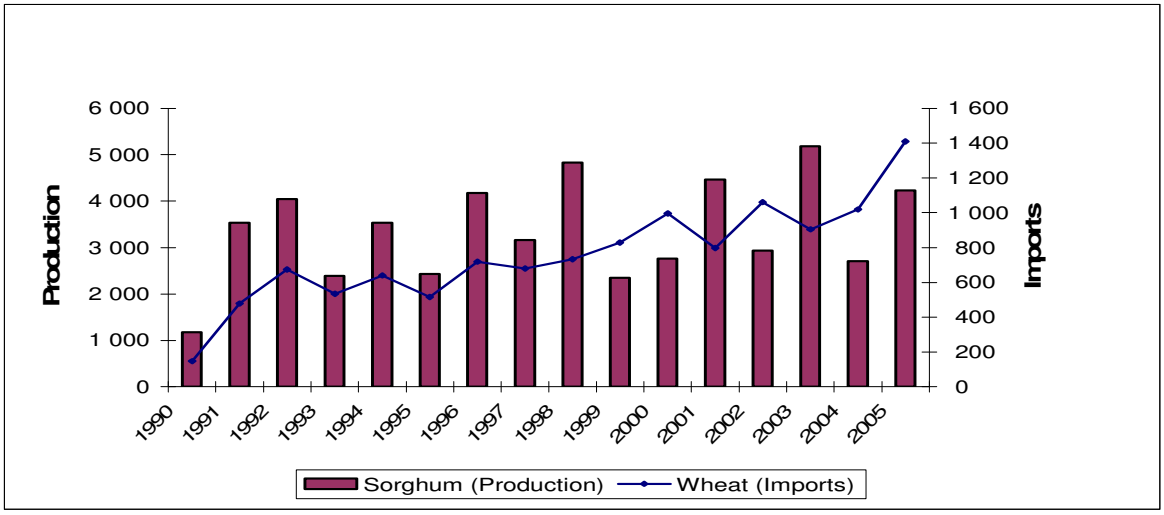
Figure 9: Sudan - Average monthly prices of sorghum in Gedaref (SD/bag) 2000-2005



The increase in wage rates, on the other hand, is a result of several factors, including the relative peace in southern Sudan that prompted the return of thousands of people from northern Sudan thus decreasing the pool of labourers; increased demand for labour in the construction and service sectors fuelled by the countries oil sector boom; and the indirect impact of rising inflation, particularly food inflation.

Markets for imported foodstuffs have risen strongly in recent years and continued in 2005 with an expenditure amounting to US$161 million, about 31 percent up on 2004. This is partly a reflection of the poor climatic conditions in the previous year that led to a drop in agricultural production. This prompted in 2005 the unusual importation of 55 000 tonnes of sorghum of millet from India through the Strategic Reserve Corporation (SRC). 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 2005 (Figure 10). Note the continued upward trend in wheat imports even in the year following a bumper sorghum harvest.

Figure 10: Sudan - Imports of wheat and production of sorghum, 1990-2005 ('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 50 000 tonnes in 2004 and 2005.

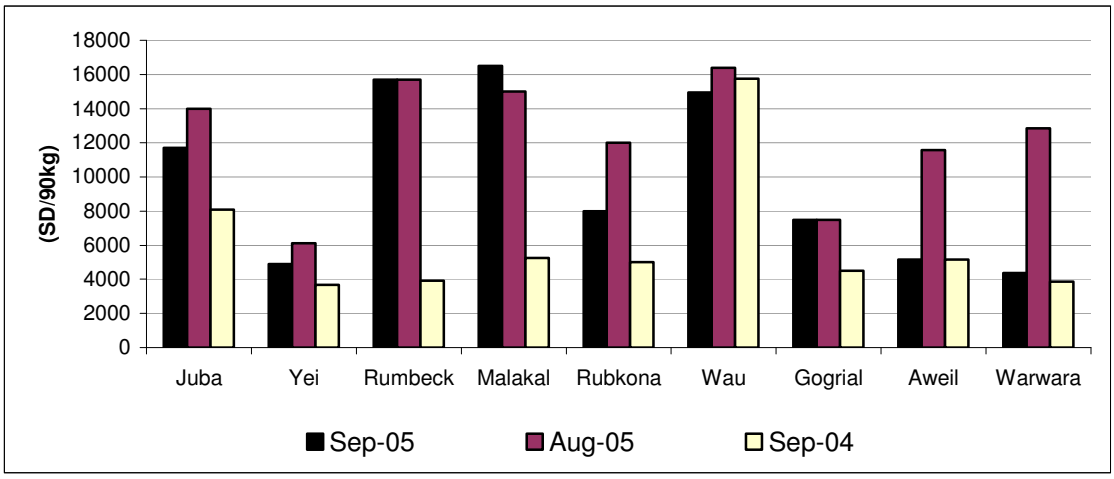
Overall, the increase in import expenditure reflects the ongoing rapid growth in the size of the Sudanese economy, which has continued to lift demand for foreign inputs. The surge in export revenue and broader strengthening of the country's external accounts has also led to a rapid improvement in liquidity. 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 Markets 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. An exception to this was the town of Pochalla (Jonglei) on the Ethiopian border, where the mission found no grain in the market. This could be explained by a reduced first cereal crop, but also by the fact that the main trade route to Ethiopia is closed as a result of the conflict in the Gambella region of Ethiopia. The town is virtually isolated as, after Gambella, the nearest trading town is in Kenya.

Following the generally reduced 2004 cereal harvest, sorghum prices increased sharply in 2005, reaching three and four times their levels of the previous year, thus seriously compromising the food security of large numbers of vulnerable population. This prompted the release of the Federal Government Strategic Reserves (mostly on commercial basis) in several ex-“garrison towns” such as Juba, Wau and Malakal. At the time of the Mission prices had started to decline in some areas reflecting the new harvest and the improved trade movement. However, prices of sorghum varied considerably from location to location (Figure 11 below), ranging from 16 500 SP/90 kg in Malakal (Upper Nile) to 5 142 SD/90 kg in Gogrial (Warab), which reflects lack of market integration and supply constraints due to inaccessibility rather than overall scarcity. The array of currencies used in Southern Sudan, with exchange rates seemingly unconnected to other realities, also reveals the prevailing dysfunctionality of the markets. Whereas the Sudanese Dinar is the currency in the towns formerly controlled by the northern administration, the old Sudanese Pound is still in use in the Rumbek area, the Ugandan Shilling is used in West Equatoria, the Kenyan Shilling in East Equatoria and the Ethiopian Birr in Pochalla.

Figure 11: Average prices of sorghum in southern Sudan (August 2004, September 2004, 2005)



Source: FAO, WFP, Miniagri South Sudan, Oxfam and Mission survey in Gogrial, Renk and Warawara

In rural areas, following the harvest of the short-cycle sorghum in October, and in nearby urban areas with access to this production, the previously tight food supply situation has temporarily eased with the arrival of the new crop. Prices have dropped markedly in agricultural surplus areas like Renk (on-going harvest from the traditional sector) and Yei, but also in towns such as Rubkona, Aweil, and Warwara which in good cropping years are supplied by local production. (Food aid distributions to IDPs and soldiers rations are also contributing to market supplies in these towns).

Local supplies are having a more limited impact in large towns like Wau, where lack of access to distant fields means that the town remains basically dependent on grain from the western Raja area, to which it is linked by road only during the dry season, or from Khartoum by plane. The situation is even worse in Rumbek and Malakal where prices have not declined and are 300 percent and 200 percent higher than their levels a year ago. Access to Rumbek from the south continues to be difficult (despite some road improvements) and the road to the north is closed. Similarly, Malakal remains dependent on supplies from the north (Kosti) where stocks have been exhausted after the previous year's reduced output. The Mission received reports that Government employees in Malakal, comprising a large part of the population, are buying sorghum at credit, with the guarantee of the Government. The food security of the vulnerable population in Malakal and surrounding areas (Obels 1,2,3, Dulaib Hills) was poor at the time of the Mission.

By contrast, in Juba the opening of the road from Yei in late September has allowed transport by trucks of substantial quantities of maize and other goods from far-away agricultural areas and from Uganda. Supplies of grains, previously depending entirely on barges from the north, have improved and prices have declined significantly only three weeks after the opening of the road. This is also resulting in a switch in consumption from sorghum to maize in response to more competitive prices. A similar improvement in the food supply situation is reported in towns of East Equatoria as a result of the opening of the Torit-Kapoeta section of the road to Kenya.

Livestock prices in southern Sudan are generally stable or rising in the rural markets but are falling in the major towns where improved access to herders has increased the number of presentations.

The Mission could not fully assess the impact of returnees on food prices because of the lack of accurate information on return numbers in the areas visited. However, in several locations and particularly in Yei, traders reported to the Mission increased demand as a result of higher population. This could explain the fact that while prices of sorghum have declined from their peaks of the past months, quotations remained above their levels of a year earlier despite a better harvest in 2005.

Overall, the food security situation is anticipated to improve in 2006. Better security has allowed more cultivation around the towns by former IDPs and returnees, and exchange between towns and surrounding agricultural areas has become more fluid. Sorghum prices have started to decline and are expected to decrease further with 2005's anticipated good harvest. However, this improvement remains limited because large agricultural areas are still inaccessible and large-scale trade continues to be constrained by mines and poor road conditions.

Trade routes

With the assistance of international humanitarian agencies and donor community, substantial work is in progress to repair and de-mine roads in southern Sudan. Most notable developments are the opening of the Juba-Yei and Torit-Kapoeta roads, which have connected previously isolated towns with distant agricultural areas and with Uganda and Kenya, respectively. Repairs of worst sections of the Kaja (Ugandan border)-Yei-Maridi-Rumbek road (which is approximately 600 km long) have reduced transport time from two weeks to four days, lowering costs for both commercial traffic and relief aid. Another significant step forward is the clearing of mines on a number of feeder roads, permitting a more fluid circulation of vehicles, (especially between Yambio and Tambura), people and bicycles. Trade links with the North have also expanded with increased frequency of barges from Kosti to Malakal and Juba

Despite these positive developments, much remain to be done to restore large-scale commercial exchanges between towns and regions and the efficient functioning of markets and the economy. Key sections of trunk roads are still closed to truck traffic, hampering the movement of goods from agricultural surplus to deficit areas and from neighbouring countries into Southern Sudan. Transport from West Equatoria and Bahr El Jebel states eastward to Eastern Equatoria and into Kenya, is restricted as the Juba-Torit section of the Juba-Torit-Kapoeta-Narus (Kenyan border) road is not passable. Similarly, movement of goods from Juba westwards to Maridi-Yambio-Democratic Republic of Congo is possible only by bicycle. From South to North, the roads Tambura-Wau (254 km) and Rumbek-Wau remain close to motor vehicles. Along the Nile River, the road linking Juba (Bahr El Jebel) to Malakal (Upper Nile) is not yet operational. To the East, (Jonglei) the road Pochalla- Boma-Lokichoggio (Kenya) is in poor conditions and opens to occasional traffic only during the dry season.

As a result of the collapse of transport infrastructure after 22 years of civil war, massive investment is urgently needed for the rehabilitation of roads in Southern Sudan. Recent reports from WFP indicate there is a shortfall in the funding of on-going operations. Additional support from the international community is necessary to continue and expedite the planned work as a key way to improve agricultural sector and market efficiency, living conditions and food security of the population.

4.1.3 Markets in Darfur[3]

Severe constraints pervade agricultural marketing in Darfur. Main constraints include; little or no transport infrastructure; inaccessibility during the rainy season especially in June and July; only intra and inter-regional or unidirectional trade in cereal commodities; and lack of incentives for private sector to bring commodities to the Darfurs, given high transaction costs and weak purchasing power. Conflict and consequent insecurity have further added to these market constraints making normal movements of food and cash crops from surplus to deficit markets extremely difficult. Furthermore, displacements of people to different locations have resulted in some of the markets being abandoned—for example Jebel Si and Shearia—while new informal markets are being established in camps and rebel-held areas.

Marketing routes between government and rebel held areas are restricted and have resulted in the opening up of new markets or expansion of smaller existing ones in rebel held areas as in Kulkul, Tabit and Shangai Tubai. On the other hand, Tawila market is shrinking, with activities of below 50 percent of its former capacity. Markets in IDP camps have sprung up supplying mainly food aid items. Those living in camps sell up to a third of the food aid they receive in order to buy other needed food and non-food items. The proceeds from the sale of food aid or in-kind exchange is also used to pay for the milling costs of the cereals. In 2005, about 44 percent of households in Darfur depended on market purchases for their food needs while an additional 48 percent relied on food aid (EFSN 2005 Survey). A mere 4 percent of households sourced food overwhelmingly from their own production. This is an indication of the effects of the conflict and displacements on own-crop production and illustrates how food aid continues to fill serious food deficits. Many communities are unable to access their land, including the majority of those living in camps.

As in other parts of Sudan, average sorghum prices rose sharply for most of 2005 in all three major markets of Nyala, El Fasher and Geneina. This is mainly due to poor harvests and insecurity. However, since September, prices began to decline slowly in Nyala and edged towards the five-year average due to expectations of an improved harvest, although in the mainly cereal-deficit areas of El Fasher prices have remained high.

[3]For an elaborate analysis of market behavior in Darfur see “Emergency Food Security and Nutrition Assessment (EFSN), Sudan 2005” by WFP and partners.

Livestock markets are generally thin reflecting the overall insecure situation in the region. The closure of the border with Libya is another factor affecting normal trade and remains a major blow to livelihoods and incomes of pastoralists. In response, traders are using unusual and longer routes to Libya but this is difficult for most pastoralists. Goat prices have been on the increase since early 2005 for Nyala and El Geneina markets as a result of improved pasture conditions. By contrast, in El Fasher goat price declined from January to April 2005 due to limited pasture which prompted increased sale of livestock. The overall terms of trade for goats has improved since September 2005 in major markets as grain prices started to decline in anticipation of better harvest.

4.2 Cereal supply/demand balance 2005/06

4.2.1 Southern Sudan

The better performance of cereal production in 2005 year is reflected in a domestic availability of 724 798 tonnes. Food needs are estimated at 809 091 tonnes for the 2006 projected population of 9.5 million people (which includes the 2004 and 2005 returnees), anticipating an average per caput consumption of mixed cereals of 85 kg per year. This figure is based on WFP's Food Economy Analysis Unit estimates of 1996 suggesting that the annual cereal use of the population (in southern Sudan) ranges from 60 kg to 120 kg per caput per annum, varying according to the availability and access to animal products, cassava, groundnuts and wild foods. These consumption estimates for the different locations have been adjusted by the CFSAM missions over the past years to reflect changes in consumption patterns resulting from disruptions to the livelihood systems 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 for determining domestic requirements. The Mission-adjusted estimate for the consumption of cereals presumes that other aspects to the annual food economy will be contributing as normal in all communities. It also takes into consideration that in the towns previously controlled by the northern administration there are fewer alternatives to balance the household food basket. The Mission strongly recommends that proper household consumption surveys be undertaken in the new post-conflict period, as a basis for monitoring the food situation of the population and planning future interventions.

Table 9 shows a theoretical cereal deficit in the traditional sector for a settled population in the urban and rural areas projected to mid-2006, of 84 293 tonnes. However, the actual deficit is higher as the aggregation of the cereal deficits in six states (-40 160 tonnes) and among the returnee population (-44 134 tonnes) cannot be matched by surpluses in the other four states (+74 473 tonnes). 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 after more than 20 years of conflict preclude transport 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 such as North Bahr El-Ghazal and East Equatoria states, which will have significant deficit of grain, movement of grain from surplus areas in West Equatoria and Bahr El-Jebel states will be very limited. Although cereals from the mechanised sector in these areas could easily cover the expected deficit, the bulk of the surplus is normally traded northwards, through Kosti, due to better roads and lower transport costs. The main exception to this is the approximately one thousand tonnes from Malakal mechanized sector that is marketed in Malakal town. For this reason, food aid assistance will continue to be necessary for vulnerable populations in deficit areas. If the expected influx of more IDPs and refugees to Southern Sudan in 2006 occurs as expected, the cereal deficit and the need of food assistance will increase significantly. The fact that the returnees of 2004 and 2005 have not fully resumed their agricultural activities has contributed to a 2006 cereal deficit that is twice the size it would have been if only the established population had been considered.

Table 9: Southern Sudan traditional sector: population and cereal deficit by state

State/County	Population 2006	Production 2005 (tonnes)	Net cereals (tonnes)	Cereal Use (kg/ha)	Needs (t/y)	Surplus/ Deficit (tonnes)
Upper Nile						
Renk	20 614	2 793	2 513	60	1 237	1 277
Fashoda	51 605	6 954	6 259	60	3 096	3 163
Tonga	33 001	3 639	3 275	60	1 980	1 295
Sobat	43 518	3 199	2 879	60	2 611	268
Latjor	456 451	29 824	26 841	60	27 387	-546
Malakal Town	105 781	1 728	1 555	60	6 347	- 4 792
Total Jonglei	**710 971**	**48 136**	**43 322**		**42 658**	**664**
Old Fangak	188 218	13 316	11 985	60	11 293	691
Atar	44 813	3 170	2 853	60	2 689	165
Nyirol	119 204	8 434	7 590	60	7 152	438
Ayod	191 802	11 455	10 309	60	11 508	- 1 199
Waat	84 503	5 047	4 542	60	5 070	-528
Wuror	53 777	3 212	2 891	60	3 227	-336
Diror	47 502	2 837	2 553	60	2 850	-297
N.Bor	120 686	7 885	7 097	90	10 862	- 3 765
S.Bor	131 984	8 624	7 761	90	11 879	- 4 117
Bor Town	21 156	658	592	90	1 904	- 1 312
Pibor	163 458	10 013	9 011	90	14 711	- 5 700
Akobo	78 748	5 427	4 884	60	4 725	159
Pochalla	25 723	1 182	1 064	100	2 572	- 1 509
Total Unity	**1 271 575**	**81 259**	**73 133**		**90 442**	**- 17 309**
Ruweng	48 055	2 576	2 318	60	2 883	-565
Bentiu Town	63 469	907	816	60	3 808	- 2 992
Rubkoana	54 673	595	536	60	3 280	- 2 745
Mayom	62 740	2 733	2 460	60	3 764	- 1 305
Guit	53 466	3 493	3 144	60	3 208	-64
Koch	125 033	11 488	10 339	60	7 502	2 837
Leer	79 397	7 295	6 566	60	4 764	1 802
Panyijar	100 807	8 336	7 502	60	6 048	1 454
Total Warab	**587 639**	**37 424**	**33 681**		**35 258**	**- 1 577**
Twic	427 201	36 829	33 146	100	42 720	- 9 574
Gogrial	542 136	49 197	44 277	100	54 214	- 9 936
Gogrial Town	21 156	576	518	100	2 116	- 1 597
Tonj	615 665	75 823	68 241	100	61 567	6 674
Total N Bel G	**1 606 158**	**162 425**	**146 183**		**160 616**	**- 14 433**
Aweil W	292 464	17 334	15 601	80	23 397	- 7 796
Aweil N	197 361	8 355	7 520	80	15 789	- 8 269
Aweil E	384 738	16 288	14 659	80	30 779	- 16 120
Aweil S	232 617	14 777	13 299	80	18 609	- 5 310
Aweil Town	24 330	142	128	140	3 406	- 3 278
Total W Bel G	**1 131 510**	**56 896**	**51 206**		**91 981**	**- 40 774**
Raja	37 198	4 557	4 101	100	3 720	382
Raja Town	59 237	3 870	3 483	100	5 924	- 2 440
Wau	217 156	28 081	25 273	120	26 059	-785
Wau Town	84 625	2 468	2 222	120	10 155	- 7 933
Total Lakes	**398 217**	**38 977**	**35 080**		**45 857**	**- 10 778**
Cuibet	169 144	20 831	18 748	90	15 223	3 525
Rumbek	327 064	42 400	38 160	90	29 436	8 724
Yirol	275 119	25 680	23 112	90	24 761	- 1 649
Awerial	95 497	7 799	7 020	90	8 595	- 1 575

State/County	Population 2006	Production 2005 (tonnes)	Net cereals (tonnes)	Cereal Use (kg/ha)	Needs (t/y)	Surplus/ Deficit (tonnes)
Total West Equat	**866 824**	**96 710**	**87 039**		**78 014**	**9 025**
Tambura	94 332	21 959	19 763	110	10 377	9 386
Yambio	249 837	67 105	60 394	110	27 482	32 912
Ezo	71 105	12 732	11 459	110	7 822	3 638
Maridi	173 607	24 757	22 281	110	19 097	3 184
Mundri	198 672	28 331	25 498	110	21 854	3 644
Total B el Jebel	**787 553**	**154 884**	**139 396**		**86 631**	**52 765**
Juba	68 821	7 494	6 745	80	5 506	1 239
Juba Town	105 781	2 592	2 333	80	8 462	- 6 130
Yei	285 755	29 951	26 956	70	20 003	6 953
Kajo-Keji	137 985	18 595	16 735	70	9 659	7 076
Magwi	119 167	10 949	9 854	70	8 342	1 513
Terekeka	75 557	6 557	5 901	60	4 533	1 368
Total East Equat	**793 066**	**76 138**	**68 524**		**56 505**	**12 019**
Torit	178 473	12 299	11 069	90	16 063	- 4 994
Budi	152 796	9 827	8 845	90	13 752	- 4 907
Kapoeta	223 213	2 735	2 461	100	22 321	- 19 860
Total	**554 482**	**24 861**	**22 375**		**52 135**	**- 29 761**
TOTAL	**8 707 995**	**777 709**	**699 938**		**740 098**	**- 40 160**
Returnees 2004-2005	811 683	27 622	24 860	85	68 993	- 44 134
GRAND TOTAL	**9 519 678**	**805 331**	**724 798**		**809 091**	**- 84 293**

4.2.2 National cereal supply/demand situation

Sudan's projected cereal supply/demand balance for the 2005/06 (November/October) marketing year is summarised in Table 10. It is based on cereal production estimates of 5.29 million tonnes, including a forecast of wheat production for harvest in April/May 2006. Further assumptions include:

- Opening stocks of cereals for marketing year 2005/06 are estimated at 185 000 tonnes, - consisting of relatively small quantities held by Strategic Reserve Corporation and about 175 000 tonnes held by WFP (based on the inventory of 248 000 tonnes of commodities at the end of November 2005). The poor cereal harvest in 2004 meant that there were no stocks at the end of October and the Mission observed that, in November, unlike earlier years where the old crop is normally sold, it was only the new crop that was traded. This was also corroborated by discussions with traders and farmers.
- Mid-year 2005/06 population is estimated at 39.7 million, comprising 30.34 million people in northern Sudan and 9.38 million in northern Sudan. This is calculated by taking the population figures given for both northern and southern Sudan in 2005 (Tables 1 and 2) and half of the respective population growth rates. However, there are unknown numbers of returnees both from northern and southern Sudan to other parts of southern Sudan which may lead to some double counting. To take account of this situation the tentative measure taken is to leave out the number of returnees from neighbouring countries in early 2006, although at national level the impact of the double counting is not significant. As mentioned earlier, caution is therefore needed in using the population figure.
- 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 2005/06 is assumed to be 146 kg/annum, as for the previous year. This consists of 83 kg of sorghum, 11 kg of millet, 49 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 2005'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 2005'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 50 000 tonnes of sorghum. Recorded exports from the above-average crop years of 2001 and 2003 were 36 000 tonnes and 17 000 tonnes respectively. Exports in 2006 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 2005/06 are projected at about 1.3 million tonnes, comprising wheat and rice (see section 4.1.1).

Table 10: Sudan - Cereal balance sheet for 2005/06 (000 tonnes)

	Total cereals	Rice	Sorghum	Millet	Wheat	Maize
Availability	**5 476**	**35**	**4 106**	**682**	**533**	**120**
Opening stocks	185	0	33	19	133	0
Production	5 291	35	4 073	663	400	120
Utilisation	**6 804**	**63**	**4 106**	**682**	**1 833**	**120**
Food	5 254	60	3 000	540	1 576	78
Feed	482	0	407	63	0	12
Seed	94	1	61	13	17	2
Post-harvest losses	528	2	408	66	40	12
Export	50	0	50	0	0	0
Closing stocks	396	0	180	0	200	16
Commercial import	**1 328**	**28**	**0**	**0**	**1 300**	**0**

Note: In the event of deterioration in security conditions in Darfur that may lead to disruptions in crop harvesting, assuming about half of the crops may not be harvested, an extra 290 000 tonnes need to be imported.

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, where practicable, grain should 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. In early December 2005, the Strategic Reserve Corporation announced its willingness to purchase a maximum of 500 000 tonnes of grains locally and set the floor price at SD5 000/90 kg bag. This is encouraging but such announcements would have to be made early enough, before planting, to allow farmers to make informed decision. Furthermore, the current structure of coarse grain production and trading in Sudan is such that domestic prices are much higher than the prevailing world market price, which makes it difficult for international organizations to justify local procurement. This is so except where local purchases and deliveries are "protected" by high transportation costs, compared to world market supply prices. Also, the current situation is unlike that in 2004, when WFP alone purchased over 100 000 tonnes of cereals—about four times the average of local purchases in the previous five years. The 2005/06 harvest is an improvement over the previous year but not at the level of the 2003/04 bumper harvest.

4.3 Risk factors that may affect the national grain supply/demand balance in 2006

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 is concerned, there is a general delay in harvesting for reasons discussed earlier. Any escalation in hostility in Darfur may further disrupt harvesting and marketing. From the above it is clear that there is a need to revisit the balance, preferably with a smaller CFSAM in February/March 2006.

4.4 Emergency agricultural support measures

There is an urgent need for 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 2006. 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 NEEDS ASSESSMENT

The food security situation and food assistance requirements presented in this section are based on the findings of the Annual Needs Assessment 2006 and Darfur Emergency Food Security and Nutrition Assessment 2005. The methodology used in these assessments is provided in Annex 2.

5.1 Health and nutrition situation

Conflict and the resulting population displacements, natural disasters such as drought and floods, and the cycle of poverty, malnutrition and loss of productivity, all expose populations to serious distress and increase their susceptibility to health and nutrition problems. The impacts of these shocks are aggravated by weaknesses in the existing health infrastructure, variations in coverage across different regions, and endemic health threats.

Diseases such as malaria, tuberculosis, meningitis and diarrhoea are common throughout much of Sudan. Immunization rates are low, as is the use of Oral Dehydration Therapy, reflecting the lack of access to health care services information. Guinea worm infestation is a major health problem across the southern part of the country, which in recent years has accounted for about 70 percent of cases reported worldwide. South Kordofan State recently faced an outbreak of yellow fever, and WHO and UNICEF are working with national authorities to ensure availability of vaccine and rapid implementation of the mass vaccination campaign to respond to the outbreak, while Médecins sans Frontières have opened treatment centres in Abu Gebiha and Kadugli. In the northern portion of the country, the health network – in terms of both infrastructure and the workforce is relatively well developed, at least in terms of the number of facilities and personnel. However, up to a third of health facilities are reported not to be fully functional.

In southern Sudan, only about 25 percent of the population has access to health care. Infrastructure is inadequate, geographically concentrated and in poor condition. Most health services are supported by international Non-Governmental Organizations under humanitarian assistance programmes. Health services are concentrated in urban areas while rural areas still suffer from inadequate preventive and curative services. The expansion of health facilities has not matched population growth, and civil strife has destroyed many previously operating health facilities. Ineffective coverage is manifested in lack of infrastructure, insufficient stocks of drugs and medical equipment, and lack of skilled health personnel. The situation regarding access to an improved water source and sanitation facilities is also preoccupying: according to UNICEF, in 2002, 24 percent of the population of rural areas had access to adequate sanitation facilities, as opposed to 50 percent in urban areas.

Nutritional status is often considered to be one of the best outcome indicators for overall livelihood security since it captures multiple dimensions such as access to food, healthcare, sanitation and education. It status can be a potent measure of both recent and current levels of food security within a household where healthcare, sanitation and education are not problematic. In 2000, the prevalence of malnutrition among children under five years was very high, reflecting the critical nutrition situation inherited from the past decades. Overall, 41 percent of children were underweight and 15 percent were severely underweight. There

were regional variations in prevalence, with the highest prevalence observed in Northern Kordofan (50 percent). Children of mothers with no education were more likely to be underweight than those of mothers with higher education (45 percent and 35 percent respectively) (FMH, CBS & UNICEF, 2001). Stunting (chronic malnutrition) affected 43 percent of under-fives and 24 percent were severely stunted. In general, children residing in rural areas and those born to mothers with low education were more likely to be affected by chronic malnutrition. There were significant regional variations in the prevalence of stunting, ranging from 31 percent in River Nile to 59 percent in Kassala (FMH, CBS and UNICEF, 2001).

Few data are available after 2001, but significant increases in malnutrition rates were observed in the Darfur region during the first years of the current conflict (CDC & WFP, 2004, 2005). Although in 2005 there was a dramatic improvement in acute malnutrition rates among children in Darfur[4], continued support of existing programmes related to food, health, water, and sanitation will be needed to sustain these gains, which were primarily the result of large-scale interventions by donors rather than positive change in the livelihoods of the local population.

Many states not affected by conflict have a critical nutrition situation with a high prevalence of wasting and stunting. A survey conducted among children 6-59 months in rural Red Sea and Kassala States in 2005, shows that the prevalence of severe wasting in both states is high enough to merit urgent concern and suggest the need for therapeutic intervention. The high levels of global acute malnutrition - 17.7 percent in Kassala and 19.4 percent in RSS - and stunting (respectively 39 and 44percent) reflect chronic vulnerability associated with structural poverty. Some of the factors contributing to this situation are chronic food insecurity, poor access to water and sanitation, poor dietary and infant feeding practices, and a high incidence of infectious and parasitic diseases such as malaria and diarrhoea. Low birth weight is highly prevalent, and both stunting and wasting prevalence are high from birth, indicating that poor nutritional status of mothers is probably a very important determinant of malnutrition in the country.

According to UNAIDS, Sudan still has a relatively low national HIV prevalence rate at 2.3 percent and as such shares the characteristics of many of the other Middle East and North Africa countries. However, in late 2004, UNICEF and UNFPA expressed concern that increased mobility of the population, as stability returned to the southern region, could accelerate the spread of HIV infection to rural communities, which had remained isolated during the war and retained low infection rates. The phenomenon could be exacerbated by the lack of HIV/AIDS awareness among the population, coupled with the already high HIV prevalence in some ex-garrison towns. Comprehensive surveys of HIV/AIDs prevalence rates for the whole of south Sudan have not been undertaken. The Centre for Disease Control carried out a general survey in Yei Town, where the sampled target group represented blood donors and pregnant women. The survey found, that of 461 blood donors 4.6 percent tested HIV positive and of 221 pregnant women 2.3 percent were positive.

5.2 Current food security situation

Overall, Sudan has gone through mixed events that affected food security in 2005. While there were several positive events, some old problems continued while the ongoing economic transformation has given rise to some new concerns.

The signing of the Comprehensive Peace Agreement contributed to an improved security situation, which in turn led to an increase in area cultivated at the household level, particularly in south Sudan. Improved rainfall led to increased levels of overall cereal production, while higher wage rates resulted in increased nominal income for the poorest. The marked economic growth, mainly fuelled by increased earnings from the export of oil has expanded the availability of wage employment and other income-generating opportunities.

On the negative side, hostilities continue in Greater Darfur and sporadic incidents have occurred in other parts of the country. Chronic food insecurity associated with structural poverty remains a problem in parts of eastern and central Sudan. Real cereal prices remain high at about double the long-term monthly average as of December 2005, although they have declined by about 50 percent from the all time highs experienced during summer 2005. Inflationary pressures associated with strong growth and increased liquidity undermined the purchasing power of many households - particularly those with fixed incomes. Poor transportation infrastructure and high costs, combined with weak purchasing power in many deficit areas, undermine the capacity of the market to meet food needs.

Despite these mixed influences, the food security outlook in 2006 appears to be significantly better than the previous year, reducing the stress faced by vulnerable households. However, these improvements will not

[4] The prevalence of global acute malnutrition (GAM) among children 6-59 months dropped to 11.9 percent [95 percent C.I.: 10.3-11.6] in 2005 from 21.8 percent [95 percent C.I.: 18.2-25.3] same time in 2004.

necessarily improve the long-term position of chronically food-insecure households facing persistent food production and access problems linked to the civil war. They cannot offset the disruption of social sharing systems, loss of markets, lack of assets, and limited income earning options. The impact of sustained inadequate food intake, compounded by the lack of basic preventive health care services, illiteracy, poor water quality, and hygiene and sanitation practices, will persist.

5.2.1 Food Insecure Population Groups

The food insecure population groups can be broadly divided into three categories:

Internally displaced: They were forced to leave their places of origin and resettle, either in a camp or non-camp environment, either due to the civil war or more recently the Darfur conflict. These individuals are the most vulnerable since they have extremely limited access to land or other livelihood opportunities while competing with the local communities for the limited natural resources and livelihood sources.

Vulnerable residents: These individuals may not have been directly affected by the conflict but experienced indirect affects such as an influx of IDPs in their communities, disruption of livelihood due to insecurity that constrained mobility or access to agricultural fields and markets, closure of routes that curtailed inward and outward supply of commodities or decline in remittances and seasonal labour and work-related migration opportunities. This category also includes people who have been experiencing chronic food insecurity 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. Markets in their areas generally do not function well given that the purchasing power is very low and therefore private traders do not find it profitable to cover these areas, particularly given the high transaction costs.

Returnees: The expectation that the peace agreement will be implemented and provide new economic opportunities has encouraged many of the four million displaced southern Sudanese in Sudan and another 600 000 living as refugees in neighbouring countries to consider returning home. Based on actual returns in 2005, it is estimated that an additional 500 000 to 1.5 million IDPs and refugees could return to their homes in 2006. The actual number of returnees will depend on the political, economic and humanitarian situation in their current places of residence, as well as formal and informal reports through various channels about socio-economic conditions in their places of return. The wide range of potential outcome, in terms of the number of returnees, requires that operational humanitarian assistance plans be considerably flexible.

WFP anticipates that approximately 236 000 individuals who returned to the south or transitional areas during the second half of 2005, and an additional 615 000 individuals projected to arrive in 2006, will require food assistance. Of the new returnees, 60 percent are projected to return during the first half and 40 percent during the second half of 2006. About 54 percent of returnees are expected to go to south Sudan while the remaining 46 percent will go to the transitional areas. Returnees arriving between January and April will require assistance until September. Those coming after April may need support until the end of 2006 given the likelihood that they will miss the 2006 agricultural season. Therefore, overall WFP planning figures reflect an average seven-month duration of food aid for 851 000 returnees including 103 000 refugees.

As a general principle, and except for the initial standard package, WFP-assisted return programmes will focus on communities rather than specific groups (i.e. IDPs, refugees and residents) in order to minimise tension between them and facilitate reintegration. The modality of assistance will depend on the security situation and the availability of project plans; the aim is to minimize free food distribution and move on to more developmental modalities as soon as it is deemed feasible.

5.2.2 Darfur

The recently completed multi-stakeholder Emergency Food Security and Nutrition Survey (EFSNS) concluded that both access to food and nutritional outcomes had sharply improved for all population categories when compared to the same time 2004. However, these improvements are directly attributed to the substantial humanitarian assistance provided during 2005 - in the absence of this assistance, the current situation would actually have been worse than what was experienced at the peak of the conflict. Even in normal times the key factor that determines whether people would be able to meet their food requirements is mobility whether for trade, labour opportunities or seasonal migration. It is unlikely that the food security situation of the masses will improve unless the freedom-of-movement issue is addressed through a political solution.

The key recommendation here is to continue to provide assistance at the 2005 levels, with some adjustment for seasonal improvements due to increased crop production. Overall, about 1.5 million internally displaced and almost 1.2 million residents, including IDPs living in resident communities, will need food assistance. The duration and level of assistance may vary depending on several factors such as the risk of whether the potentially good crop production will materialize into an actual harvest, given the increased level of insecurity experienced during the harvesting period. As discussed above a post-harvest mission will be necessary to estimate the scale of the realized harvest in February/March 2006.

5.2.3 Southern Sudan

The signing of the Comprehensive Peace Agreement (CPA) between the Government and the SPLM/A in January 2005 is a significant event that is widely hailed by the international community. The first major test of the peace agreement was the untimely death of Dr. John Garang in a helicopter crash just a week after he took oath as the First Vice President of Sudan. There were widespread riots following his demise but these were quickly brought under control by a collective efforts of the both the South Sudan leadership and the Federal Government. Subsequently the formation of the Government of South Sudan (GoSS) and the Government of National Unity (GoNU) also went ahead without major crisis. The ongoing flow of returnees will have a significant effect on the food balance for south Sudan. Despite relatively good agricultural production it is unlikely that the local production will be sufficient to meet the additional food requirements of the returnees.

Lack of infrastructure limits the ability of markets to function efficiently to balance supply and demand. In many parts of the south, even where there is excess demand, it is simply impossible to meet it from areas with excess supply. Transportation costs increase the level of risk associated with trade, to an extent that is beyond the scope of the private sector in south Sudan. Key sections of trunk roads in the South remain closed to truck traffic because of their poor condition and mines. Although production in the mechanized sector could potentially offset part of the deficit, the bulk of that surplus is traded northwards, due to better roads and lower transport costs. In fact,

Infant mortality rates are very high, with one out of four newborns dying before the age of five. Global acute malnutrition (GAM) rates are chronically well above emergency thresholds. Assessments in 2005 in Northern Bahr El Ghazal, Jonglei, Upper Nile and Warab states showed an average GAM rate of around 20 percent with results as high as 39 percent.[5] Lack of proper nourishment, coupled with poor health, water and sanitation facilities/practices, are key causes of morbidity and mortality and their mitigation requires an integrated humanitarian approach.

ANA estimates show average food gap of two months for about 25 percent of the population in South Sudan. The main areas of concern are parts of Northern Bahr-El-Ghazal and Eastern Equatoria where the food security situation will need to be carefully monitored over 2006. The impact of the new returnees will also be significant given than an estimated 457 000 out of the 851 000 are expected to return to South Sudan.

5.2.4 Eastern Sudan

Eastern Sudan, particularly Red Sea State, has suffered from chronic poverty and food insecurity for decades. Interestingly, WFP's first ever project in 1963 was in Red Sea Hills and since then it has continued to assist vulnerable population groups with the exception of a few years. The region faces several structural issues such as a weak agricultural base, closure or restrictions on livestock routes, environmental degradation, climatic variations, and lack of water for agricultural as well as human and livestock consumption. The mechanization of Port Sudan, though necessary, limits employment opportunities for unskilled labour.

While it is clear that emergency food assistance alone cannot address these structural issues, in the present circumstance, it is impossible to eliminate emergency assistance without putting significant number of individuals at risk of malnutrition and even starvation in a few locations. What is needed is an integrated development approach that will address chronic issues and sustainably improve livelihoods before an exit strategy for emergency interventions can be implemented.

ANA results show that on average about 33 percent of the population in the assessed locations of Red Sea State will experience a food gap of slightly over one month. However, the actual food gaps are higher than the reported values because the population in these responses explicitly assumes that it will continue to

[5] Office of the UN Resident and Humanitarian Coordinator – Achievements by Sector for 2005.

receive food assistance from various national (SRC and Zakat) and international sources, The real food gap, net of expectation of food assistance, average about four months.

In Kassala, the most food insecure are the internally displaced—particularly those displaced after 2000. These individuals live in camps and heavily rely on food and other assistance for most of the year, given that they have no reliable sources of income except petty trade and occasional labour opportunities. Their biggest constraints are lack of access to agricultural lands and conflict with local communities over access to natural resources—particularly in Gash Delta. Other than the recently displaced, about 46 percent of the assessed population is food insecure with slightly less than two-months food gap.

The region hosts over 74 000 internally displaced people and 110 000 refugees, of which 90 000 are assisted by WFP. Should the current tension between Eritrea and Ethiopia result in an influx of people into Sudan, their needs will need to be covered through a contingency allocation. Initial estimates indicate that as many as 300 000 Eritreans—mostly young adults avoiding conscription—may be forced to seek refuge in Sudan if a war breaks out.

5.2.5 The three areas

The Three Areas – Abyei, Southern Kordofan and Blue Nile – played a central role in the conflict between north and South and are critical components of the Comprehensive Peace Agreement (CPA). Whilst the three areas are clearly socio-economically distinct, they share a unique status within the CPA due to their location on the frontline of the civil war and at the heart of national and local contests over resources, particularly water, land and oil. There is still potential for localized clashes, particularly in Abyei, as tensions remain between political/tribal/ethnic groups, with uncertainty over borders raising the stakes. Furthermore, implementation of the CPA and the formation of a unified administration have so far been slow.

In 2005, a relatively stable security situation coupled with better rainfall has raised expectation for a better-than-average agricultural season. However, due to localized dry spells, some isolated communities will depend on food assistance during the coming year. The poorest, mostly returnees and the internally displaced, remain very vulnerable. They have limited access to land and few little livestock and so rely primarily on kinship and seasonal labour to survive. Access to arable land is also often restricted because of mines.

ANA results for the Three Areas show that recent returnees are most food insecure followed by internally displaced and local residents, respectively. The situation is worst in Abyei where, on average, some 80 percent of the assessed population is expected to have a food gap of about four months. Blue Nile is relatively better with 57 percent of the population expecting little over two months food gap. The results for South Kordofan show that almost 45 percent of the population in food insecure with a food gap of two months.

Furthermore, it is expected that out of the projected 851 000 total returnees, some 394 000 will come to locations in the Three Areas and need food assistance for a significant part of 2006.[6] Community-based reintegration activities will be critical to mitigate the burden on resident communities and to create a positive and conflict-free environment for returnees.

5.2.6 Other areas

It is expected that up to 300 000 vulnerable IDPs and residents in North Kordofan and White Nile states will need food assistance. In accordance with agreed practice, the assistance provided in these areas will concentrate on community projects aimed at improving the living conditions of their members. Khartoum has been home to approximately two million southern IDPs for more than two decades. The majority of these individuals have managed to sustain themselves in urban centres with minimal relief assistance. Subsequent displacements to remote locations are, however, increasing their vulnerability and restricting access to employment opportunities. Both the Government and the international community are launching a massive campaign to ensure that IDPs are fully informed about developments in the South, in order to enable them to properly plan their return. CARE International, with the support of community-based bodies and other non-governmental organizations (NGO), assists IDPs through an independent food pipeline. Should the situation deteriorate further, WFP may have to assist CARE International by augmenting its food pipeline.

[6] OCHA Information Update, October 2005.

5.3 Relevant government policies

Both GoNU and GoSS[7] have formally endorsed the 2006 UN work plan, which covers all of Sudan and seeks to move beyond life-saving assistance without compromising humanitarian programming. Specific Government and UN priorities for 2006 include support for a safe and dignified return and reintegration of IDPs and refugees, continued humanitarian assistance for vulnerable people, response to the HIV/AIDS threat, delivery of basic social services including education and health, support of comprehensive livelihood recovery programmes, and the development of governmental and community institutional capacity.

The Poverty Eradication Strategy Note and the finding of the Joint Assessment Mission (JAM[8]) served as the foundation for the work-plan, which was then built up from the regional assessments. This process was further strengthened by inputs from relevant Government authorities, donors and NGOs. As a result, the number of projects submitted by partners - against the UN work-plan - quadrupled compared to 2005. This collaborative approach has also allowed WFP to forge new partnerships, particularly in the South.

The implementation of CPA will require the full support of the UN and other international institutions in capacity building, especially with respect to the GoSS. WFP is helping to improve information systems and analysis, having placed a Vulnerability Analysis and Mapping (VAM) specialist in the office of the Southern Sudan Centre for Statistics and Evaluation (SSCSE). In the first quarter of 2006, this centre will coordinate implementation of the food security and nutrition baseline survey for the South. The region's food security and early warning capacity has been strengthened with the inclusion of a nutritionist and a school feeding expert in WFP, working in collaboration with UNICEF and MoE.

The Strategic Reserve Corporation (SRC), a semi-autonomous body under the Ministry of Finance, is mandated with the task of price stabilization through subsidies and relief distribution in years of poor agricultural production. WFP coordinates with SRC, but to this point the role and impact of the reserve in emergency situations has been limited. Recently, SRC has announced its willingness to purchase a maximum of 500 000 tonnes of grains locally and set the floor price at SD5 000/90 kg bag. This floor price is much higher then the prevailing world market price and therefore could make it difficult for international organization to justify procuring locally. This is unlike the situation in 2004 when, following the 2003-04 bumper harvest, WFP alone purchased over 100 000 tonnes of cereals on the domestic market.

There is a widely held view that the direct injection of cash into the local farming community, as the result of local procurement of food aid commodities can have a positive development effect by stimulating food production in subsequent seasons. This can be true if certain conditions are met. Some smoothing of the production levels might be achieved if producers are well informed, on a timely basis, of the likely levels of local procurement. This is difficult to achieve in practice. In order to stimulate the production, the announcement would have to be made early enough to allow farmers to make an informed decision. This means that the announcement would have to be made before planting and thus possibly 12 months before the procurement tenders would be launched. Moreover, food aid agencies and the WFP in particular are obliged to accept donations in kind (80 percent of the food pledged in 2005) and, since the volume and timing of such donations may not be known in advance, it would be difficult to determine the appropriate level of local procurement.

5.4 Potential strategies for food assistance

There is general consensus among the donor community that the GoS capacity to support local livelihood is inadequate. Not only is the current capacity unable to meet a large emergency situation, there is no sustainable funding structure in place to address the long-term problem of chronic vulnerability and rebuild eroded livelihood. The lack of a public acknowledgment of the severe vulnerability of local inhabitants and of a public commitment to a comprehensive, development strategy fuels the Beja and the Darfurian perspective that they are a marginalized people in a neglected region.

Food aid has been serving as a crucial life-saving instrument in Sudan. Now with changing political environment, including the peace agreement, it is important that its role also be clearly linked with the resumption of livelihood, through coordination in broader sectoral interventions such as agriculture, nutrition,

[8] JAM was carried out jointly by the World Bank and the UN with full participation of GoS and SPLM (April 2005).

health and education. Such activities could 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 initiated immediately 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 livelihood as well as the food security situation by facilitating trade and returnee movements and lowering transport costs. Provision of food aid through more recovery focused modalities such as food for education, health related intervention or food for work.

Emergency assistance is an expensive proposition. In acute emergencies, with a well-defined start and an end, it is justifiable and necessary to save lives. In chronic situations, which can last for decades, it is inefficient since the income transfer value of emergency food aid may be substantially lower than the cost of its delivery. However, in the absence of the appropriate and necessary interventions—generally cash-based—it is difficult to stop emergency food assistance without risking the lives of many whose coping capacities are already compromised.

In these cases – and where, due to limited purchasing power or transportation constraints, normal marketing channels are not able to bring commodities into deficit regions – the potential for using the subsidized sale of food aid commodities as an alternative to free distribution could be explored. The level of subsidy could be varied seasonally in order to avoid disincentives to local production. For instance, the subsidy could be much lower during the harvest season, but as the year progresses it could be increased, reaching the highest levels during the hunger gap. Targeting would be enhanced, given the less-preferred nature of the food aid commodities provided in Sudan and the issuance of vouchers to particularly vulnerable households. However, implementation of such a mechanism will require location specific feasibility studies in collaboration with relevant stakeholders.

There is an ongoing debate over the relative merits of providing in-kind food commodities versus cash transfers to improve food security. Both have their advantages and disadvantages in the Sudan context. The key advantages of in-kind transfers are that: 1) in areas facing physical shortages providing food commodities acts directly to improve availability and stabilize market prices, making food more affordable for the entire community; 2) they provide protection against inflation since a transfer coming in the form of a commodity is self-indexed and the cost of any inflation is borne by the party providing the transfer[9]; 3) giving food is the most direct way of achieving improved nutrition; 4) providing free or subsidized food is effectively an income transfer as it is possible to trade food for cash or other goods; 5) food transfers assures that the beneficiaries will allocate a higher proportion of an additional unit of food income towards food consumption than in the case of receiving cash income[10].

The main disadvantage of large-scale transfers of highly subsidized food commodities is the disincentive effects that they can have on domestic production and trade. These interventions could potentially depress market prices, if designed without considering the prevailing market and agricultural conditions. Price depression can lead to a serious erosion of profitability in domestic production, creating a situation in which farmers may reduce or move out of production and agricultural labour may lose employment opportunities.

The main advantage of a cash transfer is that it allows consumers more control over their decisions, based on the particular situations they face. Clearly, food assistance can also be converted into cash by selling in the market. However, the selling price will not reflect the full value of the commodity, simply because the buyer will later have to resell (at a higher price) to realise a profit, so that cash transfers are more efficient than food assistance as a means of transferring income to the beneficiaries. A cash transfer programme can also be more advantageous for the society as a whole, because of the non-distortive nature of cash. Where well-functioning markets provide efficiency gains from competition, providing social transfers through cash will be more compatible with such development objectives. In fact, cash transfers may augment the development process by creating additional effective demand for goods and services, with a salutary effect on domestic production, trading activities and employment generation.

The main disadvantage of cash transfers is that their real value to the beneficiaries is directly dependant on the rate of inflation. There is an almost certain prospect of even more inflation in food and other prices in the immediate aftermath of the initiation of a cash transfer programme, particularly in a closed economy in which little productive activity is possible. Poor beneficiaries of cash transfers may find inflation decreasing their consumption relative to levels experienced when food rations were given. Apart from any social and political

[10] Studies from India, Philippines and Sri Lanka have observed some increases in food consumption when food is given rather than cash.

implications of such a scenario, it will also challenge the nutritional objectives of the transfers. Another major disadvantage of cash transfers is the greater risk of theft, frauds and administrative leakages relative to in-kind transfer programmes. This is because cash can be put to use immediately, whereas commodities involve certain transaction costs prior to realization of their cash values. Assuring security and policing administration will become an enormous task for the implementers, involving high costs.

In summary, it appears that the cash versus food transfers debate boils down to the key issue of short-term versus long-term benefits. Food transfers may be marginally better in getting nutritional benefits in the current situation but may be detrimental to rapid development of the economy. Cash transfers may be a marginally inferior facilitator of household nutrition, but can help promote economic growth and development, which can eventually help eliminate the need for transfers. The probable solution in the case of Sudan may be to continue with in-kind transfers in locations where substantial food shortages exist either due to lack of agricultural production or lack of transportation infrastructure that inhibits normal market functions. Pilot cash transfers programs should be considered only where enabling conditions, including markets and infrastructure, exist and where the scope of food assistance is relatively small so as not to further increase the inflationary pressures.

5.5 Food aid requirements in 2006[11]

The results of several food security and nutrition assessments undertaken in late 2005 suggest that the overall food security situation should improve in 2006. Analysis shows that the overall food deficit for the vulnerable population groups will average about 35 percent (4 months).

The Mission estimates that approximately 6.7 million people will require emergency food assistance, amounting to 800 000 tonnes of assorted food commodities – a decrease of about 6 percent in number of beneficiaries and 13 percent in the food needs when compared to the operational plans of 2005 (Table 11). The cereal component of the total food requirements would be 555 000 tonnes or about 70 percent.

The bulk of this requirement will be met through emergency food assistance from WFP. ICRC and NGOs operating with independent food aid pipelines – operating primarily in locations where WFP does not – are expected to provide 60 000 to 70 000 tonnes of food aid commodities. As in previous years, careful planning of food aid related relief and rehabilitation activities will be is necessary to ensure not only that the locations needing assistance are adequately covered amongst various partners but also that duplication of food assistance is avoided in States where several agencies - including national institutions such as SRC - may be operating at the same time.

Table 11: Sudan - Total emergency food aid requirements by region in 2006

	Darfur	East	South	Three areas	Other	Total
Beneficiaries	3 000 000	320 000	2 100 000	790 000	500 000	**6 710 000**
Food Aid (tonnes)	530 000	20 000	160 000	66 000	24 000	**800 000**
Beneficiaries (%)	45	5	31	12	7	**100**
Food Aid (%)	66	3	20	8	3	**100**

Operations in Greater Darfur region will remain the largest component of the emergency operation accounting for about 45 percent of the total beneficiaries and 66 percent of the total food requirements. South Sudan accounts for about 31 percent of the total beneficiaries and 20 percent of the total food requirements.

Eastern Sudan is expected to have about 5 percent of the total beneficiaries and 3 percent of the total emergency food requirements. The Three Areas will account for 12 percent of the total beneficiaries and 8 percent of the total food aid requirements. It is expected that about 7 percent of the total beneficiaries and 3 percent of the total food requirements will be needed in other areas of Sudan, including Khartoum, North Kordofan and White Nile. This includes a contingency for food assistance for about 300 000 people for three months, in the event of unexpected events such as flooding or conflict-related IDP or refugee influx.

[11] The beneficiary and emergency food needs information provided in this section is based on the findings of the latest multi-agency food security and nutrition assessments including Darfur Emergency Food Security and Nutrition Survey, December 2005 and Annual Needs Assessment (ANA), January 2006.

Current need estimates suggest that of the total caseload about 50 percent of the beneficiaries are highly vulnerable and food insecure residents, 32 percent internally displaced, 13 percent returnees and about 5 percent may require contingency assistance (Table 12).

Table 12: Sudan - Total number of beneficiaries by type and region in 2006

Beneficiary Type	Darfur	East	South	Three Areas	Other	Total	Percent
IDPs	1 550 000	75 000	350 000	95 000	95 000	2 165 000	32
Returnee	0	0	500 000	395 000		895 000	13
Highly Vulnerable Residents	1 450 000	245 000	1 250 000	300 000	105 000	3 350 000	50
Contingency	0	0	0	0	300 000	300 000	4
Total	**3 000 000**	**320 000**	**2 100 000**	**790 000**	**500 000**	**6 710 000**	**100**

The food gaps for settled IDPs are relatively smaller since they have integrated into the resident communities over time and generally have some access to land or income earning opportunities. Most resident communities experience food gaps only during the hunger season and their food aid requirements vary from anywhere between two to six months of partial food assistance. The food economy of the different region varies according to the agro-ecological, socio-economic, climatic and political factors.

5.6 Other WFP programmes and special operations

The WFP Country Programme (2002–2006) School Feeding and Food for Work (FFW) activities are meant to address disaster mitigation, livelihood and asset building as well as serving as an investment in future human capital. The total programme cost is US$57.2 million but it is not adequately funded—less than 20 percent is currently covered. WFP assistance through the CP is mainly concentrated in the chronically food-insecure and acute water-shortage areas of north and central Sudan – namely the Kordofans, Red Sea and Kassala – which are subject to structural constraints and climatic variations that have eroded people's coping mechanisms and weakened their overall asset base.

WFP is currently providing school feeding to 225 000 pupils, as against a planned figure of 291 000. While this corresponds to 77 percent of the planned number of beneficiaries, actual food distributions were only 47 percent of the planned quantities due to funding shortages and logistical constraints. Food-for-work activities in 2005 provided 30 000 jobs—mostly in central Sudan. These activities also provided indirect benefits to an estimated 180 000 people, through improved agricultural production resulting from investments in water harvesting schemes.

WFP also provided food assistance to Eritrean refugees currently living in eastern Sudan through its Protracted Relief and Recovery Operation (PRRO) 10122.01. This operation, covering the period April 2004 to March 2006, requires 35 344 tonnes of food aid at a total cost of US$15.53 million. In 2005 WFP assisted 90 000 refugees through implementation of several food delivery mechanisms including general food distribution, selective feeding programmes, food for training of trainers, skills training and food for work. In this case the beneficiary target was successfully met but the tonnage distributed was about 68 percent of the planned quantities. Again shortage of funding was the key constraint encountered by the refugee operation.

The threat of hostilities between Eritrea and Ethiopia remains significant and it is likely that in case of a war the refugee caseload in Sudan could substantially increase. Initial estimates suggest that as many as 300 000 refugees could enter Sudan mostly from Eritrea in case of an all-out war.

5.7 Logistics

5.7.1 Port and surface transport

Port Sudan serves as the main entry point for imported 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. It is expected that this corridor will help to move approximately 5 000 tonnes per month into West Darfur.

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 coverage.

SO 10368– Emergency road repair and mine clearance in south Sudan—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.

The purpose of SO 10412—Rehabilitation of river assets—is 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.

SO 10428—Emergency infrastructure improvement—will allow upgrading of sub-offices and of key airstrips to allow for effective and timely response to changing demands and conditions on the ground in the South.

SO 10371—Logistics augmentation in support of the Darfur operation—is being extended to allow contingency actions such as creation or expansion of field offices and storage facilities and also to remove logistics bottlenecks for instance by spot road repairs.

5.7.2 Air transport

Airdrops have been used extensively to reach otherwise inaccessible locations. 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. In 2005, airlifts from Khufra in Libya supplemented air and surface deliveries to Darfur destinations with 17 500 tonnes. It is expected that such airlifts will not be required in 2006. The operation will then need only one AN12 aircraft based in El Obeid to secure deliveries into areas of West Darfur that become completely isolated during the rainy season.

It is expected that one or two IL 76s will remain based in El Obeid during 2006 to maintain an airdrop capability for deliveries to locations in the South and Three Areas that remain inaccessible by road. Reduced reliance on air deliveries will ultimately bring about a reduction in transport costs. However, in 2006, a tight road transport market with demand exceeding existing capacity has resulted in substantially increased rates.[12] Furthermore, over the last 12 months, the Sudanese Dinar has strengthened by 11 percent vis-à-vis the dollar. In the short term these two factors will offset gains obtained through the transfer from air to road transport. Where the security situation remains fragile, further price increases can be expected. Repeated incidents of looting of trucks are leaving a financial impact on transporters, in turn affecting WFP costs.

Through SO 10181—Humanitarian air services—WFP provides services to the entire humanitarian community in Sudan. Funding for this SO will determine to what extent WFP can capitalize on the impressive advances made in 2005, including increased coverage in the South and in Darfur.

[12] The road transport rate between Port Sudan and Khartoum increased by approximately 26 percent because of market forces alone.

ANNEX 1

METHODOLOGY FOR CROP PRODUCTION ESTIMATES

Methods used by state and scheme authorities for the estimation of cereal area and yield in North Sudan, 2005

It is generally conceded that the standard of estimation and reporting of crop areas and crop yields in Sudan has declined drastically in recent years, largely as a result of insufficient resources. This is of considerable concern to donors as these locally generated figures are the starting point for the CFSAM, on whose estimates the donors decide the levels of assistance required.

The function of the CFSAM in North Sudan is not to generate production data from scratch but rather to scrutinise the locally generated figures from several different angles - crop inspection, sample crop-cutting, farmer interview, trader interview, market survey, rainfall records etc. - and, if necessary, to modify them in consultation with the MOA so that a credible picture of the country's production is formed. This year, following donors' expressions of concern as to how the CFSAM arrived at its figures, a more detailed enquiry was conducted in various states in order to establish exactly how the state and scheme authorities generate their annual production figures. Several approaches, constraints and levels of reliability emerged. In some states practice corresponded closely with theory, whereas in others the gap between the two seemed to have widened alarmingly in recent years.

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 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, 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. Very rarely is crop-cutting used and then, as in the case of West Kordofan, it is with the collaboration of NGOs.

There are two main constraints this year that have prevented a number of administrations from adequately carrying out their surveys. The first is insufficient resources, and the second insecurity. The first - insufficient resources - should receive the immediate attention of the GOS. Increasingly it is seen as unacceptable that a government with growing oil revenues should put so little investment into the collection of agricultural data while at the same time requesting the international community to assess its agricultural production and to cover any shortfalls.

Because of the protracted history of deterioration in the reliability of production assessment and data collection within the country, the various authorities concerned would benefit from re-training in data requirements and collection methodologies. Assistance in such re-training could very appropriately be offered by FAO. State ministries with the skills and resources to collect reliable data would add greatly to the credibility of CFSAMs and would allay many of the donors' concerns.

White Nile

Mechanised rainfed

15 field inspectors (graduates) and assistants.
Area Ask farmers how many bags of seed they have used.
Yield Estimated by eye over course of 1 month.

Traditional

Area Calculate from amount of seed distributed.
Interview random farmers who have used retained seed.
Yield Estimated by eye during several visits.

Comments *No sample verification of farmers' statements.*
Appear conscientious.

North Kordofan

Usually carry out 3 surveys per year.

Take 10 percent of villages at random, then interview 10 percent of farmers in those villages.
This year no survey carried out because of lack of resources. Instead based estimates on averages of last 16 years.

Comments *Even the methodology of the 'usual' surveys didn't seem to be very clear in their minds, leading one to doubt its credibility.*
No adequate reason given for taking the average of 16 years this year.
Unconvincing.

South Kordofan

Mechanised rainfed

Area and yield

Interview farmers in Sep and again in Nov.
Quantity of seed used.
Include 'un-demarcated' as well as 'demarcated' areas.
Not done this year because of lack of resources.

Traditional

Area and yield

Extensionists interview farmers in Aug-Sep and at harvest in Nov.
Random sampling in 5 locations.
Reckon ±15% accuracy for area.
Questionnaire used.
Only a very rapid survey this year because of lack of resources.

Comments *No sample verification of farmers' statements.*
Not entirely convinced that survey is carried out regularly in other years.

West Kordofan

Area and yield

2 surveys - late Aug and Oct/Nov - carried out by graduates and diploma holders, with sec school pupils. 2nd survey, carried out with collaboration of CARE and GAA, includes crop cutting

2nd survey not done this year.

Comments *Sampling method not obtained.*
However, credible with regard to yield.
Perhaps weak on area.

North Darfur

Area and yield

Questionnaire.
1 -3 villages per mahafadh.
1 - 6 households per selected village.
Take averages and extrapolate on basis of local leaders' estimate of percentage of population cultivating land.

Comments *No sample verification of farmers' statements.*
Small samples.
1 -3 and 1 - 6 could both mean 1.
Sounds a bit shaky.

South Darfur

50 - 60 extension agents (graduates) participate in surveys.

Area Select 6 - 8 villages per mahafadh.
Interview 10 - 25 farmers in each selected village.
This year, took last year's area figure and added 10 percent . Unable to survey 3/9 mahafadhat because of insecurity. These 3 however were covered to a certain extent by NGOs.

Yield Eye estimate.

Comments *No adequate reason given for adding 10 percent to area this year.*
No sample verification of farmer's statements regarding yield

West Darfur

This year, and in recent years, because of insecurity, have had to depend on scattered reports from agricultural officers in the field and from NGOs.

Comment *Credible.*

Northern

Area Extension agents (graduates) interview a sample of farmers in early Oct.
Compare with known area harvested last year.
Take account of fuel use.
Reckon ±5% accuracy.

Yield Obtained from tractor drivers after they have threshed harvested crops.

Comments *Credible.*
Accuracy probably fairly good as dealing with irrigated land.
Conscientious and practical.

River Nile

Area Leased schemes are mapped, area known.
For summer crop, select total of 46 sites, interview 266 farmers (more for winter crops).
Questionnaire for all sampled farmers

Yield Carry out crop-cutting on 40 - 50 m^2 of land of each sample farmer

Comment *Stated methodology has commendable components.*
However, lack of clarity in explaining it led one to wonder Is this theory or is it fact?
Even if it is fact, not convinced that method is carried out in its entirety every year.

Gezira traditional

Area Eye, and previous records.

Yield Crop-cutting previously; discontinued because of cost.
Now extrapolate from weight of 100 heads sampled in straight line.

Comment *Sample too small.*

Gezira scheme

Area Scheme is mapped.

Yield During growing period . Crop cutting. Sample 3 canals in each block, 3 tenancies from each canal (head, middle and tail). 2 units randomly selected out of 14 in each tenancy. One 2 x 2 m quadrat cut from each unit and weighed.

At harvest, inspector records weights at thresher.

Comment *Dependable.*

Methods used by the CFSAM for the estimation of cereal area and yield in southern Sudan, 2005

The civil war-inflicted disruption over more than 20 years has led to a complete breakdown of the official gathering of agriculture statistics in all but limited areas surrounding towns previously held by the northern administration. Even in the Ministry offices of such towns, with the exception of Renk and Malakal, the lack of equipment, simple materials and transport, compounded by access difficulties, undermines any intention of serious information collection. Despite the peace, the situation has yet to change for although access to wider catchment areas is now possible, facilities remain the same as before so that even the most rudimentary means of transport, such as bicycles or canoes, are absent. The CFSAM is therefore forced to take a more radical approach to the generation of data than is the case in the North.

In the former SPLM areas the offices of the SRRC/State Ministries are in an even worse position without the most basic supplies and with only one extension agent per county, a situation which precludes any reliable information gathering and analysis. Further, at field level, the SRRC/State Ministry volunteer workers lack the practical numeracy and experience necessary for objective assessment. In both areas the NGOs are far better equipped and prepared for systematic data gathering and analysis but few engage in objective approaches, except for the gathering of rainfall data. Local crop assessment is, therefore, based on verbal exchanges between farmers and MOA/NGO staff in the towns and SRRC/ State Ministry volunteers/ NGO staff dialogues with farmers elsewhere in the countryside. The present exception to this generalisation is in Wau town, where a concerted effort has been made by FAO staff, this year, to collect basic agricultural data from ten localities.

Against this background, the Mission visited a total of twenty-nine locations in the ten States encompassing the seven agro-eco systems of the south. Case studies/key informant interviews were conducted as were field inspections of growing crops, crop yield estimations using the embryonic Pictorial Evaluation Tool [13](Robinson et al, 2004), crop cutting techniques, and market surveys.

Aerial observations of farms occupied, fields cropped and the type and condition of crops grown were made from aircraft flying 300m above ground level during all of the Mission's movement from location to location. This added a further dimension to the assessing process, placing case studies of single farms into the general context of the areas over-flown.

The sum of all activities enabled the Mission to obtain an independent picture of agricultural production across the south in a short period of time.

[13] Robinson WI, Stirling CM, Hunde M, and Bradbury H (2004) PET-Cereals; A pictorial evaluation tool for crop harvest assessment for Ethiopia. Centre for Arid Zone Studies, UK.

Area

The Mission area estimates for the traditional sector are compiled from Mission-audited State Ministry returns for the mechanised sector in Upper Nile State and derived from population statistics for the traditional sector using factors selected to determine;

- Number of households in each county by dividing the mid-2005 population estimate by an average of 6 persons.
- Percentage of households in settled population, including long-term IDPs, farming in 2005 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.

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 excluded towns, to determine the residential population in each county-urban combination, as well as the preliminary OCHA figures of returnees in 2004 and 2005. 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 since clearing and cultivation of plots takes time.

The change of source to a recognised authority, the high NGR and the large influx of returnees increase last year's Mission population estimate by 18 percent from 7.8 million to 9.25 million people in 2005. These data are also the basis of the mid-marketing year 2006 population estimates for the cereal needs from which surpluses and deficits are derived. As the stage of the calculation resulting in cereal area is based on Mission and local estimates (State MOA, SRRC) of the percentage of households actually farming and estimates of area cultivated in the areas visited or observed by the Mission during aerial transects, it is not possible to provide separate area data for each cereal. Nationally, sorghum is estimated to make up 70 percent of the total crop; however in the Greenbelt and in northern Unity State, maize is the dominant cereal.

Due to the larger population figure used to derive area data and the fact that more people are farming this year, the traditional sector cereal area estimates are again higher this year at 888 000 hectares or 1.4 percent of the total area. Cereal area per household is assumed to be similar to last year. Far-field planting includes small, fenced units surrounding fertile areas around leguminous trees cultivated by family members in North Bahr el Ghazal and large areas cultivated by *nafeer* or food/drink groups for individuals with cash to invest in agricultural expansion in areas further south in Tonj, Lakes and Equatoria where the main season rainfall is reliable.

Area data for the mechanised sector, provided directly to the Mission by the State Ministry of Agriculture offices in Malakal and Renk indicate that around 470 000 hectares of cereals and oilseeds have been grown this season, of which 70percent are cereals.

Yield

Crop yields from the on-going harvests are assessed by the Mission. Where sorghum was already harvested at the time of the Mission, but not threshed, which was invariably the case, spot-checks of stored heads were used to estimate production per plant and the fields were inspected to determine plant densities from the stubble. In all cases information obtained was crosschecked against secondary information from other sources and from a review of factors affecting production including rainfall, inputs, pest and diseases and personal/community security.

Yields from the long-cycle sorghum landraces to be harvested in December-January are predicted from the plant populations, maturity and overall quality of the standing crop.

ANNEX 2

FOOD SECURITY AND NUTRITION ASSESSMENTS METHODOLOGY (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) 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 - such as ICRC and CARE International - that have their own food pipelines.

The role of CFSAM is to verify whether the in country findings are based on sound analytical methodology and match the observations and independent findings of the mission. Therefore the mission relies heavily on primary and secondary food security analysis undertaken by the national and international institutions within the country and then uses field visits, stakeholder consultations and methodological reviews to see whether the findings could be corroborated or should be further adjusted.

In Sudan, the CFSAM focused on latest multi-agency food security and nutrition assessments including Darfur Emergency Food Security and Nutrition Survey (EFSNS), September 2005; Annual Needs Assessment (ANA), November 2005; 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; and IOM survey on IDP Intentions Concerning Return to their Places of Origin, 2005. 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.

The mission found that in addition to several data sources, two key exercises were critical in the estimation of initial emergency food and non-food needs in Sudan—Darfur EFSNS and ANA for the rest of the country. The main difference between the two is that while ANA assesses only the food security equation, EFSNS also incorporates a nutrition and mortality component. Hence the scope and sample size for the EFSNS is much larger than the ANA.

Both exercises use purposive sampling meaning that their sampling universe consists 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 is 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.

In Darfur, the survey was designed to statistically represent the population defined by the United Nations as ‘crisis affected’. This population numbered approximately 3.2 million people and included internally displaced persons living in camps, out of camps, as well as residents. A two-stage cluster sampling method was employed. A total of 101 clusters were selected using a population proportionate to size method, of which 87

areas were accessed. Data were collected from 2 090 households containing 13 396 individuals, and 1943 children were measured.

In the rest of the country, 15 locations per State were selected and in each location one key informant and 25 randomly selected households were interviewed.[14] Locations were replaced if the initially chosen location was inaccessible due to weather or insecurity. Food insecurity incidence level of 40 percent and precision of 5 percent was used for sample size calculation. Over 200 professionals from various institutions including WFP, UN agencies, NGOs, and national counterparts conducted more than 4 000 structured community and household interviews.

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. Data was collected from household on demographics, living conditions, productive assets, income sources, agricultural and livestock, expenditures, food sources and consumption, food security coping mechanisms and food aid received during 2005. The community-level questionnaire focused on community demographics, local economy, land use patterns, livestock and pasture, health and education facilities, markets and price information and community long and short term priorities for assistance.

The mortality component of EFSNS was assessed using the retrospective household census method with a recall period of approximately seven months. All household members living in the household at that time were listed by age and sex and then the respondent was asked where each person was at the time of interview. Possible choices were: alive and living in the household, alive and living elsewhere, missing, and dead. Births and deaths occurring during the recall period were also recorded including cause of death. Each questionnaire had descriptions of the coded causes of death including diarrhoea, fever, measles, difficulty breathing, malnutrition, violence/conflict-related deaths, and other.

The nutrition segment of the EFSNS 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. Furthermore, children's weight, height/length were also measured, and the presence of oedema assessed. MUAC was measured on all mothers in the survey using a MUAC measuring tape. Where facilities existed, malnourished children and women were referred to therapeutic feeding centres for treatment of severe malnutrition (<70 percent weight-for-height percent of median) or to supplementary feeding programs for treatment of moderate malnutrition (>70 percent to <80 percent weight-for-height percent of median).

Data analysis

Nutrition and health data was analysed by Epi Info™ version 6.04d software (Prevention 2001). The anthropometrics indices analysis was conducted through EpiNut—a module within Epi Info.™ Analysis of all other variables from the clinic-based survey was carried out in SAS version 9.1. Indicators of the precision of prevalence, such as CI, for major health outcomes accounted for the cluster sampling used in selecting the sample for this survey. Tests of statistical significance for proportions were done using a chi-square test. A p-value <0.05 was considered to be statistically significant. A sample weight was associated with each record to account for the probability of selection and a post-stratification adjustment based on the population size of each camp/village.

ADDATI 5.3c©12 was used to conduct both Principal Component Analysis (PCA) and cluster analysis while SPSS® version 12.0 and Excel was used for other statistical analyses related to food security.

The food security analysis for EFSNS was undertaken by first asking the respondent for the number of meals eaten during the last 24 hours. Then households were classified according to their dietary diversity and frequency of consumption—the number of days on which a household consumed each of 12 food items9 in the last seven days prior to the interview—to analyze food consumption patterns.

Formally, the following steps were taken: 1) apply the number of days on which each food item was consumed to a PCA in order to identify key Principal Components (PCs) that more clearly explain diversity

[14]The exception was South Sudan where in each of the ten States seven locations were chosen given that a comprehensive EFSNA is planned for the first quarter of 2006.

and frequency of consumption of major food items; 2) Select PCs with greatest variance of PC scores (loadings) so that the cumulative variance would account for 85-90 percent; 3) through cluster analysis classify all the households into several food consumption patterns based on scores of selected PCs; and 4) further classify identified food consumption patterns into three groups— (i) acceptable food consumption; (ii) borderline food consumption; and (iii) poor food consumption. Then cross-tabulate the proportion of households with each food consumption pattern against the proportion of food aid's contribution to total foods consumed.

In addition to the analysis of average meal intake over the last 24 hours and dietary frequency and diversity, the ANA 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 2006. 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 of analysis

Both food security assessments use a purposive sample—food-insecure or potentially food-insecure locations and populations—therefore the results cannot be generalised to wider population groups. Hence both exercises provide only the lower bound estimate of food-insecure people.

Since these are one-time exercises they do not capture the seasonality effect in terms of food consumption, dietary diversity and frequency. However, the results are used to design responses for the entire next year—which may be inadequate given a fluid environment like Sudan. Currently this issue is addressed by undertaking two additional assessments—March/April and August/September—to recommend operational adjustments at critical timings such as just before the beginning and before the end of the hunger season.

The availability of reliable baseline data has a crucial bearing on the accuracy of assessments, and the quality of demographic information is perhaps the most important factor. Uncertainty over population figures, in particular, constitutes one of the main barriers to accurate needs assessment. 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. Unmonitored population growth, the war-related death toll, large population displacements, highly mobile populations and impeded access, all render population estimates highly debatable. This variation in the 'denominator' could definitely affect the calculation of resource requirements.

The locations assessed do not vary substantially from year to year, which creates assessment fatigue as well as an inherent bias since the respondents have a clear incentive to withhold positive information. Currently this bias is addressed by first calculating the food gaps based on expected seasonal and annual food consumption and then adjusting it according to other factors such as level of assistance in prior years, improvements in the economy, national capacity to respond to emergencies—though these methods are highly subjective.

ANA is an expensive and data-intensive undertaking in which donors and agencies have invested considerable funds and human resources. This multi-agency approach goes some way towards countering institutional biases and so may have greater potential to produce credible, reliable and objective results. However, a significant amount of non-food related data, relevant to many institutions, is neither thoroughly analysed nor disseminated because of the financial and technical constraints of these agencies.

Way forward

Although valuable and valued, ANA should evolve into a lighter, more iterative process once comprehensive food security and nutrition baseline surveys have been completed in a given region. Two comprehensive EFSNSs have already taken place in Eastern and Western Sudan. A third exercise is planned for Southern and Three Areas in early 2006. 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 ANA 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. It should be possible for the unit to implement food-security monitoring systems in at least two of the regions where baseline surveys have been completed during 2006.

It is 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 nutritional surveillance system led by the Ministry of Health and supported by UNICEF, FAO and WFP is about to be implemented as a pilot activity in Greater Darfur. 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. Currently there appears to be bias towards assessment in the form of surveys, as opposed to ongoing surveillance. 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 recommend that a monitoring exercise aiming at validating the few assumptions leading to the conclusions of this report take place in February/ March 2006.

ANNEX 3

AGRICULTURAL SITUATION BY REGION

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. Cereal production is based on irrigation, with maize and sorghum being produced in the summer and wheat being grown during the winter months. Summer cereals are grown on pumped irrigation schemes along the Nile as well as on low-lying flood plains during the *demira* season (August to October). Sorghum in this region is produced mainly as a cash or fodder crop, the preferred staple being wheat. By virtue of its comparatively cool winters and its access to irrigation, Northern Region is the country's main wheat producer. Large areas of broad beans and vegetables are also grown under irrigation during the winter, and a significant amount of alfalfa is produced, with up to ten cuts throughout the year.

This year the level of the river was satisfactory and the *demira* crop, which was poor last year as a result of low water levels, was normal in terms of area and yield. In addition, good rains in late August in River Nile State allowed the planting, in September, of an estimated 4 000 hectares of sorghum on residual moisture on land, much of which had not been planted for several years. The high prices of the preceding months further encouraged farmers to take advantage of the favourable conditions. This combination of increased area and better yields is expected to result in a 57-percent rise in this year's sorghum production for the region compared with that of last year.

Given the relatively small extent of planting that had been achieved by the end of November (less than one percent of the planned area in Northern), it is expected that the area under wheat this year will again be significantly less than planned, and similar to that of last year. Despite wheat's being the preferred staple, farmers generally give precedence to higher-value winter horticultural crops; consequently wheat is often sown as late as January, even though the period of late November to early December is optimum. Urea is readily available and the subsidised price of fuel for irrigation is acceptable to producers, but the availability of improved seed is poor. Last year, the SMOA of River Nile State commissioned 3 000 feddans of seed production on farmers' land but was unable to pay for it, with the result that the harvest was sold as grain; the SMOA hopes that funding will be available this year for a similar commission. Temperatures at the end of November this year were indicative of a climatically favourable growing season in both states. Yields and overall production of wheat are expected to be similar to those of 2004/05.

The hydro-electric dam under construction at Merowe is due to be completed in 2007 and is expected to facilitate the irrigation of up to four million additional feddans of crops in Northern State. Dates are an important source of income for many families in the region, but in recent years infestation by green scale insects has significantly reduced yields and killed a large number of palms. Control measures have been identified but are costly. The region's livestock are in good condition, and fodder production has been, and continues to be, very satisfactory.

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 rainfed mechanised farming area in the country (Gedaref).

The rains over most of the region were generally better than last year in quantity and distribution, but there were some large variations. In Gedaref, for instance, where rainfall records for the season ranged from 250 to 870 millimetres, a band covering about 15 percent of the total area received below-normal amounts that were poorly distributed. In Kassala records ranged from 270 to more than 700 millimetres.

The area under sorghum in Eastern Region increased this year compared with last, most notably in the rainfed mechanised sector, and largely in response to recent high prices. The two spate irrigation schemes at Tokar and Gash, benefiting from numerous flushes resulting from this year's better rainfall, registered an expansion in cropped area. The area under wheat (in New Halfa) remains small this year having contracted in recent years because of high production costs and unsatisfactory yields.

The SMOA provided 500 tonnes of improved seed this year at Gedaref. This was less than last year and it is estimated that improved seed was used on only about 30 percent of the total area. In Kassala, almost 900 tonnes were provided to smallholders by the MOA and FAO. Although fuel was readily available for tractors and pumps, a shortage of tractors led to a lot of delayed planting. Gedaref appears to have registered some of the highest labour cost escalations in the country, with rates increasing up to threefold in the last twelve months. There has been some increase in the use of herbicide, but seemingly less than in Central Region. New Halfa scheme has benefited from a year of rehabilitation in which some new canals constructed, others were de-silted and 75 percent of the invasive weed mesquite was removed. Fertilizer use is increasing on the scheme.

The low level of pests and diseases this year was helped by a number of successful campaigns to control birds, sorghum bug and grasshoppers. Sorghum midge attacked late-sown crop at Kassala and stem borers and smut were reported at Gash. As elsewhere, millet was often planted in rainfed areas with a level of striga infestation that growers considered would significantly limit sorghum yields.

The region's total cereal production is expected to be up more than 60 percent on last year and this is reflected in falling prices.

The condition of livestock and pasture is good. Sheep rearing is said to be on the increase in Kassala in response to favourable prices. Some destruction of crops by pastoralist herds was reported in Kassala.

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

Central Region is the most important grain-producing region of the country. Rainfall over most of the region was generally much better this year than last, in both quantity and distribution. The rains started mostly in May and continued in some areas till October. Blue Nile reported one of its best seasons with respect to rainfall for several years. However, some areas, such as parts of Sennar and the north of White Nile were less fortunate and suffered from dry spells and early cessation of the rains in September.

The generally better rainfall over the region and the high prices following last year's poor harvest enabled and encouraged a considerable expansion in the area under sorghum this year compared with 2004/05. While some of this was attributable to the irrigated sector, most resulted from a very substantial increase in area in the traditional sector. Better security in Blue Nile State also facilitated an expansion in cropped area. Preparations for the irrigated wheat crop in Gezira and White Nile were not very advanced by the end of November, indicating that the final area will probably be slightly down on that of last year. The area under rice in White Nile remains substantially unchanged this year.

The availability of improved sorghum seed (principally 'Wad Ahmed', 'Arfa Gadamek' and 'Tabet') was generally better this year than it has been in the past and producers appear to be increasingly aware of the benefits resulting from the use of good seed. All the sorghum seed sown on the Sennar scheme was improved, as was 95 percent of that sown on the Gezira scheme. In White Nile more than 500 tonnes of improved seed were distributed to traditional farmers in a revolving-fund scheme. The SMOA of White Nile also commissioned private growers on an area of 1 600 feddan to grow sorghum for seed but at harvest was unable to raise the finance to buy the produce which consequently had to be sold as grain. Also in White Nile a large number of farmers were provided with inferior seed which they believed to be 'Tabet' through the Agricultural Bank of Sudan; legal action is pending. Fuel has been readily available for mechanised operations this year but the condition of large numbers of tractors and implements continues to deteriorate, and their inadequate numbers frequently lead to serious delays in planting. On the other hand, a number of new seed drills have been purchased and twenty new irrigation pumps installed on the Sennar scheme.

Pest and disease levels were low this year. Sennar carried out a campaign to control birds, as did Blue Nile State which also controlled tree locusts and sorghum bug. Some African bollworm was reported on the Gezira scheme. Striga continues to be troublesome in much of the land under sorghum and many farmers periodically switch to the more tolerant millet when infestation reaches a certain threshold.

Labour costs have risen dramatically in the last twelve months with the movement of much of the labour pool back to the south, to their own land, or into the cities for better paid and less arduous work in other sectors such as the construction industry. The growing interest in gum arabic harvesting has also attracted labour away from farms in certain areas. The high cost of labour has brought about a significant increase in the use of 2,4-D instead of hiring weeding gangs, and it seems likely that this trend will continue.

Total cereal production for the region is expected to be up about 50 percent on last year, but still only about 70 percent of that achieved in the bumper harvest of 2003/04. Prices have fallen sharply from their very high levels of a few months ago but are still higher than at the same time last year.

The area under sesame in Central Region has increased this year. However, prices are low because there has been very little export and much of last year's production remains unsold in silos. The area under cotton (mostly long-staple) on the Gezira scheme has increased to more than 300 000 feddans from last year's 27 000. On Rahad scheme though, no cotton was planted this year because of difficulties with irrigation; sorghum was planted instead.

The condition of livestock and pasture is generally good following the favourable rains, and livestock prices, which have increased slightly over the last year, are stable.

Kordofan (North and South)

In 2005, the state of West Kordofan was subsumed into North and South Kordofan. Agricultural production in the newly delineated North Kordofan is predominantly traditional, while about half of South Kordofan's cereal production comes from the rainfed mechanised sector, especially from the extensive area around Dilling and Habila.

This year, rainfall in most of Kordofan was considerably better than last year, though it was disappointing in the north and north-east of the region. In the south, round Kadugli, rainfall was reported to be poorer than expected during August. The western part of the region (the former West Kordofan) received very good rainfall in September and the rains continued later there than they did in the east.

The area under sorghum increased this year in response to the favourable rainfall and the high prices of recent months. However, the increase in the area under millet was much more dramatic; North Kordofan reported having an extra 0.8 million feddans under millet compared with last year. In South Kordofan, especially in the area of the Nuba Mountains, part of the increase in cropped area in the traditional sector can also be attributed to better security. Increased area combined with an improvement in average yield of both sorghum and millet has led to a rise in cereal production for Greater Kordofan of more than 60 percent compared with last year. Cereal prices began to fall rapidly in November from very high levels earlier in the year in anticipation of a satisfactory harvest. Nevertheless, in nominal terms, they remained higher than at the same time last year.

More than 1 000 tonnes of seed were distributed this year to farmers in the traditional sector in South Kordofan, while in North Kordofan 3 700 tonnes were made available through GOS, international organisations and NGOs to an estimated 10 percent of all framers. In line with most of the rest of the country, labour costs have escalated over the last twelve months, and this has encouraged an increased use of herbicide in the mechanised rainfed sector. Striga is a continuing problem in sorghum fields and, as in previous years, producers periodically switch their land for one or more seasons to millet which is less susceptible to the parasitic weed.

Pest incidence was low this year, with millet headworm, grasshoppers and local birds all present at acceptable levels. In the old North Kordofan, WFP ran a very successful food-for-work programme for the collection of watermelon bugs, but in the old West Kordofan there was no such programme and production was greatly reduced. Farmers in Kordofan tend to regard watermelon as a survival crop; if the rains are satisfactory they devote their energies to expanding the area under millet and to tending that crop, whereas if the rains are poor and it is obvious that the millet crop is not going to perform well, they pay more attention to their watermelons. Therefore with the relatively good rains this year watermelon received little attention except in those areas where the collection of bugs translated into food income. Around Barra (which was covered by the WFP programme) a record harvest of watermelon seed was reported.

The sesame crop covered about 1.5 million feddans this year as a result of more generous financing by lending institutions. Production is expected to be disappointing in those areas where planting was delayed until late August by the demands on tractors. In addition, with a large proportion of last year's harvest still unsold, sesame prices remain very low, calling into question the economic viability of harvesting some of the crop. Prices are also low for groundnut which has performed well this year; parts of North Kordofan, where almost one million feddans of the crop were planted, reported their best yields for five years. With increased security and favourable prices, this year has witnessed an upsurge in the collection of gum arabic. Being potentially more lucrative and less arduous than field work, this has further contributed to labour shortages.

The region's livestock is in good condition and pasture is more plentiful than last year. In many areas, however, fire breaks have not been made this year and there is therefore a risk that much of the pasture could be lost to fire during the dry season. By the end of November only 2 000 kilometres of firelines out of a planned 13 000 had been formed in North Kordofan, while in South Kordofan none had been formed. Livestock prices remain high, indicating a lack of imperative to sell.

Darfur (North, South and West)

Darfur's crop production is almost exclusively in the traditional sector. Last year's cereal crop (2004) suffered from inadequate rains and poor security. Not only was the planted area much smaller than normal because farmers were fearful of planting in insecure localities, but it was estimated that about 50 percent of the planted crop could not be harvested for reasons connected with the ongoing conflict. In many cases crops were destroyed by pastoralists' livestock, while elsewhere crops were left un-weeded and un-harvested because producers feared for their life to go to their fields. This year, despite reports in West Darfur that 20 percent of the crop was destroyed by grazing livestock, and the fact that there are still several areas in all three states that remain unproductive and others that could not be surveyed by the SMOAs for reasons of insecurity (three out of South Darfur's administrative districts are classified as war-affected), the situation is generally regarded as being rather better than it was at the same time last year. Improved security and better rains have resulted in the expansion of both sorghum and millet areas in all three constituent states. This, combined with better average yields, has led to an expectation of cereal production for Greater Darfur that is almost double that of last year. Production is still, however, a good deal lower than might have been expected in the absence of conflict. Since harvesting will continue into January it should be borne in mind that the crop remaining in the field could still suffer from a downturn in security, leading, in the worst case, to a reduction in production of about 45 percent (since about 55 percent has already been harvested) on the present estimate.

In terms of both quantity and distribution, this year's rains were better than last year's in most areas. In the south the first rains came in May while further north the start was delayed until early July. Good rains in July and August - some flooding in wadi beds in North Darfur in August necessitated re-planting - led to the expectation of a long rainy season. However, this hope was disappointed by an abrupt cessation or diminution of the rains over much of the region in September. Late-planted crops were adversely affected with often very poor grain-filling.

Production this year was assisted by the distribution of relatively large amounts of inputs from GOS, international organisations and NGOs. These included cereal seed, vegetable seed, hand- tools and donkey-ploughs. Birds were effectively controlled in most of the region, though some localities suffered significant losses. Surveys were carried out and control measures taken against small pockets of locusts. In North Darfur, 1 400 hectares were treated for sorghum bug, while in some of the drier parts millet production was adversely affected by headworm. Otherwise, levels of pest infestation were generally low.

Grain prices started falling in November with the expectation of an adequate harvest. There were some market distortions during the preceding months in West Darfur which apparently resulted from an over-supply of food aid. It was reported, for instance, that in May sorghum was selling for SDD 3 500 per bag, about one third of the price it was then fetching in El Fasher. Similarly, in November, aid wheat emanating from IDP camps was selling for SDD 2 400 per bag in Zalingei market, while elsewhere in the country wheat was selling at between SDD 8 000 and 10 000 per bag.

Livestock health, pasture conditions and water provision are all satisfactory at present, and some extensive vaccination programmes have been carried out, indicating a relative improvement in security. Several hafirs have been repaired and some new ones have been constructed, and agreed migratory cattle routes are beginning to be established. There are fears, however, that the lingering restrictions on movement caused by insecurity in some areas could lead to over-grazing and enhanced disease transmission. The possibility of loss of grazing to fire is also of concern as few fire-lines have been formed. Livestock prices have begun to rise in several markets.

Concern has been mounting about the escalating illegal exploitation of the region's timber which is suspected of being carried out by members of the army and by IDPs attempting to establish a source of income to replace that lost as a result of their move away from their land and into camps.

Upper Nile, Unity and Jonglei States

Upper Nile State forms the transition zone between the mechanized farming zones of north Sudan and the traditional hand-cultivated farming systems of the south. This year visits to the mechanized farms around

Malakal revealed an area reduced to some 3 500 feddans(1 400ha) of mostly, highly variable, long-cycle sorghum crop (*agono*) still very much in the vegetative stage, due to late planting in Mohamed el Jack and c.1 500 ha of a much better *agono* crop in the Shilluk Kingdom (Tonga). In the latter are also earlier planted, short-cycle red feterita fields which have performed equally well as the rains began normally ain May and were sufficient to support growth until now. However, with a tractor force reduced from 9 to 3 tractors over the past two years, no access to credit, high fuel prices adding organisational problems to the poor security caused by marauding militia in June, in Malakal the problems this year are not climatic, Only 2 large scale farmers and the army have invested, therefore, in agriculture. Cultivation has been reduced to one pass of discs with a sowing box attached and no seed dressing has been applied in order to reduce costs. Weeding has been minimal and is only being conducted on the more promising stands of late-planted crops at a charge of 100 000 SDs per 120 feddan. Production is expected to vary considerably but given that the rains continue and that there is no major *quelea quelea* bird infestation, overall production of sorghum is expected to average 1.2 t per ha on the west bank but only around 500kg per ha in Mohamed el Jack.

By contrast, in the large mechanised Renk area, crops are far better than in the past five years according to the local agriculturalists due to highly satisfactory rainfall. The banks have supported rainfed production with increased financial packages to 282 farmers so that the cereal area in the combined Renk and Wadakona localities is 50 percent greater than last year. Information given to the Mission shows that the banks provided 420 million SDs for diesel and weeding costs. Later in the year a similar sum will be provided to cover harvesting costs. At the same time the *salam* price, upon which the loans are based, is 30 000 SDs for a 90kg sack (quintal) anticipating a considerable drop in prices when the harvest becomes available. Aerial-spraying by the plant protection unit in Renk, to protect Renk farms from the dura bug was conducted in April- May and the unit is now spraying quelea quelea nesting sites.

No mechanised farming has been conducted in Melut.

The traditional sector in Upper Nile has also benefited from the very good rains. With the early maturing *Leuwarding* and early maize crops noted to yield 1.5 to 3.0 tonnes per ha in Mission spot-check crop- cuts in the Obels and the settled villages of Dulip Hill and Duteng (west bank).The late maturing *Agono* is also in good condition. So far, there have been no significant pests or diseases, however, as in the mechanized sector, the late maturing traditional crops remain subject to *quelea quelea* attack until harvest time in January.

Unity State had better rains this year than last year, which supported good yields of maize around Bentui-Rubkona where some limited farming is practised. Yields are estimated to be over 1.2 t per hectare. Good yields of sorghum further south in Leer and Nyal are noted however, in the limited areas, localised flooding has caused some displacement the details if which will be provide during the annual needs assessment exercise.

Regarding Jonglei State, aerial observations suggest that harvesting has been completed in Padak and south Bor to good effect, but as the airstrip was unlandable at both places due to heavy rain, the Mission was unable to sample the localities. In Pochalla, the first harvest of maize is reportedly less than last year due to less planting and some flooding. Crops to the south of the town are noted to have benefited from the better rains this year suggesting an overall performance similar to last year despite much better rains. In the same area, Anuak refugees have established small, productive farms growing sorghum, maize and vegetables in the nearby forests.

North Bahr el Ghazal and West Bahr el Ghazal States

The Mission visited Aweil Town, Malualkon and Warwarra in North Bahr el Ghazal and Raja and Wau in West Bahr el Ghazal. Although a little late in some areas, a good start to the rainy season in the North was followed by some breaks in June, August and September reducing yields of crops on the sandier soils. Area planted to cereals is noted to have been sustained due to security and more farmers planting larger areas per household, including far fields. Planting of long-cycle sorghums such as *Rabdit* and *Mabior* was accomplished with the farmers' own seed carried over from last year, or where necessary, borrowed through extended family connections. Similarly, early short-cycle sorghums were planted more or less on time but yielded less on the sandier soils. Areas cropped may have been less than require due to the poor season last year, therefore given the importance of these strategic crops seed multiplication programmes are recommended to boost seed security. The long-cycle sorghums although successfully harvested, suffered from the breaks in the rains affecting sorghum yields on the sandier soils resulting in yields similar to last year. A migratory pest-free year has not aggravated the situation; however, the usual non-migratory pests are present including birds, sorghum bug, ants, stem borer and African bollworm. Of these only birds are subjects of pest control through continuous bird scaring during daylight hours. Striga, a pernicious plant

parasite, remains a perennial weed problem in areas where shifting cultivation has been discontinued and the Mission noted a farmer in Malualkon differentially applying goat manure to combat the effect of the pest.

Consequently, a sorghum harvest similar to or slightly better than last year is expected with spot-check samples taken by the Mission ranging from 0.5 t/ha on the sandier soils to 1.0 t/ha on the heavier soils in the lower lying areas. This year organisational difficulties affected the performance of the rice crops in Aweil town and in Malualakon. In the former location, only 390 feddans have been grown and of these only 100 feddans have received irrigation. In Malualakon, the number of farmers growing rice on contract to Tearfund has decreased by 50 percent because of a poor performance last year. Groundnut planting was successfully accomplished at area estimates larger than last year and the early harvests have been good, the Mission recording yields of freshly dug material (not dried) at up to 5 tonnes per ha. These crops are expected to compensate the households on the sandier soils for a disappointing sorghum season.

Sorghum prices currently range from 7 500 SDs per quintal in Aweil compared to 15 000 SDs last year.

In West Bahr el Ghazal, the rains were much more favourable. Last year agricultural production picked up in Raja and this year, the re-establishment is continuing with very good crops of sorghum, groundnuts, cassava, sweet potatoes and sesame noted by the Mission. Sample crop cuts of cassava suggest yields of c.18 t/ha and sorghum yields between 1.5 to 2.0 t/ha. Since the fighting three years ago destroyed most planting material, assistance is still needed to bring source material back to levels needed to cater for local expansion in a very productive area. Elsewhere, in Western Bahr el Ghazal planted area generally is greater than last year and there are noticeable increases in cassava planting close to Wau town as town's folk and local returnees re-establish their farms, encouraged by improved security. Such actions have caused discontent among some IDPs presumably farming sites to which others have longer standing rights. This may be a forewarning of some of the clashes to come when agricultural expansion in the transitional zones around the GOS towns does begin in earnest. Sorghum and groundnut crops in Wau County are also well grown and are likely to yield well this year.

As with other areas, a migratory pest free year means that the main pest and disease problems are caused by local birds, rodents, monkeys and termites. Striga, as in the north, is a significant problem where sorghum has been grown continuously without crop rotation or the use of animal manure. Such areas tend to be concentrated in zones of restricted access around Wau town. Wau farmers and IDPs did not cultivate rice this year due to poor organisation, a declining tractor force, fuel at 24 500 SDs per 200 litre drum, no seeds of planting quality and low river levels.

Rumbek, Yirol, Awariel, Cuibet Counties

Early and consistent rains with few breaks of a short duration meant vigorous planting and no replanting in Lakes. Ox ploughs enabled farmers to cultivate greater areas rapidly, however, the weeding needing to take full advantage was beyond the purchasing power of many.

In Rumbek and Yirol, early-maturing sorghum landraces such as *rapjan* and maize and the crops being harvested at the time if the Mission are noted to have performed well benefiting considerably from the good rains this year with yields of 1.7 tonnes per ha common place. The performance of the long maturing landrace *kec* is also expected to be good throughout the zone, if the rains continue into next month.

Again another year without significant pest and disease attacks has not added particular problems. Given that the main sorghum harvest is yet to occur market presentations of sorghum were low and prices are comparatively high at 4 000 SDs per 90 kg sack but have begun to fall in recent weeks.

Bahr el Jabel, East and West Equatoria States

The Mission visits to Equatoria this year included Yambio and Yei, in the Greenbelt where all crops were performing well due to sufficient rains, evenly distributed, despite a late start in Yambio and the recorded quantity being less than usual. Maize yields were recorded at 1.7-2.5 t/ha at the sites visited. It should be noted that at least two cereal crops are grown is series in one year in the Greenbelt, which stretches from Tambura to Yei, effectively doubling the area under cultivation. Exports from the zone noted to have reached 1 500 tonnes of cassava flour, 600 tonnes of sesame seeds and 750 tonnes of groundnuts last year have probably been sustained or increased but this year's figures were not made available to the Mission.. The Mission also visited Juba and Ikotos. In the former there has been a noticeable increase in planting in all directions. FAO seed supply programmes have supported farmers wishing to plant away from the town to the west and to the east and in the outlying villages. Despite breaks in June that affected early crops, crop cuts and linked observations indicate sorghum yields around 1.2 to 1.5 t/ha for both the short cycle landrace *Kelle*

and *Lodoka*, the tall, longer maturing landrace that makes up the bulk of the crop. Small areas of tractor ploughed, late-planted Wad Ahmed, seen close to the town will depend on the continuation of the rains to reach a reasonable crop. Aerial observations suggest widespread planting and well-grown sorghum crops ready for harvest throughout Bahr el Jebel.

In Ikotos, security has improved, planting is observed to be better organised and the crops east of the town and near the airstrip, for the most part, are in good condition exhibiting high yields of 1.5 to 2.0 t/ha. To the west of the town the late-planted sorghum landraces are dependent on more rain next month. CRS is organizing the distribution of planting material for root crops following pilot introductions of cassava and sweet potatoes.