Food Security Analysis[1,2]

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I. Introduction

1. Background

Sudan has experienced more years of war than peace since independence in 1956. The second phase of the civil war, begun in 1983, has destroyed productive activity, uprooted socioeconomic structures and systems, and hindered the development of civil society (Catholic Relief Services [CRS], 1998). Displacement and drought have disrupted agricultural production and led to famines. Disease and starvation have claimed much of the southern Sudan's estimated (Majok and Schwabe, 1996) four million livestock. Insecurity has hindered economic growth. Political development has been stifled because the demands of war have taken priority over the implementation of democratic political and socioeconomic structures in both northern and southern Sudan. The effects of the war have disproportionately impacted women and children. As men leave to join the army or pursue economic opportunities elsewhere, women are left to bear the dual burden of being both providers and caretakers, thus exacerbating their traditionally subordinate position, preventing them from pursuing existing opportunities, and making them less capable in coping with danger (CRS, 1998).

Relief has come from the international community including the U.S. Agency for International Development (USAID). Total US humanitarian assistance to Sudan amounted to US$1.4 billion between 1989-2000 (USAID, 2002). Despite this costly response, needs continue to exceed capacity and access to local and regional markets have continued to be hampered.

There is, however, some hope that increased agricultural production and market transformation will replace humanitarian assistance and food aid, especially as both sides are in the midst of peace talks. For peace to be sustained, political, social and economic development will need to be demonstrated. The attainment of these elements will result in the realization of sustainable food security.

In fact, the ending of the military conflict will only be the *sine qua non* for improvements in food security. Progress in the food security situation in the country will be directly linked to the policy and investment choices made prior to any peace accords by the Sudanese themselves and not originated by donors. These policy choices are in relation to: (a) sustainable agricultural productivity; (b) effective commodity market transformations; (c) a concerted effort to develop the physical and institutional infrastructure which currently impedes the development of trade linkages between the rural, urban, regional and international markets; (d) development of liberalized, small scale business enterprises; (e) a relentless attack on rural poverty which is the major

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constraint to access to food; and (f) a well-targeted development of human resources through improvements in health, education and the environment.

The purpose of this food security analysis is to provide an analytical framework to address these choices which would in turn help to inform policy and investment choices under the preferred scenario that peace is becoming a reality. The policy implications presented in the document will have less relevance under other possible scenarios: that the peace process may either collapse, further exacerbating the food crisis situation, or a stalemate will be reached, which would lead to the continuation of the current food delivery regime with the possibility that donors become fatigued.

2. Food Security

People are "food secure" when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life (USAID, 1995, p.7). Three distinctive and interrelated variables are central to the attainment of food security: availability, access, and utilization. Food availability is achieved when sufficient quantities of food are consistently available to all individuals within a country either through household production, other domestic output, commercial imports or food assistance. Food access is ensured when households and individuals have adequate resources to obtain the appropriate foods for a nutritious diet. Food utilization is the proper biological use of food, requiring a diet providing sufficient energy and essential nutrients, potable water, and adequate sanitation. Effective food utilization depends in large measure on knowledge within the household of food storage, processing techniques, basic principles of nutrition and proper child care (USAID, 1995).

Food aid can help meet a fraction of the needs of the poor. However, improved access to food – through increased agricultural productivity and incomes – is the essential prime insurer of food security. Agricultural productivity includes measures across the entire spectrum of the food system which reduce food costs in real terms and increase incomes (USAID, 1995).

This document will provide an analysis of these food security parameters to assess Sudan's performance. The results of the analyses will provide a basis for rational policy choices and investment strategies not only for USAID and the international community but also for the Sudanese themselves. These policy and investment choices will not only be influenced by the outcome of the current peace talks but also on the realities of regional and international political and economic environment.

3. Agricultural Systems in Sudan

With its diverse agricultural system, Sudan has often been referred to as the "bread basket" of the Arab World (Jaffe, 1992). Sudan has the potential to feed, not only its growing population of 28 million (FAO, 1999), but other countries. It has three distinct agricultural sub-sectors: irrigated, mechanized rain-fed, and traditional rain-fed.

The irrigated sector, the largest in sub-Saharan Africa (4.4 million feddans[4]) gets most of the attention because it is the engine of political and economic stability and development. Historically, it has also been a major source of foreign exchange earnings. Increasing land under irrigation implies huge increases in capital investment to support the deteriorating conditions of irrigation infrastructure at the expense of other subsectors and labor.

Mechanized rainfed farming is concentrated in El Gaderef, Blue Nile, Upper Nile, White Nile, Sinnar, and Southern Kordofan states. It covers about 14 million feddans, comprising of farm units of 1,000 feddans that are partly mechanized but also depend on seasonal labor (IMF, 2002). Historically, this sub-sector has been a source of sorghum exports as well as meeting internal needs, particularly in urban areas.

Traditional farming comprises of nomadic, transhumant, and sedentary agriculture. It is widespread throughout northern and southern Sudan, with livestock being the main hedging commodity against uncertainty. The area under traditional rainfed farming is estimated to be 18 million feddans (IMF, 2002).

While the three agricultural sub-sectors are generally well supported by the diverse agro-ecological zones in Sudan, drought is a re-occurring phenomenon and is generally an intrinsic feature of the rural environments in Sudan, especially in the north.

Southern Sudan has three main ecological zones each with unique traditional rainfed agricultural characteristics. The Central Rainland Region consists primarily of the extensive flood region, the Equatoria Region consists of the Ironstone Plateau, central hills, and the lush Green Belt, and the Southern Eastern Hills and Mountains Region consists of high altitude areas, lower mountain slopes and hills, and the South Eastern Plain. Livestock and crop production are the most prominent agricultural sectors - with crop production dominant in Equatoria and southern Bahr el Ghazal and livestock dominant in Upper Nile, Eastern Equatoria, and northern Bahr el Ghazal. The fishery sector, while largely limited to subsistence fishing, is key to the entire Sudd area. Forest resources (again, largely untapped) are found in Equatoria and Bahr el Ghazal while wildlife is most plentiful in Western Equatoria and Bahr el Ghazal (Southern National Park) and also in Eastern Equatoria and Upper Nile (Boma and Nimule National Parks) (USAID, 2002).

4. The Causes of Food Insecurity

Basic economic statistics and more complex indexes including measures of nutritional status can be used to evaluate the food security status of a population. At the simplest level, per capita income growth, per capita food production, the percentage of total household income spent on basic foods, and the percentage of the population falling below the country's poverty line are useful indicators.

Food insecure people are, by definition, unable to lead healthy and fully productive lives.

[4] One feddan is 0.42 hectare, or 1.0379 acres

They drain the service budgets of the poorest developing countries, and they lack the simple physical energy needed to contribute to their own livelihood. The most pernicious impact of food insecurity, however, is its toll on children. Severe malnutrition results in very high infant and child mortality, and for those children who survive, there are many life-long medical complications, including mental retardation. Recent research has also demonstrated that even mild-to-moderate malnutrition significantly raises the risk of mortality in children (USAID, 1995).

Given the labor-intensive nature of subsistence food production in the Sudan, the HIV/AIDS endemic becomes an important health parameter. AIDS affects adults in their prime productive years and as it spreads in the rural areas, changes in the availability and productivity of the labor force will directly affect food production and consumption and, therefore, food security (Shapouri and Rosen, 2001).

We will assess Sudan's performance using established concepts of the causes of food insecurity.

II. Macro Level Issues

1. Food availability

1.a. Physical grain/cereal availability

The per capita supply of cereals remained relatively stable from the early 1960s to 1980. In the early 1980s, per capita supply, particularly of sorghum and millet, declined, reflecting the effect of the drought of 1983/84. During this time, supply slightly increased. However, the per capita supply of wheat over this period cannot be viewed as an improvement in the supply of the availability of wheat because wheat is almost exclusively consumed in the more affluent urban areas in the form of breads and cookies. From the mid-1980s, per capita cereal supply rose and had stabilized by 1991. From 1991, per capita the sorghum supply rose significantly and the millet supply rose somewhat. This reflected the increases in cereal production obtained in the rainfed areas, both mechanized and traditional, because at this time, per capita wheat (an irrigated crop) supply declined (Table 1).

The ratio of cereal imports to domestic cereal production rose very steadily, peaking between 1980 and 1990. The ratio of cereal aid in the total cereal supply (domestic production plus imports) was insignificant until the 1980s when it was between 0.04 and 0.15. It is interesting to note that the bulk of cereal aid was wheat, except during the drought years of 1984/85. During the peak of subsistence cereal shortages in the Sudan, the ratio of wheat aid in cereal aid was between 0.6 to 1.75. This is reflects the urban bias of the Sudanese food security policy. In fact the same data set shows that while many Sudanese in the rural areas of southern and western Sudan were starving due to the lack of the basic staple cereals of sorghum and millet, Sudan exported up to 2.8 MT of millet and 184.1MT of sorghum between 1981-1985.

Turning to specific sub-sectoral performance, it has been shown (Elamin et al, 1995) that Sudan has a comparative advantage in livestock, cotton, wheat, groundnuts, and gum

arabic production. Actual performance levels have generally been below expectation. Agricultural GDP growth rate averaged -4.2 percent per annum during 1981-1985 and -1.2 percent during 1986-1990. The drought years of 1983-1985 affected performance. Agriculture rebounded to 8.4 percent growth rate in the 1990s, remained stagnant, but generally below the population growth rate of 2.6 percent, toward 2000. This poor performance has been attributed to weak macroeconomic and sectoral policy, including market and price controls, the deterioration of agricultural infrastructure, and drought (IMF, 2002).

Major crops recovered in the 1990s following the drought of the 1980s. Groundnuts, millet, and sesame did particularly well (Table 2) while cotton and sunflower did poorly. Output growth was mainly due to area expansion, yield increases, and switching to high value crops such as fruits and vegetables. Only sorghum did not have statistically significant increases in area harvested. Millet and sorghum had significant growth rates in yields, while groundnuts and sesame did not. Cotton declined significantly in yield and area, and wheat declined in area (IMF, 2002). (Table 3)

The good performance of the livestock was due to the sound delivery of the veterinary health services which in the north involved GOS control of infectious diseases through the establishment of veterinary clinics, animal health centers and hospitals at district, province and regional levels. Community based programs were also introduced in high risk areas, especially in SPLM-controlled areas.

Agriculture continues to dominate the gross domestic product (GDP), although since the late 1990s petroleum, manufacturing and construction became important. Since there have been no significant technological transformations, the basic structure of the economy has remained the same as in the early 1980s (IMF,2002). In GOS areas, yields remain very low, stagnant, and/or falling for most crops (Table 4). This has special ramifications for food security because per capita agricultural production (Table 5) is, obviously, very low and cannot support the growing population at the current rate of 2.6 percent per annum. (IMF, 2002)

Sorghum production in SPLM-controlled areas of southern Sudan began increasing in 1999 after the famine in 1998 and then started declining except in 2002. Harvested areas started to decline in 2000 and reached the its lowest level in 2002/03; yields slightly increased during the period 1998-2003. (Table 6) Reduced production in 2002/03 is mostly attributed to erratic rainfall and increased insecurity in Bahr el Ghazal and Upper Nile regions.

The aggregate sorghum production in southern Sudan does not provide adequate information about regional variations. (Figure 1) While the cereal production per capita increased after the famine in 1998, peaked in 2001 and considerably declined in 2002, the cereal production per capita was the highest in Equatoria with Upper Nile and Bahr el Ghazal having production levels almost half that of Equatoria.

As a result of apparent decline in food availability in Southern Sudan in 2002, the estimated cereal deficits are considerably high throughout southern Sudan, with the exception of Western Equatoria, which is predicted to have cereal surplus. (Table 7) Bahr el Ghazal region is predicted to have the highest cereal deficit, followed by Upper Nile, Eastern Equatoria, Nuba Mountains and Southern Blue Nile.

1.b. Coping with the Decline in Food Supply: Natural Resources

Given limited access to food supply either through household production or through markets or food relief, households in food-deficit areas, particularly in southern Sudan, are becoming increasingly reliant on natural resources. Current studies on the impact of conflict on food security and wildlife in Bahr el Ghazal, Upper Nile (Boma) and Eastern Equatoria (Nimule), clearly showed the drastic shift from traditional sources of livelihood (agriculture and livestock) to harvesting of natural resources (hunting, wildfood collection and fishing).

The contribution of the traditional household activities (farming and livestock) to the overall livelihood has declined compared to pre-war period, the contribution of hunting of wildlife and collection of wildfoods has considerably increased across various communities except internally displaced persons (IDPs). (Figure 2)

Similar patterns of increased reliance on natural resources is also observed in Bahr el Ghazal region. (Figure 2) In Gogrial County, for example, while the contribution of farming to the overall household livelihood decreased by almost 20 percent during the war, the contribution of wildfoods increased by about 38 percent. During the famine in Bahr el Ghazal in 1998, wild foods contributed more than any other food sources, including relief food, in saving lives of large numbers of famine victims because of its unique characteristics of being easily available and affordable by all. Wildlife, particularly the big game animals, have almost disappeared during the current civil war particularly in the 1990s when the civil war spread to all parts of Bahr el Ghazal region.

In the Nuba Mountains, the cease fire agreement between the GOS and the SPLM has brought relative peace and encouraged free movement of the civilians and that resulted in a huge influx of returnees. The poor households are becoming increasingly reliant on kinship support and purchases of food from the local markets, while the non-poor households are dependent of the own food production, livestock and purchases from the markets. (Figure 3)

2. Utilization of food

There is no doubt that the prime cause of food insecurity in Sudan is the absence of physical access to food. Compounding this problem, however, is improper utilization of nutrients which can lead to food insecurity. Food insecurity can be exacerbated by disease, poor water and sanitation systems, inadequate nutritional education, and cultural conditions, which affect consumption patterns. The basic indicators in Sudan's performance in these areas are not encouraging (Table 8). More than 40% of the population does not have proper waste disposal systems (Table 9). Only 31.4% have access to piped water. The Sentinel Sites Survey (2002) found that about 33% of children

under five years of age had suffered diarrhea with its prevalence decreases with age. There are regional variations in the prevalence of diarrhea. Western Equatoria, which has the highest number of latrines and protected water sources, paradoxically also has the highest level of diarrhea prevalence compared with other regions. (Figure 4) The overall effect of this is that unhealthy bodies have reduced ability to absorb all the nutrients required for a normal healthy life. (IMF, 2002) (Figures 5, 6, and 7 and Tables 10 and 11)

2.a. Nutrition and Malnutrition

Obviously consistent with the supply numbers, calorie, protein, and fat intakes have risen over the last ten years in GOS areas. Intakes were stable between 1961 and 1980. From 1981 to 2000 there have been significant increases in biological intake from the traditional cereals of sorghum and millet. Wheat also has provided increased amounts of nutrient intakes. Per capita supply paths seem to have dictated the biological intake paths. It is also true that during the later parts of 1980, significant technological changes were tried in the area of introducing improved cereal cultivars that were not only potent in higher yields, but were also superior in nutrient quality. It is also possible that significant increases in the biological access could be attributed to the increased physical access to supplies from food aid. Also, supplemental feeding programs for millions of infants, children, mothers, and the elderly during the early 1980s may have contributed to the raising the biological intake of levels in Sudan. Therefore, despite the significant increases in the level of biological food intake, Sudan largely remains a country whose populace is deprived of adequate amounts of the necessary biological elements of foods required for a healthy productive life.

In SPLM areas, malnutrition rates between 1999 and 2002 were highest in Western Upper Nile, ranging from 22 to 38 percent. Malnutrition rates were also high in other marginalized regions, particularly Jonglei, Northern Bahr el Ghazal and Red Sea region. (Table 12) The global acute malnutrition rates reached as high as 39.9 percent in the oil-rich areas in Upper Nile region. The severe malnutrition rate was relatively high in most areas and ranged between 1.6 percent in Upper Nile to 8.2 percent in Red Sea in 2002. All of these regions suffered from the effect of the drought of 1983/84 and have experienced a severe decline in their traditional agricultural base. In Equatoria, malnutrition rates were between 0 and 12 percent for the period 1999 to 2002. Much of Equatoria has remained stable during this period and many people chose to return from the neighboring countries or from internal displacement camps to their ancestral homesteads. Agricultural production increased significantly. Many rural food markets were reopened and border trade with Uganda, Kenya, Congo and the Central African Republic reemerged after the SPLM captured Yei in 1997.

2.b. Poor delivery of basic human services

In government-held areas, the GOS spends 10 percent of revenues on education, compared to 17.8 percent for Sub-Saharan Africa. Emphasis is placed on tertiary education rather than basic and secondary education. The quality and efficiency of the schools are therefore below that for Sub-Saharan Africa. Enrollment rates have remained between 20 to 50 percent, with dropout rates from primary schools as high as 53 percent. There is a wide regional and gender gap across the country in education. There is severe

shortage of basic textbooks and teachers are generally poorly or never trained nor paid. Up to 75 percent of the teachers do not have the necessary educational requirements to accredit them as teachers. The curriculum has largely remained very traditional and does not cover technical education, life skills, and the effects of globalization.

Federal and state budgets for health in government-held areas were only 0.7 percent of GDP during 1998 -2000, compared with 1.5 for Kenya, 1.1 for Tanzania, 1.0 for Ethiopia, 1.3 for Mozambique and 0.9 for Uganda. Infrastructure for rural health care have deteriorated during 1990s. Primary health care facilities are a state of disrepair throughout the country and the "forced cost recovery" funds are not used for improvements in the health service itself. A large proportion of the population in the rural areas cannot afford health care. Coverage of primary health care is inadequate as children's inoculation levels are very low. (IMF, 2002) These health outcomes are reflected in the widespread water diseases such as malaria, which accounts for a fifth of work day losses each year and is linked to income and consumption poverty in most poor countries.

3. Financial access to food

Although annual average percentage change in per capita income accelerated from 1.2 percent during 1991-1995 to 4.0 percent during 1996-2000, poverty remains the major source of food insecurity in the Sudan. Poverty studies in the Sudan since 1992 show that it is high and on the rise, with wide disparities between regions, between urban and rural areas, and by gender. Researchers estimate that poverty has increased by an annual rate of 4.8 percent from 45 percent in 1978 to 91 percent in 1993. The increase is manifested in the upward trends in infant mortality rates (World Bank, 2000, p.130). Estimates of poverty range from 70-90 percent. Most of the poor are rural residents. Urban poverty is also on the rise because of economic displacement, the military and civil conflicts and natural disasters. The poorest areas in the Sudan are in the western and the war torn areas in the south. To assess the impact of poverty on food access, it is important to evaluate the level of food prices over the same period. The level of food prices indicates level of financial access to food.

Though cereal prices showed a significant decrease from those of the 1980s following the drought years of 1984/85, the reductions have favored those in the upper income brackets. These are the ones who can afford to purchase cereals even if there were price shocks of high proportions. (Figures 8-10, Tables 13-15) Price data from the western towns of Gedaref, Elobeid, and Nyala were used to indicate the impact of prices on access to adequate amounts of cereals by the average rural households, and the price patterns for cereals in the Gezira were used to evaluate the possible effect on the people in the urban areas.

Cereal prices were more stable in the Gezira than in Elobeid and Nyala. The implication of this in terms of food security is that it shows that there is more uncertainty about the financial ability of the rural populations to purchase food cereals and that the food security policy of the government may be biased towards the more affluent and politically active urban populations.

One of the determinant factors of nominal prices in the 1980s was the increased supply of food aid which cushioned and stabilized prices. During this period, yields were low and therefore domestic production might not have been instrumental in reducing prices from the level of the 1970s. Without increased food aid, prices would have been higher; this would have had a negative impact on the ability of consumers in the lower income brackets in rural areas to access cereal foods.

As for wheat, the government has always maintained artificially low wheat prices. Hence, in the 1984/85 season, when the price of other cereals were high due to the drought, wheat price remained relatively lower although it was not grown in 1984 because of the drought. Prices were kept low because of the massive imports. These imports were augmented by huge amounts of donor-supplied wheat.

Whereas a lot of effort has been exerted to ensure access to food in government areas, these efforts have not produced the desired effects, namely, the access by all people to enough food to maintain a healthy productive life. The food security policies of the government have been biased towards the more affluent higher income bracket groups in the urban areas or the regions with high levels of per capita income such as those in the Gezira triangle. A rational food security program would be aimed at improving access of the more vulnerable groups in remote rural areas. This underscores the argument that a meaningful food security strategy will have to be based on facilitating domestic local production. A well-organized local production system ensures that local mitigating strategies against shortages can be developed rather than relying on food aid.

One can also evaluate the poverty and food security linkages through an analysis of the economic growth of the Sudan. The agricultural sector has always provided annual employment for over one million workers. Most of these are either seasonal migrant laborers or permanently settled workers in the irrigated and semi-mechanized farms. Over the years, employment has not increased. Moreover, since the early 1990s, the government has relinquished most of its control over agriculture but it has continued to interfere with sorghum production and marketing by requiring farmers to allocate more irrigated land to sorghum production and by controlling export for purposes of food security. This has created additional uncertainty among farmers. As a result, the semi-mechanized farm sub-sector had a negative growth in GDP in the 1990s and only 2 percent per annum GDP growth over the last 15 years (Table 16). This decline has had a devastating effect on seasonal employment in the subsector.

Wages are also a measure of financial accessibility. Given the low per capita income, an increasing numbers of farmers in the Gezira rely on off-farm income to supplement their incomes. (IMF, 2002, Laki, 1992) Based on this observation, it could be inferred that more people in Sudan rely on off-farm income to meet their food needs because of the falling crop yields and rising family size/population. Citing a Ministry of Labor Survey (1996), Ali and Elbadawi (2002) note that only 36% worked for a wage. Wage earners in the urban areas accounted for 72% of the employed urban labor force while those in rural sector accounted for 20% of the employed rural labor force. Therefore wage employment

is limited and poorly paid, particularly in rural areas. The average monthly wage in 1996 was LS26,320 (US$20) in the rural sector and was LS50,024 (US$37) in the urban sector. The rural wage rate was below the international poverty line of US$30 per person per month.

3.a. Falling per capita income

Between 1981-2000, annual per capita income growth rate was 0.4 percent (IMF, 2002). During 1960-1998, the annual growth rate of per capita income, based on purchasing power parity, was only 0.02 percent, and per capita income growth averaged -0.89 percent per annum during 1960-73 and 1.2 percent per annum during 1974-84 (Ali and Elbadawi, 2002). Of particular importance to food security is what has become abundantly clear: during periods of peace (1972-83) the economy experienced recovery and in times of war (1960s and 1980s) per capita growth declined. Investments, savings and exports collapsed. In addition to the drain on the economy, productive political activity ceased. The resulting absence of acceptable institutions that could mediate policy differences among key constituencies made it difficult to agree on economic growth oriented reform policies (IMF, 2002).

Although economic growth between 1990-1995 was 3.8 percent, accelerating to 6.6 percent between 1996-2000 and per capita income grew at 4.0 percent during 1996-2000 (IMF, 2002), a lot of caution is advised in terms of evaluating these figures for food security assurances. The changes did not come as a result of technological transformation. The basic agricultural, industrial, and services structures of the economy are still those of the 1980s. Their shares' in GDP are the same as those of 1980s, with industry increasing due to oil production (IMF, 2002). (Table 17)

4. Demographic Changes

The civil war has caused profound demographic changes in SPLM areas, with female-headed households reaching as high as 70 percent. While the population of males and females is almost the same in the 0-19 age group, the number of males decreased significantly in the 20-39 age group years. The number of female declined considerably among the 40 and older age group. (Figure 11) These trends may be attributed to the fact that the 20-39 age group is the most active age group currently engaged in the fighting. As for the 40 and older age group, the upward increase in the number of males could partially be explained by the pattern of displacement and migration.

There are, however, apparent regional variations in the distribution of population by sex. (Figure 12) While northern Bahr el Ghazal and Eastern Equatoria sub-regions have a significantly higher number of males, Western Equatoria and Jonglei sub-regions have a considerably higher population of females. These regional variations are partially attributed to types of counterinsurgency warfare, displacement/migration and the level or fear of conscription.[5] For example, in northern Bahr el Ghazal, the counterinsurgency

[5] Further analysis of the impacts of the civil war and coping mechanisms of households exposed to the civil can be found in "Confronting Civil War: A Comparative Study of Household Assets Management in Southern Sudan," by Luka Biong Deng, published by the Institute of Development Studies, September 2002.

warfare specifically targets female members of the household either for slavery or forced marriage; this results in the permanent migration of females to northern Sudan. Similarly, the activities of the Ugandan rebels in Eastern Equatoria have forced female members of household to take refuge in Uganda. The fear of conscription into the SPLA has forced many male members of household in Western Equatoria to take refuge in Uganda, Congo and Central Africa. Jonglei and Bor counties in particular was greatly affected by the high level conscription of male adults during the early formation of the SPLA in 1983.

4.a. The underlying dynamics of rapid population growth

A closer analysis of the composition of Sudan's population (Table 18) shows that the rate of growth of those economically active declined between 1971-1990 (0.33) and 1991-1998 (0.24). More importantly, and with serious implications for food security, the rate of growth of the population that is economically active in the agriculture sector fell over this period (0.25 to 0.17). Of particular concern is the fact that rate of change of males actively involved in agriculture was significantly slower than of that of females (0.24 and 0.14 for males and 0.26 and 0.24 for females, for the years 1971-1990 and 1991-1998, respectively.) (IMF, 2002) This means that more and more of the burden of the agricultural work and the burden of feeding the families has fallen, unfortunately, on women. This exacerbates their already precarious position in society.

III. Poor infrastructure and trade links

Improved on-farm productivity will not increase food security if farm production is unable to make it to the market. Farm-to-market roads, for example, may be poor to non-existent, hampering distribution and access to food. Sufficient and well-functioning infrastructure is essential to facilitate exchange and access to markets which must function well enough to encourage further production and ensure food security. (USAID, 1995)

Ali and Elbadawi (2002), in exploring the characteristics off the food market, reiterate the conclusion of USAID that improved on-farm productivity will not increase food security if farm production is not moved to the market. In this case it is hard to sustain financial access for producers and consumers. From the producer's perspective, it aggravates their problems of production incentives in terms of selling what they produce at profitable prices. Subsequently, it exacerbates their poverty situation by continuing the cycle of poverty which often leads to chronic food insecurity. Consumers are deprived of the opportunity to access a range of food commodities in the market place at affordable prices.

There are no indications that Sudan will overcome the problems of poor infrastructure in the near future. Infrastructure development has not received the attention it deserves in the consolidated federal and state expenditures in government areas (Table 19). Public administration and defense account for half of the functional expenditures. Conservative estimates place the daily defense expenditure at US$1 million. This places a great deal of strain on the budgets of productive sub-sectors, and it implies that the potential peace dividend would be substantial.

The budgetary stress of economic services is particularly manifested in the deterioration of roads and agricultural research and extension services. The poor state of the roads and transportation is particularly hurts the more southern regions. Communities in Southern Sudan are spread over a vast area. Transport and communication are vital to facilitate trade and economic development. For example, Juba, the capital of Southern Sudan is 1,130 miles from Khartoum and 1,600 miles from Port Sudan (IMF, 2002). It is about 150 miles from Koboko, the nearest border town (on the border of northwestern Uganda). The road and water transport infrastructure has been ruined by the war. The railway line only stops in Wau. The waterways and roadways are also now in need of major repairs. Since the resumption of war in 1983, transport and communication infrastructure in southern Sudan has been ignored and physically and administratively insecure. The feeder road networks are in disrepair. To enhance a sustained food security strategy in Sudan, the agricultural system must be made more profitable. Where product movement to profitable markets fails, the victims are producers and consumers.

The main roadways that radiate from Juba and Wau connect to the northern Sudan. These are no longer open to active civilian transportation, however. The main road outlet for southern Sudan is through Yei to Uganda and the Democratic Republic of Congo. Yei is also connected to Juba, Bor, Ayod, and Malakal and to Kosti. The eastern town of Kapoeta is connected through Torit, Juba, Yirol, Rumbek, Tonnj, Wau, Aweil and Raja. Yei is also connected to the west through Maridi, Yambio, Tambura and Wau. These road networks are difficult to use during the rain season, especially in Eastern and Jonglei states which are subjected to annual floods (IFM, 2002).

1.Transition Zone and Trade Links

While we can look at infrastructure development in the North or in the South, there are two other aspects of infrastructure that affect the overall food security situation that we need to keep in mind. The first is the Nile which flows from the Uganda border through the South then to Khartoum and up to Egypt. Historically steamers and barges were used for traffic both human and cargo along the Nile. The conflict has reduced this significantly to the extent that most barges are now military with a few carrying food aid that pass only after extended negotiations on access and delivery of food aid to both sides of the conflict. A peace agreement would once more lead to revitalization of this major trade and transport corridor between North and South. Secondly we have an entire area commonly referred to as “the Transition Zone” which extends all the way from South Darfur and Bahr el Ghazal in the Western part of Sudan to the Southern Blue Nile region. This zone is very important because stability in this zone will not only enable the displaced from the south to return home from the North, but also it is a conducive area for trade between South and North. During the years of conflict trade has been substituted by slave raiding and cattle rustling. Part of the USG strategy under the Danforth initiative has been to stabilize the “transition zone” through negotiating a cease-fire and following up with programs that bring immediate benefits to populations on both sides of the line. This has happened in Nuba and is beginning to take place in Abyei and Southern Blue Nile. Implementation of the transition zone strategy should not only stabilize and enhance food security but also lead to increased trade and income flows to populations along this huge swath of land.

IV. Investment Choices

Scenarios: Since the dominant factor in Sudan is the civil war, how Sudanese resolve or prosecute the war will be the greatest influence on U.S. diplomacy and programs during the next three years. This analysis anticipates three scenarios: a successful peace process, a return to war and a middle state of uncertainty.

Peace Scenario: The signing of a peace agreement in 2003 by the Sudanese parties would be an historical milestone of immense significance. USAID's dominant policy and program initiatives of the past dozen years have focused on the humanitarian sector - assistance, principles and access. With peace, this focus will shift towards laying the foundation for poverty reduction and sustainable and equitable economic, social and human development. The cross-border nature of humanitarian aid to war-affected regions managed largely by international actors will quickly begin to change to greater use of resources within Sudan managed by Sudanese institutions and authorities. The need will disappear for negotiated humanitarian access with its pattern of GOS denial of access to UN/OLS, to be replaced by normal bilateral arrangements. There will be an immediate increase in international development assistance, although humanitarian needs will remain significant for some time.

Peace will lead to large-scale population movements, although many displaced people may choose to integrate economically into their current urban environment. Populations returning to their rural home areas will have a tremendous impact on available food stocks, social services and the environment. Many areas along military front lines will need to be demined. Infrastructure will be a major program focus, especially roads because of the link to economic growth, elimination of food consumption gaps and delivery of social services.

With peace, USAID's development assistance is likely to overtake its humanitarian assistance within the period of this strategy. USAID's five-year Southern Sudan Agricultural Revitalization Program, running from 2002-2007 and funded by development assistance, may be expanded, and other development programs in food security are likely to be started. Given Sudan's agricultural potential, USAID food assistance levels will fall as the economy in war-affected areas recovers, and shift from general relief distributions to smaller programs targeting specific groups, such as food for work for returning IDPs and refugees.

War Scenario: Should the peace process collapse, intensified war between GOS and SPLM/A is likely, and emergency needs will escalate. International assistance will remain mostly humanitarian. Displacement of populations will continue in the war zones, and economic activities will be constrained. However, it is unlikely that all of southern Sudan will be affected by conflict; Western Equatoria and Southern Bahr el Ghazal are likely to remain stable. USAID development assistance for food security in opposition areas will continue through the SSARP. USAID humanitarian assistance will remain at high levels, both food aid and support to agricultural and livestock production. Infrastructure improvements will be minimal.

Neither Peace nor All-Out War: Under this in-between scenario, development activities will be possible but more limited than with a peace accord. Demilitarization may not occur along the front lines in war-affected areas, creating zones of insecurity. Displaced Sudanese may be unwilling to return where the two armies are facing each other, unless they are convinced that hostilities have ceased. Military front lines will remain around the major "garrison" towns in southern Sudan, with their heavy toll on livelihoods and economic activities. Militia activity and inter-communal conflict may increase. If militia attacks and aerial bombings of civilians remain at the current low level, then the stable zones in southern Sudan are likely to expand and economic growth recover. As peace talks approach the "end game", tensions within northern political groups may heat up, resulting in a change of government as happened during the 1989 peace process when the National Islamic Front took power through a coup.

Investment choices in the Immediate to Medium Term under a Peace Scenario. A peace scenario can be viewed as providing an opportunity to invest in the future but there will be tremendous immediate needs both of a humanitarian nature and to demonstrate a "peace dividend" that will need to be met. Under this scenario the following responses and investment choices will lead to meeting immediate needs and laying the foundation for economic growth.

1. Food aid needs will continue, especially as at least 1 million IDPs and returnees are expected to move back to their home areas immediately following the signing of a peace agreement. Food aid will also be a necessary resource in immediately addressing chronic poverty and food access issues.

2. Sudan's agriculture sector has shown that it can rebound after stress and shock. For example, in 1986, sorghum production increased by over 2 million tons after the 84/85 drought; Similarly in the late 80's and mid 1990s drought years have been followed by years of large surpluses. While these surpluses have been in the North, the South has not had the opportunity to rebound because of continuing conflict since 1983. Stability that comes with peace could lead to increased production both in the South and in the transition zone. With stability in the transition zone trade between north and south will also increase (e.g access to grazing rights, cattle markets, etc.). Investment choices which promote cross-line trade will be important as well as stability in the transition zone.

3. However, movement of surplus requires infrastructure investments. After the 1984/85 drought, USAID financed the Kosti-El Obeid road, an all-weather road and feeder roads. This road known as the Western Agriculture Marketing Road was justified both as a means of linking western Sudan to the export markets in the Gulf and also to meet food emergencies in the future. The end of war would require a commitment to infrastructure development in the south which is at least equal in a level of commitment, because for two decades the south has suffered from a phase of disinvestments and de-development..

4. It is clear that in the south that economic growth and food security requires the development of an institutional framework which would support a market oriented economy which is outward looking and tap its huge natural resources – proper use of

Natural Resources require delineation of a system of property rights, data and analyses of the natural resources base (both from the needs of conservation and utilization) and access to markets. Invesment in these are crucial to providing the base for rational investment and policy choices for the future..

5. Access to Global markets. Globalization as a phenomena is spreading all over the world. As the World's Largest "Organic Farm" Southern Sudan has to become part of the world both as a supplier to the world market and also importing needed technology and inputs from the outside. Its goods must meet global standards and trade will lead to an agricultural transformation. While this will not take place within the timeframe of this strategy at least the foundation for this to happen can take place under a scenario of peace.

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Annex: Graphs and Tables

Table 1: Physical supply per capita per year availability of cereal grains in Sudan (in kilograms)

Period	Maize	Sorghum	Millet	Wheat
1961-65	0.82	18.20	83.36	10.84
1966-1970	1.12	18.38	80.04	17.30
1971-75	1.32	20.82	87.34	20.08
1976-80	1.86	19.58	85.44	20.00
1981-85	1.52	14.10	84.80	24.74
1986-90	1.62	11.78	93.34	34.40
1991-95	1.64	12.96	100.36	38.16
1996-2000	2.14	15.58	101.86	35.18

Table 2: Growth rates for major crops

Crops	1971-81	1982-91	1988-2000		
	Output	Output	Output	Area	Yield
Sorghum	3.7	-3.5	4.69	3.46	4.52
Wheat	4.1	14.9	0.55	-2.86	2.40
Millet	0.4	-10.4	11.74	7.01	4.16
Sesame	-3.5	-4.1	7.25	7.40	0.09
Groundnuts	6.4	-11.4	12.26	11.31	0.48
Gum Arabic	---	---	2.68	---	---
Cotton	-8.8	-6.4	-7.21	-4.63	-2.64
Sunflower	NA	-23.2	-10.17	-14.73	4.52

Source: IMF, 2002, Table 6.2

Table 3: Average yields (tons/hectare)

Crops	Irrigated Sub-Sector			Semi-Mechanized Sub-Sector			Traditional Sub-Sector		
	1971-1984	1985-1998	1999-2001	1971-1984	1985-1998	1999-2001	1971-1984	1985-1998	1999-2001
Sorghum	0.91	1.59	1.79	0.69	0.53	0.51	0.48	0.38	0.52
Wheat	1.34	1.63	2.15	NA	NA	NA	NA	NA	1.09
Millet	0.78	0.88	0.59	NA	0.41	0.45	NA	0.24	0.23
Sesame	NA	NA	0.63	0.36	0.23	0.19	0.26	0.13	0.13
Groundnut	2.05	2.06	1.95	NA	NA	NA	0.63	0.44	0.56
Cotton	1.34	1.49	1.35	NA	NA	NA	0.29	0.48	0.22
Sunflower	NA	NA	0.86	NA	0.43	0.45	NA	NA	NA

Source: IMF, 2002, Table 6.3.

Table 4: Average crop productivity in Sudan (tons per hectare)

Crop	1971- 1980	1981-1990	1991-1998
Sorghum	0.60	0.61	0.59
Wheat	1.32	1.45	1.83
Millet	0.42	0.23	0.24
Sesame	0.30	0.22	0.19
Groundnut	0.91	0.69	0.71
Cotton	0.75	0.89	0.85

Source: The core data is from IMF, 2002.

Table 5: Average per capita agricultural production (in kilograms)

	1971- 1980 for:		1981-1990 for:		1991-1998 for:	
Crop	**Whole Population**	**Active Agriculture Population**	**Whole Population**	**Active Agriculture Population**	**Whole Population**	**Active Agriculture Population**
Sorghum	110	400	110	430	110	460
Wheat	10	50	10	30	20	90
Millet	30	90	10	50	20	70
Sesame	20	60	10	30	10	30
Groundnut	40	150	20	80	20	80
Cotton	10	80	10	60	10	20

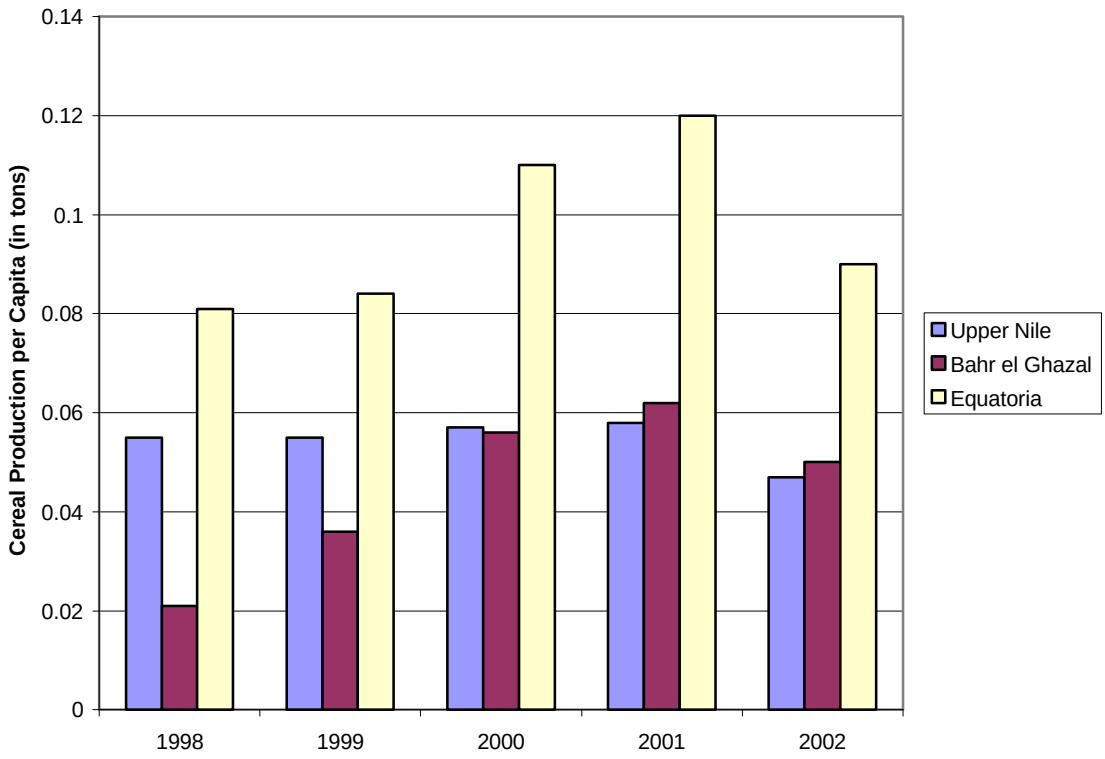
Source: Crop production from IMF (2002); and Population from FAO (2001).

Table 6: Sorghum Production in Southern Sudan, 1998-2003

Sorghum Supply	1998/99	1999/00	2000/01	2001/02	2002/03
Harvested Area ('000 hectares)	917	550	768	672	430
Production ('000 tons)	535	313	434	567	410
Yield (tons/hectare)	0.58	0.57	0.57	0.84	0.95

Source: FAO (2002)

Figure 1: Trends in Cereal Production per Capita in S. Sudan, 1998-2002



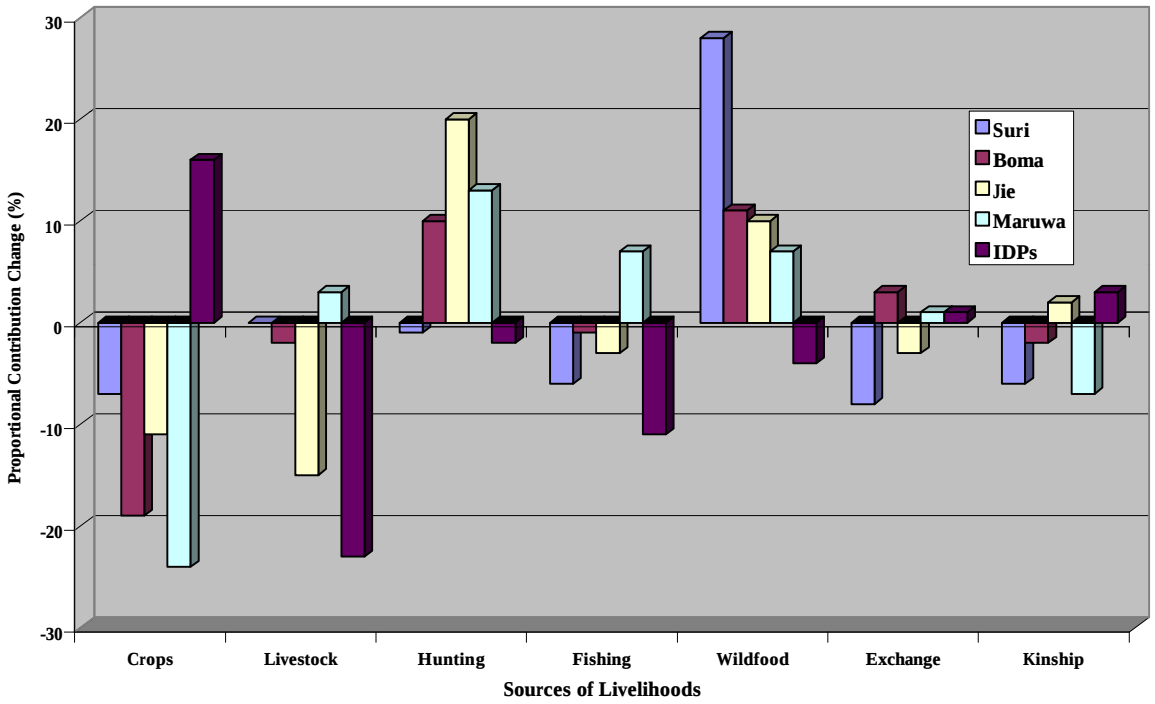
Source: FAO (2002)

Table 7: Traditional Cereal Balances by Sub-Regions, SPLM-controlled Areas, 2003

Sub-Regions	Cereal Deficit/Surplus ('000 tons)
Upper Nile	**-42**
Bahr el Ghazal	**-82**
Western Equatoria	**23**
Eastern Equatoria	**-38**
Southern Blue Nile	**-3**
Nuba Mountains	**-13**

Source: FAO (2002)

Figure 2: Change (compared to pre-war) in Sources of Livelihood, Upper Nile



Source: Deng (2003)

Figure 3: Access to Food Sources by Wealth Group in Nuba Mountains

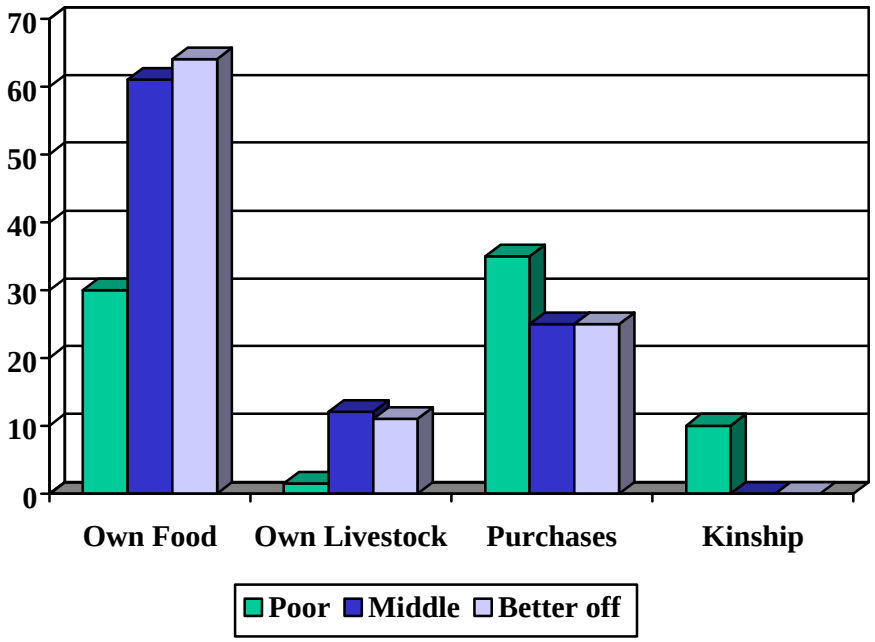


Table 8: Demographic characteristics for Sudan and service delivery indicators

Demographic characteristics	Northern Sudan	Southern Sudan			Average
		Upper Nile	Barh el Ghazal	Equatoria	
Literacy rate (%)	--	63	47	47	53
Literacy rate for males	67	76	60	61	66
Literacy rate for females	42	50	34	34	41

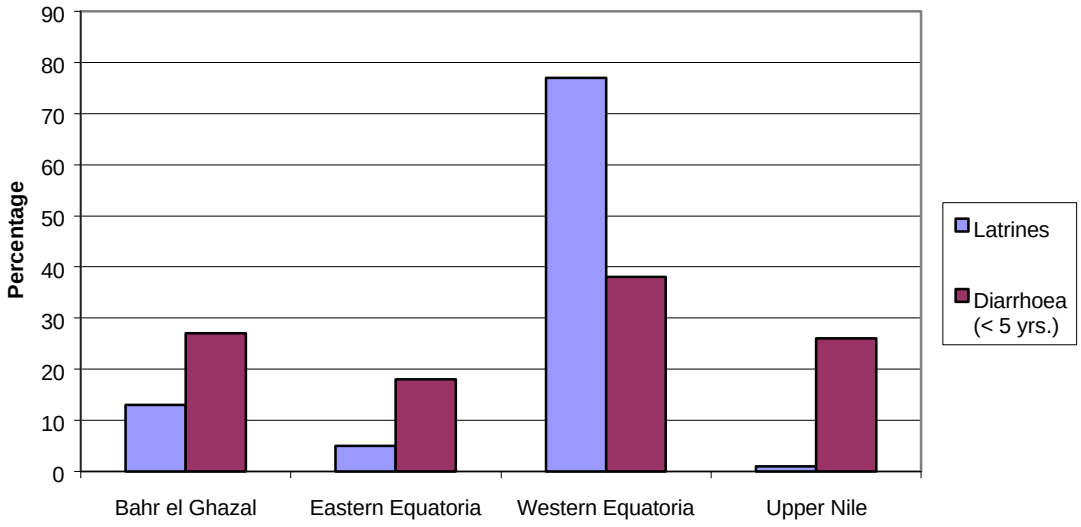
Source: IMF, 2002.

Table 9: Health Indicators for Sudan

Characteristic	Northern	Southern			Overall
		Upper Nile	Bar el Ghazal	Equatoria	
Crude death rate (1998-2003)	11	16	15	12	12
Infant mortality rate: male (1993)	116	100	161	177	134
Infant mortality rate: female (1993)	98	92	132	156	115
Life expectancy at birth: male (1993)	54	53	46	43	53
Life expectancy at birth: female (1993)	57	54	48	46	56
Total fertility rate (1998-2003)	6	6	6	6	6
Percentage of population getting drinking water from:					
Piped water in the dwelling	31.4	---	---	---	
Deep well pump/bucket	43.1	---	---	---	
River/canal	11.2	---	---	---	
Rain water	8.1	---	---	---	
Other/missing	6.2	---	---	---	
Percentage of population disposing excreta by:					
Flush to sewage system	6.8	---	---	---	
Traditional pit latrine	53.0	---	---	---	
Missing/ no facility/other	40.2	---	---	---	

Source: IMF 2002.

Figure 4: Diarrhoea Prevalence and Status of Latrine Coverage in S. Sudan, 2001



Source: SRRA/UNICEF (2002)

Figure 5: Calorie, protein, and fat intake in the Sudan

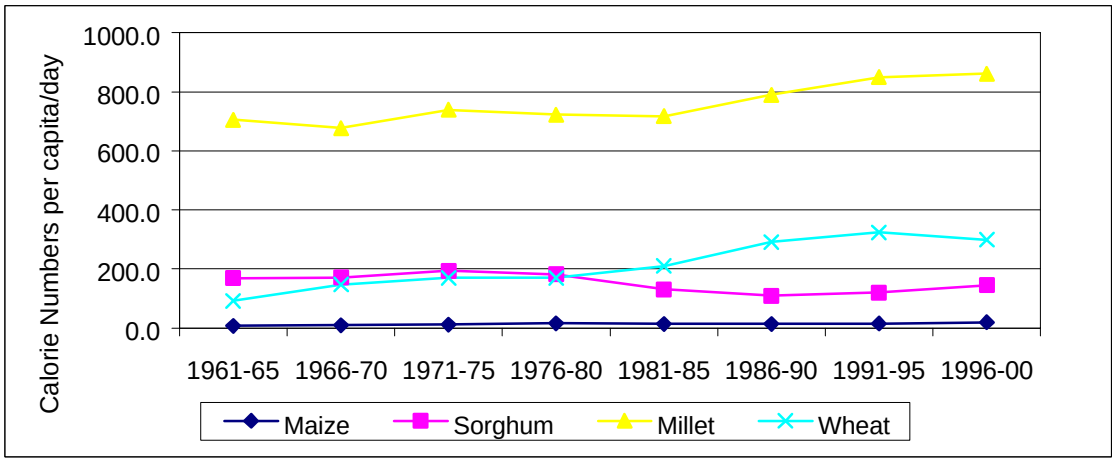


Figure 6: Protein intake for the Sudan

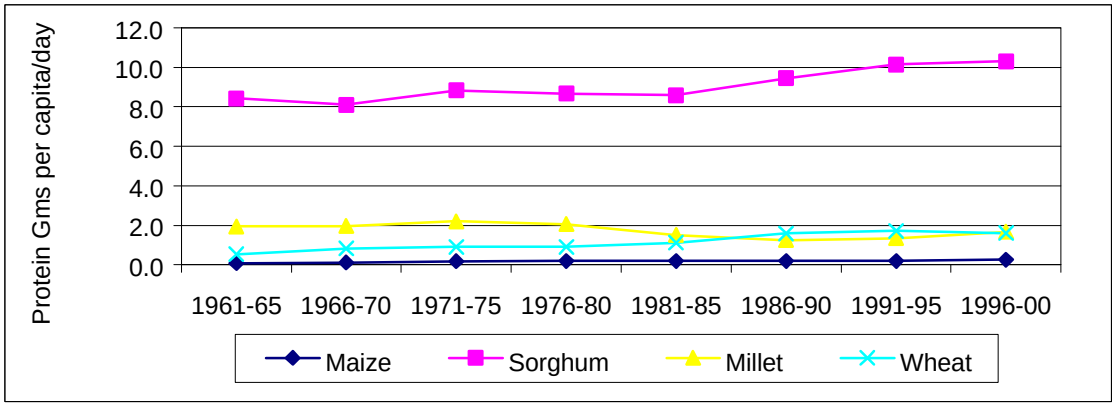


Figure 7: Fat intake for the Sudan

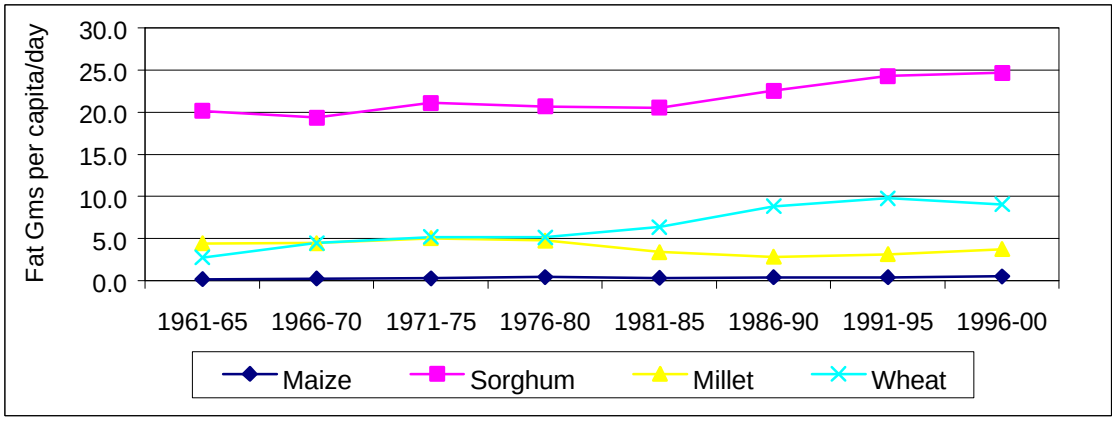


Table 10: Biological (Calories) access of cereal foods in Sudan (per capita/per day)

Period	Maize	Sorghum	Millet	Wheat
1961-65	7.28	169.10	704.94	91.98
1966-70	9.98	170.74	677.04	146.90
1971-75	11.88	193.54	738.74	170.40
1976-80	16.74	182.18	722.64	169.78
1981-85	13.78	131.12	717.40	209.82
1986-90	14.50	109.60	789.28	291.82
1991-95	14.66	120.56	848.94	323.66
1996-00	19.20	144.86	861.52	298.72

Table 11: Biological (protein and fat) availability of cereal food in Sudan (per capita/per day)

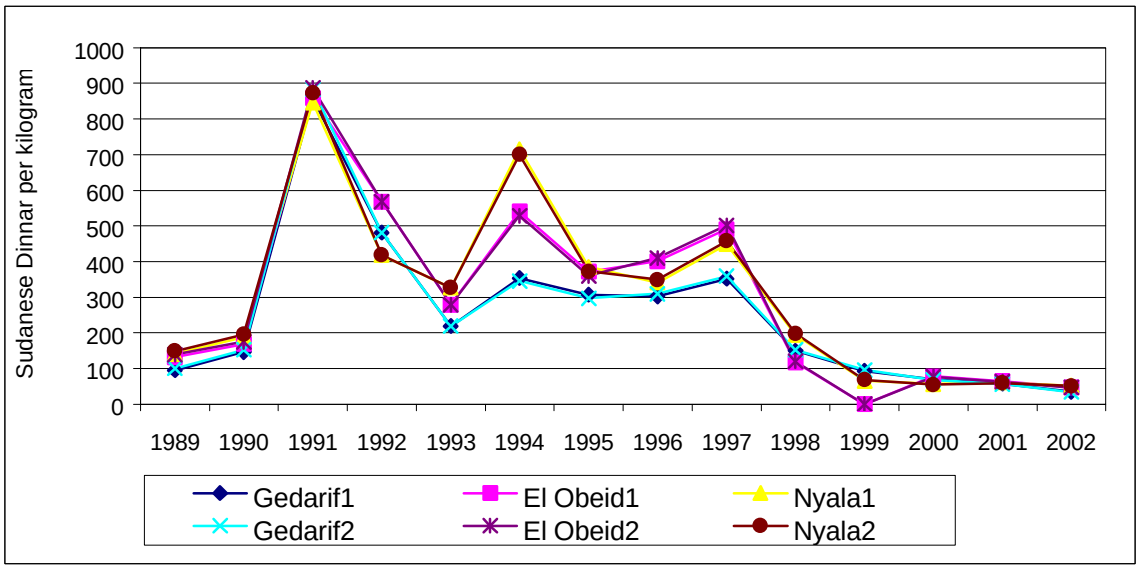
	Maize		Sorghum		Millet		Wheat	
Period	**Protein**	**Fat**	**Protein**	**Fat**	**Protein**	**Fat**	**Protein**	**Fat**
1961-65	0.20	0.08	20.14	8.42	4.42	1.94	2.78	0.54
1966-70	0.28	0.12	19.36	8.10	4.46	1.96	4.46	0.82
1971-75	0.32	0.18	21.10	8.82	5.04	2.20	5.18	0.90
1976-80	0.44	0.20	20.66	8.66	4.76	2.06	5.16	0.90
1981-85	0.36	0.20	20.50	8.58	3.40	1.50	6.36	1.12
1986-90	0.40	0.20	22.54	9.44	2.86	1.24	8.84	1.58
1991-95	0.40	0.20	24.26	10.14	3.14	1.34	9.80	1.72
1996-00	0.52	0.26	24.64	10.30	3.76	1.66	9.06	1.60

Table 12: Nutrition Situation in the Marginalized Regions of Sudan: 1999-2002

Regions	**Trends in Malnutrition Rates: 1999-2002 (<2 weight for height z-score in %)**				**Trend**
	1999	**2000**	**2001**	**2002**	
Western Upper Nile	26.3	25.1	38.4	22.4	High
Jonglei	24	27	31	39.9	Rising
Bahr el Ghazal		17.8	19.6	21	High
Equatoria		9	12	0	Normal
Eastern Sudan (Kassala)	8.8	7.5	5.8	17.9	Rising
South Darfur	20	9.3	23	24.4	Rising
Kordofan	15	23	18.8	23	Rising
Red Sea	19	17.8	23.1	29.6	Rising

Source: Food and Agriculture Organization, 2002

Figure 8: Adjusted (2002 = 100) sorghum prices



Note: 1 denotes high income bracket group, and 2 denotes low income bracket group.

Figure 9: Adjusted (2002 = 100) millet prices

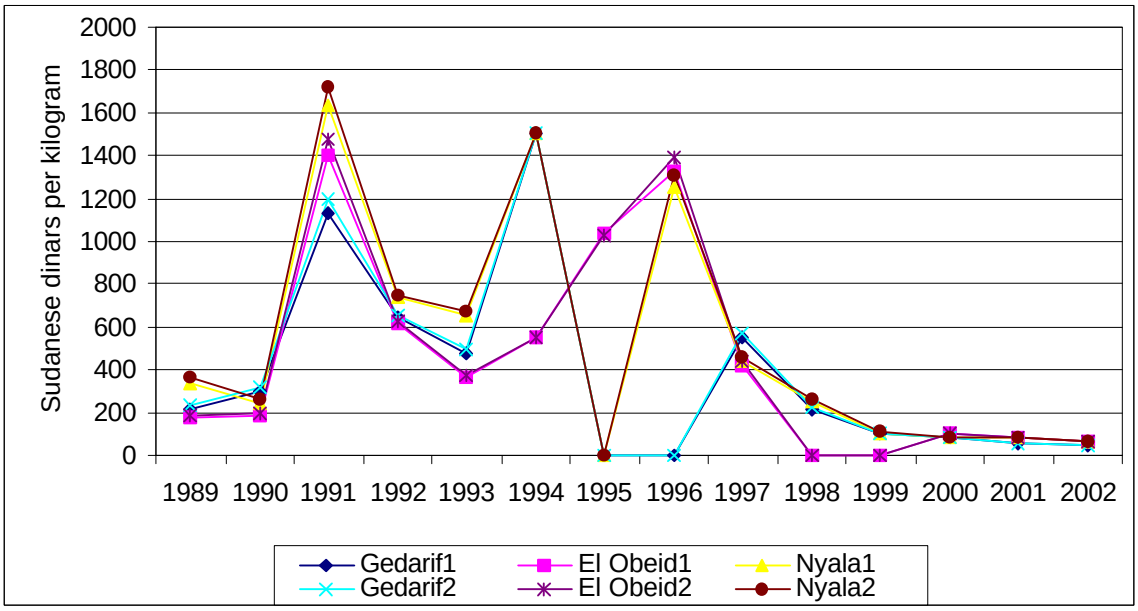


Figure 10: Adjusted (1999 =100) food crop prices in the Gezira scheme

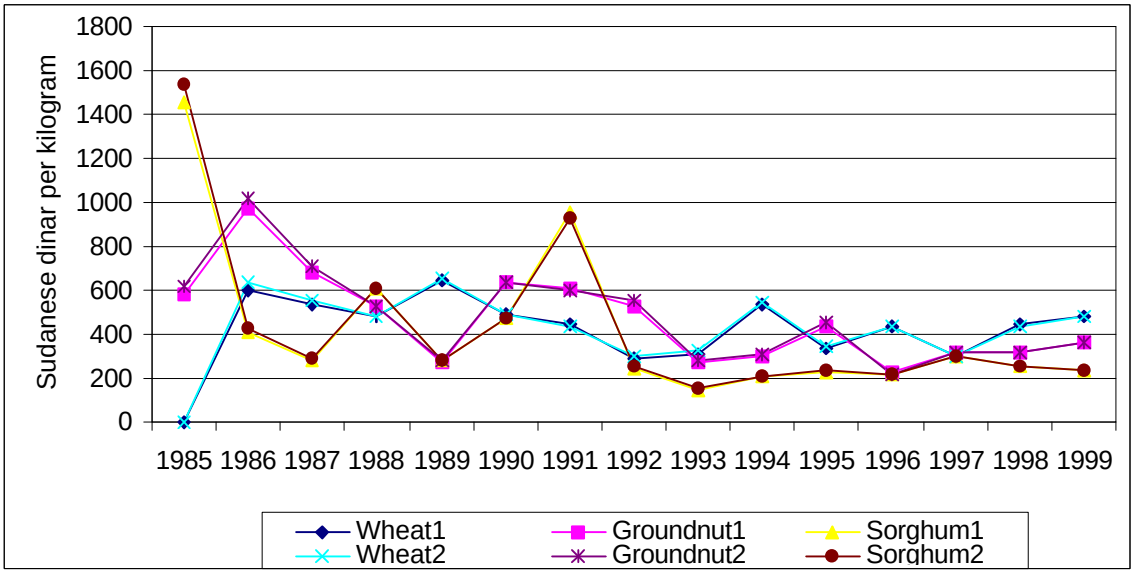


Table 13: Adjusted (2002 = 100) sorghum prices per kilogram for the rainfed sub-sector

Year	High Income Bracket			Low Income Bracket		
	Gedarif	El Obeid	Nyala	Gedarif	El Obeid	Nyala
1989	96	132	141	101	139	149
1990	147	169	188	153	175	196
1991	857	859	846	885	887	874
1992	481	568	418	481	568	418
1993	219	279	326	279	279	326
1994	354	540	716	346	529	700
1995	307	372	385	297	360	372
1996	302	401	341	309	410	349
1997	352	491	449	359	501	458
1998	150	118	195	153	120	199
1999	93	0	66	96	0	68
2000	69	78	56	68	77	55
2001	58	64	61	57	63	60
2002	35	47	52	34	46	51

Table 14:Adjusted (2002 = 100) millet prices per kilogram in the rainfed sub-sector

Year	High Income Bracket			Low Income Bracket		
	Gedarif	El Obeid	Nyala	Gedarif	El Obeid	Nyala
1989	217	177	341	234	191	
1990	33	184	242	322	196	257
1991	1132	1398	1634	1194	1474	1723
1992	644	615	736	658	628	752
1993	480	368	657	491	376	671
1994	1504	550	1504	1503	550	1503
1995	0	1036	0	0	1024	0
1996	0	1331	1248	0	1391	1304
1997	548	418	441	571	435	460
1998	212	0	250	221	0	261
1999	100	0	103	105	0	109
2000	82	99	80	82	100	80
2001	56	85	80	56	85	80
2002	46	63	64	46	63	64

Table 15: Adjusted (1999 = 100) crop prices in the Gezira scheme

Year	High Income Bracket			Low Income Bracket		
	Wheat	Groundnuts	Sorghum	Wheat	Groundnuts	Sorghum
1985	0	585	1450	0	621	1539
1986	603	973	408	633	1022	429
1987	534	681	284	553	706	294
1988	478	524	611	478	524	611
1989	647	275	279	657	279	283
1990	490	637	474	487	634	472
1991	448	612	951	439	600	932
1992	289	531	248	300	551	257
1993	313	276	146	324	286	151
1994	532	298	205	550	308	212
1995	334	437	223	350	457	233
1996	439	224	220	436	222	218
1997	300	317	300	298	315	298
1998	443	318	257	440	316	255
1999	480	364	240	480	364	240

Table 16: Shares of GDP and Growth Rates in Agriculture

Item	Share of Agricultural GDP (1998 prices)	Growth Rate (1985/86-1990/91)	Growth Rate (1991/92-1998)
	Percent	Percentage per annum	
Irrigated crops	21.3	2.3	7.9
Rainfed mechanized	6.4	-31.4	-2.9
Rainfed traditional	16.3	-12.2	24.2
Minor	0.8	-8.6	-0.2
By products	4.8	4.7	0.1
Total crops	49.6	-3.7	8.6
Livestock	39.9	5.1	10.4
Forestry	9.1	-0.1	-12.6
Fisheries	1.4	4.1	11.0
Total Agriculture	100.0	0.4	8.5

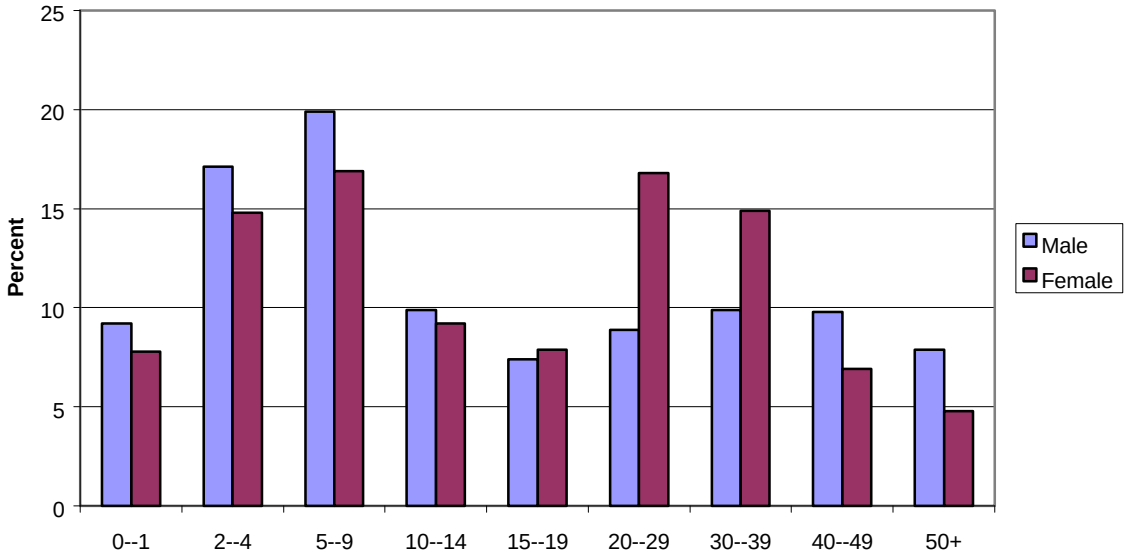
Source: International Monetary Fund, 2002.

Table 17: Structure of GDP

Period	Percentage Share of:			
	Agriculture	**Industry**	**Service**	**GDP**
1982-85	35.7	15.7	48.6	100.0
1986-90	33.4	14.4	52.2	100.0
1991-95	30.5	14.9	54.6	100.0
1996-00	36.9	17.4	45.7	100.0
2001	35.4	16.3	48.3	100.0

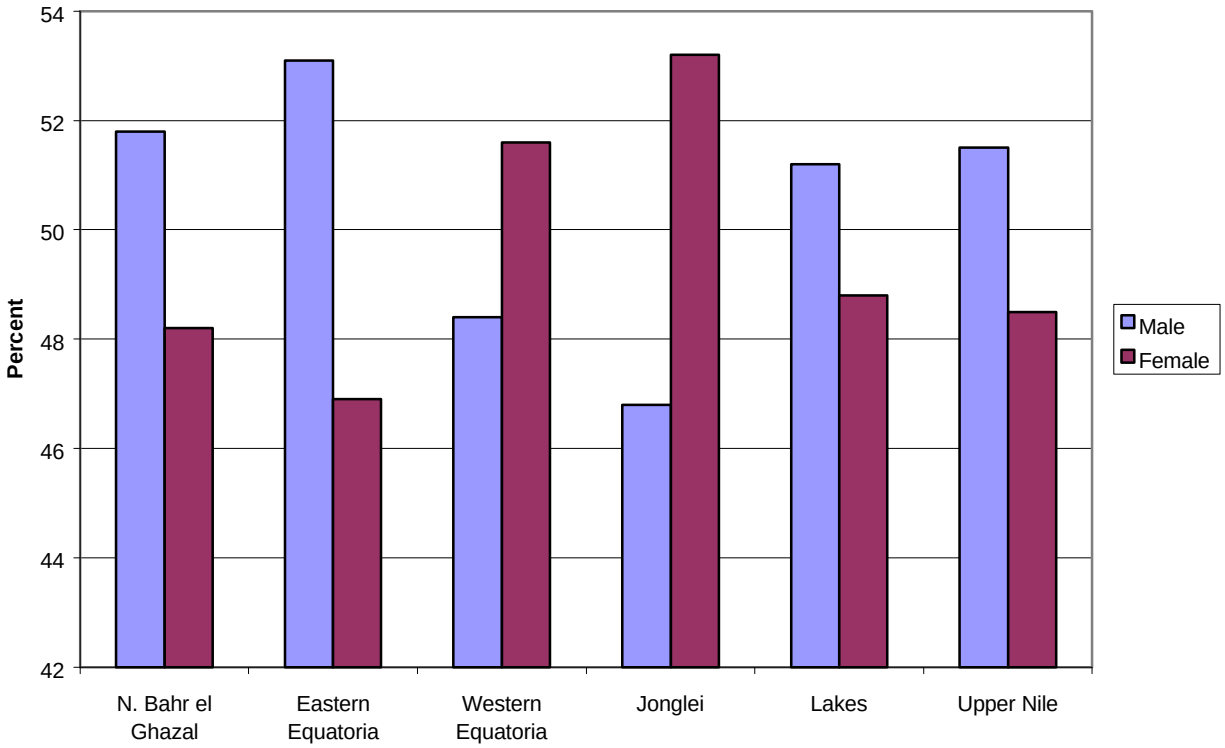
Source: IMF, 2002.

Figure 11: Distribution of Population by Age Group and Sex in S. Sudan, 2002



Source: SRRA/UNICEF (2002)

Figure 12: Population Distribution by Region and Sex, 2002



Source: SRRA/UNICEF (2002)

Table 18: The composition of Sudan's population (1971-1998)

	1971-1980	1981-1990	1991-1998	Change 1971/80 – 1981/90	Change 1981/90 – 1991/98
Total	16,343	21,694	26,386	0.33	0.22
Males	8,185	10,890	13,234	0.33	0.22
Females	8,158	10,804	13,153	0.32	0.22
Rural	13,270	16,648	18,228	0.25	0.09
Urban	3,073	5,047	8,158	0.64	0.62
Agricultural	12,259	15,318	17,339	0.25	0.13
Non-agricultural	4,083	6,376	9,047	0.56	0.42
Total economically active	6,033	8,001	10,083	0.33	0.26
Males economically active	4,416	5,851	7,240	0.32	0.24
Females economically active	1,617	2,150	2,843	0.33	0.32
Total active in agriculture	4,527	5,649	6,623	0.25	0.17
Males active in agriculture	3,064	3,802	4,336	0.24	0.14
Females active in agriculture	1,462	1,847	2,237	0.26	0.24

Source: The core population data are from the Food and Agricultural Organizations (FAO), 2001.

Table 19: Composition of federal and state expenditures

Category	Percentage of GDP			Percentage of total expenditures		
	1998	1999	2000	1998	1999	2000
Administrative Services	2.8	2.8	3.1	27.1	24.0	21.4
Defense and security	2.1	3.3	3.9	20.1	28.3	26.8
Social Services (Total)	2.8	2.1	3.0	27.0	17.6	20.6
Education	1.5	1.0	1.1	14.3	8.8	7.8
Health	0.9	0.7	0.8	8.5	6.2	5.4
Social Subsidies	0.4	0.3	1.1	4.2	2.6	7.5
Economic Services (Total)	2.4	2.1	3.4	22.9	18.0	23.6
Agriculture	0.7	0.6	0.7	7.1	4.9	4.6
Irrigation	0.4	0.5	0.9	3.6	4.1	5.8
Drinking water	0.3	0.3	0.4	3.3	2.2	2.5
Industry	0.1	0.1	0.5	1.3	0.6	3.8
Transport	0.5	0.3	0.6	4.5	2.8	4.2
Energy	0.3	0.4	0.4	3.1	3.5	2.7
Other	0.3	1.4	1.1	2.9	12.2	7.6
Grand Total	10.4	11.8	14.6	100.0	100.0	100.0

Source: IMF, 2002; Table 3.6.