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Centre for World Food Studies

**Food Security in Sub Sahara Africa:
A comparison between countries in coastal West Africa, the Sahel, Central and
Eastern Africa, and Southern Africa**

by
M. Nubé

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Abstract

A comparison has been made of developments with respect to food security over the period 1980-2000 in four regions of Sub Sahara Africa: coastal West Africa, the Sahel, Central and Eastern Africa, and Southern Africa. On the basis of trends in food production and consumption and trends in human outcomes (child malnutrition, life expectancy), it appears that developments have been relatively positive in coastal West Africa (with the exception of Liberia and Sierra Leone), and also in the Sahel region, and relatively unfavourable in Central and Eastern Africa and Southern Africa. Regional differences have been identified with respect to natural resources conditions, with respect to the occurrence of emergencies and disasters, and with respect to international assistance in the form of food aid. It is concluded that awareness and understanding of regional differences between various regions of Sub Sahara Africa is important in further analysis of food security developments and prospects of Sub Sahara Africa.

Acknowledgement

The present paper has been prepared within the context of SOW-VU's continuing efforts to report on developments with respect to the world food situation. For the present paper, valuable inputs were in particular provided by R.L. Voortman, B.G.J.S. Sonneveld and G.B Overbosch.

Section 1

Introduction

Sub Sahara Africa has become known as the developing region where over past decades developments have been very slow if not negative. Most distressfully, many countries have been facing periods of acute food shortages and associated famines and hunger amongst their populations. Also in a less visible way, developments over past twenty years with respect to food security and nutrition have been highly unsatisfactory, with for Sub Sahara Africa as a whole only limited gains in per capita food production and consumption and only moderate reductions in prevalence rates of undernutrition in children.

While there is thus the overall picture of stagnation or even decline in African development, there are still differences between countries or between regions within Sub Sahara Africa. In the present report an inventory will be made of developments in the food security situation of Sub Sahara Africa over the past twenty years. As it may be speculated that there is some relationship between countries' geographical location and their agricultural performance, the study takes a regional point of view, discriminating between four agro-ecological zones in Sub Sahara Africa, which are the coastal region of West Africa, the Sahel, Central and Eastern Africa, and Southern Africa.

First, a very brief account, including some contrasting views, will be given on current concepts with respect to Sub Sahara Africa's potential for agricultural production, on the basis of the quality of its natural resources, in particular climate and soils. Next, developments over past decades with respect to food production, food imports, and total food availability will be reviewed. Specific attention will be given to the occurrence of food emergencies, and the provision of food aid in response to such events. A specific question being addressed is the extent at which the occurrence of food crises is to be attributed to adverse climatic conditions and natural disasters or to manmade factors such as civil strife, war with neighbouring countries, or overall political instability. Also, a brief review will be given on differences between the various regions of Sub Sahara Africa in absolute levels and trends in human outcomes as these relate to food availability and consumption, e.g. differences in prevalence of undernutrition in children, or differences with respect to overall health indicators such as child mortality and life expectancy.

The paper concludes with a brief review on regional factors which appear to affect food security developments in Sub Sahara Africa, and with some speculation on the relative roles of, on the one hand, natural resources conditions, and on the other hand, degree of regional political stability on the occurrence of emergencies and food shortages in Sub Sahara Africa.

Section 2

Natural resources

According to FAO the potential for agricultural production in Africa is high. On the basis of the “Global agro-ecological assessment for agriculture in the 21st Century” (FAO/IIASA, 2000), also referred to as the Agro-ecological Zones methodology (AEZ), it is estimated that in Sub Sahara Africa the area of land which is suitable or very suitable for crop production is almost twice as high in comparison with Asia. At the same time, the percentage of total available land which is currently under cultivation is much lower in Sub Sahara Africa than in Asia (Figure 1)¹.

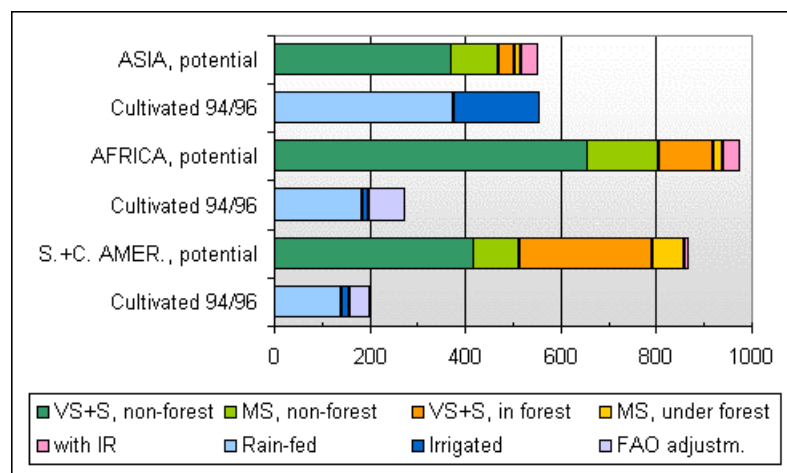


Figure 1. Crop cultivation potential and land used for cultivation in 1994-1996 (million ha) in developing regions. (VS+S=very suitable plus suitable, MS=moderately suitable, IR=irrigation) (FAO/IIASA, 2000)

The large potential for agricultural production in Sub Sahara Africa, in combination with the relatively low percentage of land currently being cultivated, suggests that there are ample opportunities for increased agricultural production. Indeed, also in another meta-analysis in which global crop production potentials have been estimated, both under a high input and under a low input scenario, Sub Sahara Africa’s potential for increased food production is considered to be large and more than sufficient to stay ahead of population growth, at least up to the year 2040 (Penning de Vries, 1997).

However, at the same time there are a number of reasons to be very cautious in formulating too optimistic prospects for raising the production of food crops or other crops in Sub Sahara Africa. In the first place, it should be noted that at the level of countries, the AEZ-methodology often yields remarkable results. Table 1 shows the percentages of total land area considered suitable for crop cultivation at the level of the individual countries of the four regions considered

¹ The methodology used in estimating areas of land suitable for crop cultivation is complex (FAO/IIASA, 2000). The estimates as given in Figure 1 are, roughly spoken, based on the assumption that land classified as ‘Very Suitable’ or ‘Suitable’ is cultivated under high levels of input, and land classified as ‘Moderately Suitable’ under intermediate levels of inputs. It may be noted, however, that also under an assumption of only low levels of inputs, the estimates of areas of land suitable for cultivation are, for most countries, not very much different.

in this report, coastal West Africa, the Sahel, Central and Eastern Africa, and Southern Africa, under a mixed-input regime and rainfed conditions (FAO/IIASA, 2000). It appears that these estimates vary from less than 1% (Mauritania) up to over 80% (Benin). Remarkable are the very low estimates for countries such as Rwanda and Burundi, in particular as these countries are among the most densely populated areas of Sub Sahara Africa. Also in highly populated Eritrea, estimated crop production potential is extremely low. The question may be raised how lands of such poor quality can sustain such high population densities. When comparing the four regions, highest potentials for crop cultivation are indicated for the coastal countries in West Africa, where for almost all countries at least 50% of total available land area is considered suitable for cultivation. In each of the three other regions there are several countries where the percentage of land considered suitable for cultivation is much lower.

Table 1. Percentage of total land area suitable for crop cultivation (land classified as ‘very suitable’, ‘suitable’ or ‘moderately’ suitable) under mixed input/rain-fed conditions

West/coast		Sahel		Central and East		South	
Benin	80.9	Burkina Faso	67.7	Burundi	24.4	Angola	50.9
Cameroon	66.8	Chad	23.9	Central Afr Rep	73.1	Botswana	8.8
Congo Rep	63.8	Gambia	68.4	Congo Dem Rep	61.5	Lesotho	11.1
Cote d'Ivoire	71.5	Guinea Bissau	60.5	Eritrea	2.9	Madagascar	43.3
Gabon	60.4	Mali	16.5	Ethiopia	29.9	Malawi	48.4
Ghana	70.2	Mauritania	0.5	Kenya	23.1	Mauritius	
Guinea	45.4	Niger	5.3	Rwanda	7.5	Mozambique	67.3
Liberia	46.5	Senegal	53.2	Somalia	1.9	Namibia	8.2
Nigeria	63.4			Sudan	33.1	Zambia	67.4
Sierra Leone	49.2			Tanzania	60.7	Zimbabwe	43.0
Togo	71.7			Uganda	48.7		

Source: FAO/IIASA, 2000.

In the second place, according to various reports there are major soil fertility problems in many regions of Sub Sahara Africa, presumably resulting from decades of soil depleting practices by small-scale farmers and from insufficient attention being given by governments to maintenance and conservation of soil quality (Sanchez, 2002; Eswaran et al., 2003). In this view, in particular under low levels of input, much land in Sub Sahara Africa is increasingly considered unsuitable for cultivation. In this respect it may be noted that there are strong reasons to argue that, on average, soil quality in Africa is of much lower quality than, for example, in South and Southeast Asia (Voortman et al., 2003). The main reason is that African soils are derived from Basement Complex rock which can be characterized by spatial diversity in combination with local homogeneity. As a result, in Sub Sahara African soils nutrient imbalances and micronutrient deficiencies are much more likely to occur in comparison with Asian soils.

In the third place, it is important to note that rainfall patterns may vary strongly over time, with rainfall conditions being in particular unstable in Southern and Eastern Africa. Figure 2 shows how in Southern and Eastern Africa the lengths of growing periods (largely determined by the length and the stability of the rainfall period) have been rather short and unstable over the period 1980-1995. Also in the Sahel, the lengths of growing periods have been rather short over past 20 years, but here rainfall patterns have been relatively stable. Longest and most stable

rainfall periods are being observed in Central Africa and in the coastal region of West Africa (Keyzer et al., 2003).

In short, it appears that various sources give widely diverging assessments of Sub Sahara Africa's potential for agricultural production, and great caution is warranted with either overoptimistic or over pessimistic assessments with respect to the Sub Sahara Africa's prospects and potential for agricultural production.

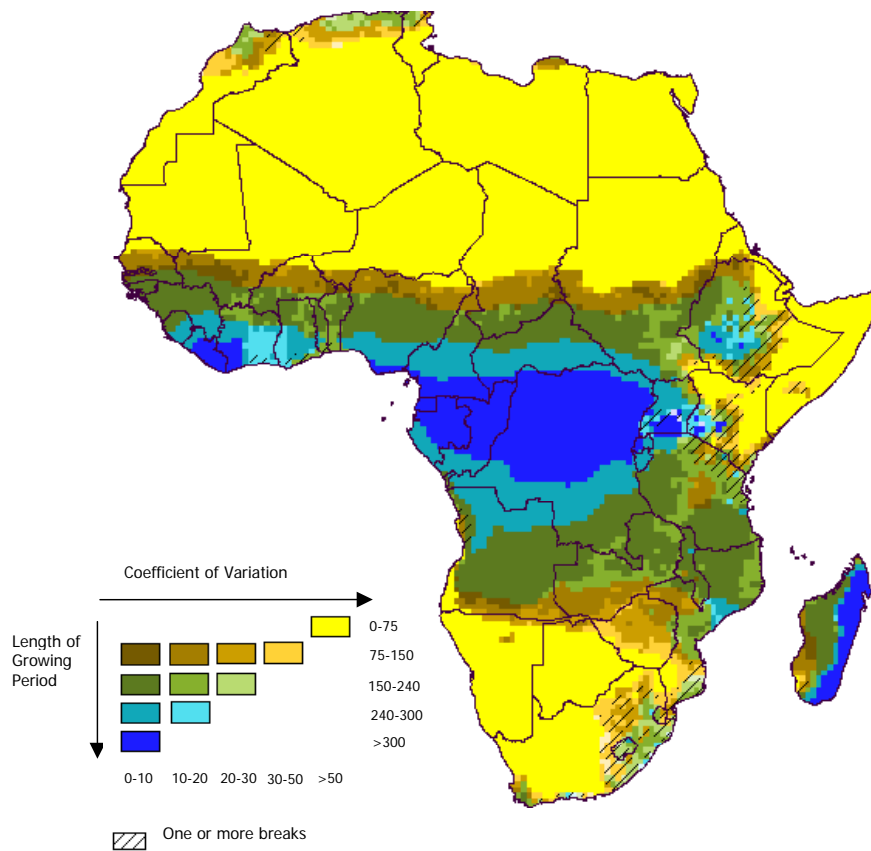


Figure 2. Length of Growing Period (days), Coefficient of Variation (percentage) and occurrence of breaks over the period 1980-1995. Source: Keyzer et al., 2003 (figure prepared by R L Voortman and B G J S Sonneveld, based on data in Fischer et al., 2000).

Section 3

Food production

Reports on food production in developing countries generally have a strong focus on cereals. For example, the recent FAO report ‘World Agriculture: towards 2015/2030’ presents in its Annex extensive tables on the production, yields and harvested areas for the major cereals (wheat, rice, barley, maize, sorghum and millet) for all countries in the world, but such information is not presented for any other crop. Available data indicate that between 1980 and 2000 total cereals production in Sub Sahara Africa increased by approximately 80%, from 41 million metric tons (Mt) to 75 million Mt. However, over the same period the total population increased by approximately 74%, implying that the per capita cereals production increased only marginally, by only around 5% over a period of 20 years. This already clearly illustrates the overall poor performance of the agricultural sector in Sub Sahara Africa over past decades.

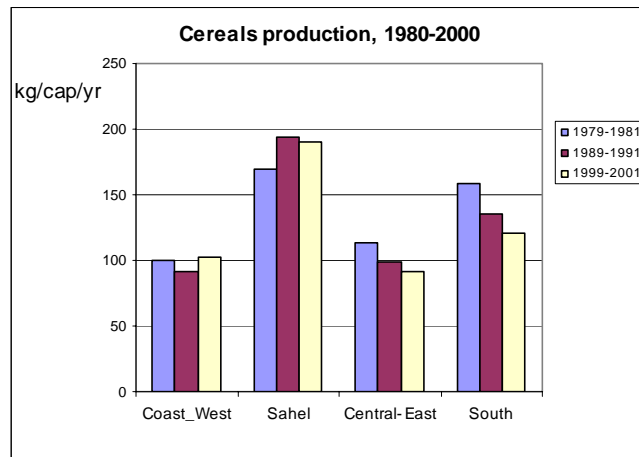


Figure 3. Trends in cereals production, 1980-2000, kg/cap/year
Source: FAOSTAT

Yet, there are considerable differences between the different regions in Sub Sahara Africa. As shown in Figure 3, in the coastal countries of West Africa and in the Sahelian countries, over the period 1980-2000 per capita cereals production remained more or less at the same level or increased. On the other hand, over the same period a continuous and considerable decrease in per capita cereals production occurred in Central and Eastern Africa and in Southern Africa.

It is important to note that cereals are not the only major source of food energy in Sub Sahara Africa. Figure 4 shows how different food groups contribute to food consumption in Sub Sahara Africa, expressed as percentage of total food consumption in kilocalories. For comparison, the same information is given for the world as a whole and for Asia. With respect to cereals, their contribution to total energy consumption is in Sub Sahara Africa somewhat lower than in Asia and almost at the same level as it is for the world as a whole. However, as regards to root crops Sub Sahara Africa has a special position. In many Sub Sahara African countries root crops are a major source of calories, in particular in those regions where humid conditions prevail. While for the world or for Asia the contribution of root crops to total kcal consumption is only a few percent, in Sub Sahara Africa root crops contribute, on average, for approximately 20% to total kcal consumption.

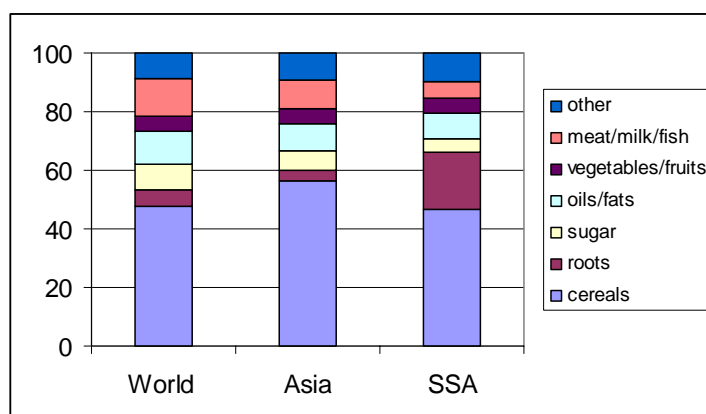


Figure 4. Food consumption patterns in the world. Percentage contribution of different food groups to total kcal consumption, 3-year averages over 1999-2001. Source: FAO- food balance sheets.

Reviewing trends in root crops production in Sub Saharan Africa is less straightforward as reviewing trends in cereals production. In the first place, there are large differences between regions in Sub Sahara Africa, and also between countries within regions, both with respect to absolute production levels of root crops and with respect to trends.

Table 2 Percentage contributions of cereals and root crops to total kcal consumption in Sub Sahara African countries

West/coast			Sahel			Central/East			South		
Country/h	Cereals %	Root crops %	Country	Cereals %	Root crops %	Country	Cereals %	Root crops %	Country	Cereals %	Root crops %
Benin	37	37	Burkina Faso	75	1	Burundi	16	35	Angola	32	36
Cameroon	40	19	Chad	50	9	Central Afr Rep	23	34	Botswana	47	2
Congo Rep	26	37	Gambia	52	1	Congo Dem Rep	26	37	Lesotho	78	3
Cote d'Ivoire	41	26	Guinea Bissau	61	9	Eritrea	71	4	Madagascar	53	22
Gabon	28	18	Mali	70	1	Ethiopia	69	12	Malawi	59	17
Ghana	28	44	Mauritania	52	0	Kenya	50	7	Mauritius	45	1
Guinea	44	16	Niger	69	2	Rwanda	16	36	Mozambique	42	33
Liberia	40	24	Senegal	59	2	Somalia	-	-	Namibia	54	12
Nigeria	45	21				Sudan	53	1	Zambia	63	13
Sierra Leone	55	9				Tanzania	50	21	Zimbabwe	56	2
Togo	48	28				Uganda	21	23			

Source: FAO Food Balance Sheets (1999-2001)

Table 2 shows the contributions to the diet, as percentage of total kcal consumption, of respectively cereals and root crops for the countries in the four regions of Sub Sahara Africa for the period 1999-2001. The table shows that in particular with respect to root crops differences between countries are large. The highest root crops consumption is in the Democratic Republic Congo, contributing 57% to total kcals, followed by Ghana where 44% of food energy consumption is in the form of root crops. In total, in nine countries root crops contribute for one third or more to total kcal consumption. On the other hand, in many other countries root crops consumption is moderate or very low, and in 10 countries their contribution to total kcal

consumption is less than 3%. This is in particular the case in countries in the Sahel region, where climatic conditions are highly unfavourable for root crops production. With respect to trends, in some countries, including Ghana, Angola, and Malawi, reported root crops production increased tremendously over past 20 years, by up to a factor 4 or even 5. But in several other countries, such as for example Tanzania, Côte d'Ivoire and Togo, production of root crops increased much slower than population size, resulting in marked reductions in per capita root crops consumption. In the second place, it should be noted that, in comparison with cereals, there are major technical difficulties in obtaining reliable estimates on root crops production and consumption. Unlike cereals, harvesting of root crops takes place over long periods of the year, which renders it much more difficult to make quantitative production estimates. To illustrate some of the difficulties with respect to statistics on root crops, Table 3 gives for a few selected countries main figures on production and utilization of cassava. The countries have been selected on the basis of their relatively high level of cassava production and consumption.

Table 3. Estimates of food and non-food utilization of cassava in selected Sub Saharan African countries.

	% of Production used as feed	% of Production lost (waste)	% of Production available as food	Kcals contribution to diet by cassava, kcal/cap/day
Angola	25	5	70	644
Congo Dem Rep	5	5	90	872
Ghana	15	35	50	645
Nigeria	25	30	45	277
Mozambique	10	15	75	637
Togo	0	15	85	386
Uganda	45	10	45	295
Zambia	0	5	95	251

Source: FAO Food Balance Sheets (1999-2001)

According to the table, among the eight selected countries, between 0% and 45% of national cassava production is reportedly used as feed. With respect to estimates of waste, these vary between 5% and 35%. On the basis of these differences in estimated percentages of non-food cassava utilization, the resulting percentages of cassava available for human consumption in the various countries vary enormously, from 45% in Uganda up to 95% in Zambia. Clearly, errors in absolute estimates of root crops production or errors in the estimates of non-food utilization have far reaching consequences for national level estimates of total kcal consumption. It is most likely because of the presumed high degree of inaccuracy of data on root crops, that most studies on trends in food production and consumption give only limited attention to these crops. Yet, for a meaningful assessment of food security in Sub Sahara Africa, information on root crops cannot be ignored.

Another type of food which has, in some Sub Sahara African countries, the position of staple food is formed by the food group of bananas and plantains. Though for Sub Sahara Africa as a whole, the contribution of bananas and plantains to the total kcal consumption is small (approximately 3%), for a few countries plantains and bananas are, expressed in kcal share, an important component of the diet. Thus, in Uganda and Rwanda plantains and bananas contribute for approximately 20% to total kcal consumption, in Gabon for around 13%. In all other Sub Sahara African countries the contribution of bananas and plantains to total kcal intake is below

10%. With respect to estimating production and consumption of bananas and plantains, problems are similar to those related with root crops. Bananas and plantains are also harvested throughout the year, and reliable production estimates are hard to obtain. Furthermore, levels of waste are difficult to estimate, in particular as the product is rather perishable.

Not only absolute levels of food production, but also variability over time is an important determinant of food security. Fluctuations in food production may be caused by vagaries of climate, but also by the occurrence of political events, such as civil upheaval and war, which may negatively affect food production and distribution. In Table 4 the countries' fluctuations in cereals production are expressed on the basis of the coefficient of variation (adjusted for trend) of annual cereals production over past twenty years (USDA, 2003). The Table shows that, with the exception of Liberia, a relatively low variability is recorded for countries in the coastal region of West Africa, with for most countries coefficients of variation in the 5-15% range. Both in the Sahel countries and in countries in Central and Eastern Africa year to year fluctuations are somewhat higher, with for most countries a coefficient of variation between 10% and 20%. Exceptions are Mauritania, where rainfall is scarce and highly unpredictable, and Eritrea, Somalia and Sudan, all countries whose populations have been frequently subject both to political unrest and to adverse climatologic conditions. On average, the largest variations in food production are observed in Southern Africa, generally between 20% and 30%, with the exception of Madagascar where cereals production appears to be rather stable. It may be noted that the main cereal in Madagascar is rice, which is mainly produced on irrigated land.

Table 4. Coefficients of variation of annual cereals production, 1980-2000

West/coast	%	Sahel	%	Central/East	%	South	%
Benin	9.5	Burkina Faso	14.1	Burundi	15.8	Angola	24.7
Cameroon	10.4	Chad	18.1	Central Afr Rep	14.3	Botswana	n.a.
Congo Rep	n.a.	Gambia	21.3	Congo Dem Rep	9.5	Lesotho	30.8
Cote d'Ivoire	6.3	Guinea Bissau	18.7	Eritrea	46.4	Madagascar	4.6
Gabon	n.a.	Mali	11.8	Ethiopia	15.5	Malawi	23.5
Ghana	16.0	Mauritania	32.2	Kenya	14.2	Mauritius	n.a.
Guinea	6.0	Niger	14.9	Rwanda	14.2	Mozambique	30.7
Liberia	37.0	Senegal	18.6	Somalia	36.6	Namibia	n.a.
Nigeria	16.4			Sudan	32.4	Zambia	31.4
Sierra Leone	9.3			Tanzania	12.8	Zimbabwe	30.8
Togo	15.0			Uganda	9.6		

Source: USDA, 2003.

Section 4

Food imports and kcal import dependency

Countries obtain their food from own production or from imports. High levels of food imports are not necessarily problematic as long as there is sufficient foreign exchange to pay the import bill. Most Sub Saharan African countries, however, are poor and large food imports are more likely to be a sign of insufficient national food production than of a strong trade position.

It is common practice in reports on food security to provide information on countries' degree of food self-sufficiency, or its mirror image, the degree of food import dependency. However, self-sufficiency estimates are generally based on data on production and trade of cereals, ignoring other types of food. Thus, in 'World Agriculture: towards 2015/2030' cereals self-sufficiency ratio's are presented for all developing countries (FAO, 2003). The data are to some extent misleading as they give an incomplete picture of overall levels of food self-sufficiency, in particular for those countries in Sub Sahara Africa where crops other than cereals are major contributors to the average diet. For the present report a different approach has been chosen in which the food import dependency is estimated by expressing imported cereals in kilocalories and calculating what percentage of total national kcal availability is imported (see Annex)². It is hypothesized that this food energy based import dependency ratio is much more relevant to a country's food security situation than a cereals based import dependency ratio. One of the few countries which, occasionally, expresses import dependency in terms of dependency on imported kcals is Japan (Mainichi Daily News-Editorial, 2000; Mitamura, T., 2002).

Table 5 shows that there are wide variations between Sub Saharan countries with respect to the extent that food consumption originates from food imports or from national production. For about half of the countries of Sub Sahara Africa, throughout the 1980s and 1990s the kcal based food import dependency has been below 15%. However, there are also a number of countries with high or very high levels of food imports, such as for example Eritrea where high import levels are to a large extent the result of large inflows of food aid. There are also a number of countries where high levels of import dependency result from large volumes of commercial food imports. Among these are, for example, Namibia and Botswana. Remarkable are also the high levels of import dependency of The Gambia and Senegal, as in these countries agro-ecological conditions would allow for sufficient food production, and the high import dependency of Côte d'Ivoire which developed over recent years, possibly as a consequence of the emerging political instability of the country and related collapse of the food production and consumption system. Finally, when looking at changes in imported kcals over the last 20 years, a number of countries show rather strong fluctuations, however generally without revealing a clear trend.

² For the World Food Summit in 1996, FAO prepared a map (Map 15) in which, at the level of developing regions, this approach has been followed, however without supplying background information on the methodology used (FAO, 1996a). Furthermore, also for Latin American countries national level import dependencies based on kcal have been reported by FAO (FAO, 1996b). Finally, also in the classification of LIFDC-countries (Low-Income Food Deficit Countries) the levels of food imports expressed in kcals are taken into consideration (FAO, 2002).

Table 5 Kcal Import dependency: food imports expressed as percentage kilocalories of total kcal availability, three year averages for 1979-1981, 1989-1991 and 1999-2001.

	79/80/81	89/90/91	99/00/01		79/80/81	89/90/91	99/00/01
Coast/west				East			
Benin	7.5	14.7	6.0	Burundi	9.4	1.7	1.4
Cameroon	5.7	11.7	11.2	Centr Afr Rep	2.2	4.3	5.0
Congo Rep	15.2	13.1	20.0	Congo DR	5.8	5.0	3.2
Cote d'Ivoire	16.0	15.3	33.8	Eritrea			30.1
Gabon	14.7	17.3	22.1	Ethiopia			6.0
Ghana	8.4	8.6	7.1	Kenya	8.0	6.1	15.0
Guinea	10.8	19.0	14.2	Rwanda	14.7	1.2	5.1
Liberia	17.6	21.7	18.4	Somalia			
Nigeria	11.9	2.3	7.9	Sudan	19.2	13.0	11.2
Sierra Leone	11.6	16.6	18.3	Tanzania	7.4	1.6	5.2
Togo	6.9	11.7	10.6	Uganda	15.5	0.4	1.3
Sahel				South			
Burkina Faso	9.7	5.4	7.2	Angola	18.8	14.6	14.9
Chad	3.2	3.8	2.7	Botswana	27.8	29.2	35.6
Gambia	4.1	30.7	32.1	Lesotho	27.6	25.6	29.6
Guinea Bissau	17.9	19.6	21.2	Madagascar	8.0	3.6	6.0
Mali	9.1	3.4	3.8	Malawi	2.4	8.4	3.9
Mauritania	27.3	39.6	39.0	Mauritius	53.8	56.3	58.9
Niger	5.5	5.8	8.6	Mozambique	12.7	17.3	10.1
Senegal	3.0	30.9	34.4	Namibia	19.9	37.1	44.7
				Zambia	20.1	5.5	3.4
				Zimbabwe	3.2	2.7	4.2

Source: FAOSTAT, own calculations (see Annex).

For comparison Table 6 provides for a few selected countries information on both the calorie self-sufficiency ratio and the cereals self-sufficiency ratio. While for countries such as Ethiopia and Zimbabwe both indicators are rather similar, for countries such as Angola, Senegal, and Namibia the two indicators differ strongly. The largest differences between the two indicators are recorded for the Republic of Congo and Mauritius, where the calorie self-sufficiency ratio's are respectively 80% and 41%, but the cereals self-sufficiency ratio's respectively one percent and nil percent.

While it is generally agreed upon that, in principle, food self-sufficiency has no merits by itself, over the years there have always been countries which have formulated food self-sufficiency policies. Among relatively recent ones are, for example, Malaysia and South Korea, while also several Central Asian countries have embarked on food self-sufficiency policies after their untying from the former Soviet Union (Overton, 1999; Beghin et al., 2003; Babu and Rhoe, 2001; Wegerich, 2001; Pandya-Lorch and Rosegrant, 2000). In addition, it may be noted that over past years China, and also some countries in Southern Africa, have been pursuing a high degree of self sufficiency in cereals (Fang et al. 2000; Fang et al. 2002; SADC, 2003). As long as food self-sufficiency targets are part of countries' strategic objectives, it matters how food self-sufficiency levels are being defined, calculated and reported.

Table 6 Cereals self-sufficiency ratio and kcal self-sufficiency ratio for selected Sub Sahara African Countries

Countries	Cereal self-sufficiency ratio (FAO) ¹⁾	Kcal self-sufficiency ratio ²⁾	Countries	Cereal self-sufficiency ratio (FAO) ¹⁾	Kcal self-sufficiency ratio ²⁾
Ethiopia	94	94	Namibia	36	55
Madagascar	92	94	Mauritania	21	61
Zimbabwe	88	96	Gabon	21	78
Eritrea	53	70	Botswana	9	64
Angola	51	85	Congo Rep	1	80
Rwanda	49	95	Mauritius	0	41
Senegal	48	65			

¹⁾ Cereals self-sufficiency: imported cereals (available for human consumption) as percentage of nationally produced cereals (available for human consumption), both expressed in kg.

²⁾ Kcal self-sufficiency: imported food (available for human consumption) as percentage of nationally produced food (available for human consumption), both expressed in kcals (see Annex).

Source: FAO, 2003; FAOSTAT; own calculations (see Annex).

Section 5

Food aid

Food enters a country either in the form of commercial imports or in the form of food aid. Figure 4 gives, in aggregate amounts, total volumes of food aid as shipped over past decades to the countries of the four regions, coastal West Africa, the Sahel, Central and Eastern Africa and Southern Africa.

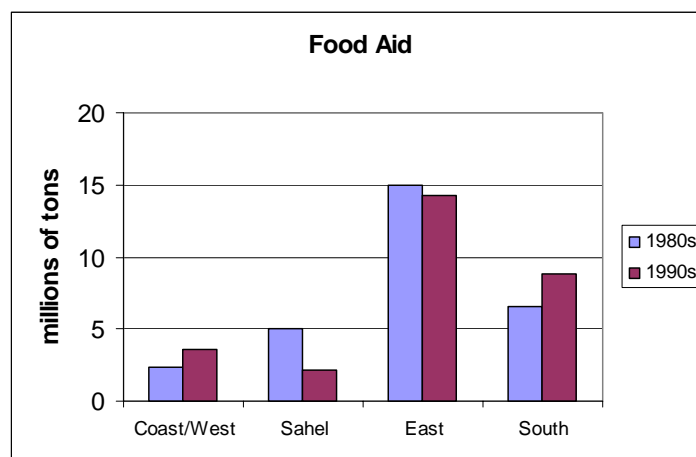


Figure 4: Volumes of food aid to Sub Sahara Africa; aggregates (millions of tons) for 1980-1990 and for 1990-2000. Source: FAOSTAT.

The figure shows that both during the 1980s and during the 1990s the Central and Eastern African region was the largest receiver of food aid. While during the 1980s the Sahel countries received a considerable volume of food aid, the amounts were more than halved during the 1990s. On the other hand, food aid to countries in Southern Africa was during the 1990s considerably higher than during the 1980s. Throughout the 1980s and 1990s the coastal countries of West Africa were only moderate receivers of food aid.

For a further analysis of flows of food aid over past decades, Table 7(a-d) gives absolute amounts of food aid for individual countries in the four agro-ecological regions, and Table 8(a-d) gives, also at the level of countries, the per capita inflows of food aid.

First, Table 7(a-d) reveals that a number of countries stand out as very large receivers of food aid. For Eastern Africa these are Ethiopia, Sudan, Rwanda, Somalia, and Kenya, for Southern Africa these are Angola, Mozambique, and, for shorter periods of time, Zimbabwe and Zambia. Hardly any of the Sahelian countries or the coastal countries of West Africa have been receiving food aid quantities, comparable to those of above listed countries from Eastern and Southern Africa.

While existing or predicted serious shortages of food are the immediate reason for food aid shipments, there can be different underlying causes of such food shortages. Among these are persistent adverse climatic conditions (drought, floods), but also large conflicts within or between countries can be the cause of a major break-down of the food distribution and consumption system. Finally, also general economic malaise, either caused by unfavourable external economic conditions (e.g. serious falls in export earnings), or resulting from poor governance at the national level, may well result in seriously constrained food supply and demand

systems. Below, an attempt will be made to identify major causes of food shortages and related food aid shipments to the various Sub Sahara African countries, as they occurred over past decades in the various regions of Sub Sahara Africa.

Central and Eastern Africa

For Sudan, Ethiopia and Eritrea, internal conflicts and war have been major causative factors of the need for large shipments of food aid throughout the 1980s and the 1990s. The situation was most critical in 1984-1985 and from 1997-2000, when, in addition to war, the region was hit by severe droughts. During these periods also in Kenya and Tanzania food supply was seriously affected, resulting in increased food aid shipments to these countries. In the early 1990s Somalia faced a major breakdown of the food system as a result of rampant civil strife, while in the mid 1990s the ethnic clashes in Rwanda caused, apart from hundreds of thousands of casualties, massive numbers of people to face extreme food shortages, and large-scale food aid shipments to the region followed. As a result of this regional conflict, in 1993 and 1994 considerable food aid shipments went also to Burundi. It appears that only to a limited extent adverse climatic conditions have been the underlying factor of major food shortages in the Eastern African region. Tanzania is one of the few countries in the eastern African region where food aid needs did markedly decline over past 20 years. The increased level of food aid to Tanzania in 1994 was to a large extent in response to the presence in the country of hundreds of thousands of refugees, in particular from Rwanda, but also from Burundi and from the Democratic Republic of Congo. Uganda, finally, has been a very modest recipient of food aid throughout the 1980s and 1990s.

Southern Africa

Throughout the 1980s and the 1990s, Angola and Mozambique were the largest receivers of food aid in the Southern African region, and for both countries the need for food aid could primarily be attributed to rampant civil war. In Angola, internal fighting started right at the time of independency (1975) and continued for almost 25 years, up to 2002 when a formal peace agreement was signed. During the 1980s and 1990s almost on a continuing basis hundreds of thousands of people were displaced and lived in refugees camps. In Mozambique civil war raged from 1977 until the early 1990s. Also during the 1990s, after the civil war, large amounts of food aid were channelled to Mozambique, mainly as programme aid, with the objective to provide assistance to the country's economic recovery. Food aid to Malawi, which was in particular very high between 1987 and 1992, can also be largely related to the civil war in Mozambique, as the country harboured large numbers of refugees from this neighbouring country. But not only the civil wars in Angola and Mozambique triggered the need for food aid to Southern Africa. Already during the 1980s, and in particular in 1984, droughts affected the region, resulting in food aid shipments, not only to war-ridden Angola and Mozambique, but also to Zambia and Zimbabwe. These last two countries have been receiving large amounts of food aid, both during the 1980s and the 1990s, with large fluctuations partially related with the political instability, in particular in Zambia during the 1980s, and partially in response to adverse weather conditions and poor harvests. In 1991/92 a serious drought hit almost the entire region, resulting in unprecedented large food aid shipments to almost all countries in Southern Africa. By far the largest amount was shipped to Zimbabwe, though it may be noted that serious doubts have been expressed as to the extent that food aid did indeed reach those most in need (Clay and Stokke, 2000). Another drought followed in 1994/95, resulting again in large food aid shipments to the region. A special note should be made on Botswana, which is often quoted as an example of a country which has managed successfully periods of food shortage, but the country's favourable foreign exchange situation, thanks to its gold production, has of course facilitated the needed commercial food

imports. Finally, it should be noted that also Madagascar has been receiving sizeable amounts of food aid, in particular during the 1980s and on a smaller scale during the 1990s. While during the 1980s the country's political system might have operated poorly in terms of food production and people's access to food, the country is also frequently hit by adverse weather conditions, such as cyclones and droughts.

Coastal West Africa

Over past twenty years, on a per capita basis Liberia and Sierra Leone were the largest receivers of food aid of the region. The almost continuously ongoing internal conflicts in these countries appear to be a major cause of the dismal food situation in these countries, and large food aid shipments have been sent to the region. In the mid 1980s also Guinea went through a period of internal turmoil, and there were considerable food aid shipments, in particular between 1984-1986. Also in the late 1990s food aid was sent to Guinea, but now mainly to refugee camps to which people from neighbouring countries had fled. By the year 2000, Guinea harboured close to half a million refugees from Guinea Bissau, Liberia and Sierra Leone. Food Aid to Côte d'Ivoire, which peaked in the mid 1990s, was also mainly aimed at refugees from Liberia. Over past 20 years, also Ghana has been receiving significant amounts of food aid. In the early 1980s the return of approximately one million Ghanaian migrants caused acute food shortages and in the early 1990s yields were strongly suppressed by adverse climatic conditions. Apart from Nigeria, which does not receive any food aid, Cameroon, Benin and Togo are hardly dependent on food aid. Only in 1984, a drought resulted in a significant increase in food aid shipments to Togo.

Sahel

A major and long enduring drought (from 1970 to 1985) triggered large shipments of food aid to all countries of the Sahelian region in the first half of the 1980s. The food crisis which hit the region during this period has been one of the worst of the African continent, and resulted in numerous initiatives aimed at prevention of a new catastrophe. But not only climate has been affecting the food supply systems in the region. One of the politically most unstable countries has been Chad, with civil war and other forms of political unrest throughout the 1980s. With respect to Guinea Bissau, food aid shipments in the 1980s were mainly in response to adverse food production conditions (drought, pests). However, as of 1998 the country entered a period of severe political instability, and large numbers of people fled from the capital to the rural area and also to neighbouring Senegal and Guinea, creating a need for food aid for both IDP's in Guinea Bissau and for refugees in neighbouring countries. It is important to note that after the highly disastrous 1980s, during the 1990s there has not been a new collapse of the food systems in the Sahel region, and consequently food aid shipments to the region remained at rather low levels. In fact, on a per capita basis only two countries appear to have been strongly dependent on food aid throughout the 1980s and 1990s, namely Mauritania, and the small island nation of Cape Verde (not included in Tables 6 and 7). Here, agro-climatic conditions are highly unfavourable for food production, which explains these countries' needs for food imports, whether commercially or in the form of food aid.

From above descriptive analysis, it appears that over past decades food aid shipments to Sub Sahara Africa were in part in response to adverse climatic conditions, but much more so in response to food shortages caused by civil strife and war, or deep economic trouble. Patterns of food aid shipments clearly show how civil war or other forms of political unrest not only affect the countries which are directly involved, but also neighbouring countries, as in many cases food

aid was not only aimed at victims within the warring or otherwise politically disrupted countries, but very often also to refugee camps in neighbouring countries.

Table 7a Absolute annual quantities food aid, coastal West Coast Africa (mt), 1979-2001 (FAOSTAT).

	Benin	Cameroon	CongoRep	Côte d'Iv	Gabon	Ghana	Guinea	Liberia	Nigeria	Sierra Leone	Togo	Total
1979	5,000	3,600	4,200	2,000	0	110,000	24,156	3,200	0	36,400	7,400	209380
1980	11,132	10,190	1,722	0	0	94,313	33,901	26,375	0	11,771	4,213	218048
1981	8,310	10,520	440	877	0	43,130	38,530	42,370	1,430	28,810	4,580	208857
1982	13,982	5,633	8,805	0	35	58,435	24,972	57,426	0	29,036	6,696	231113
1983	5,621	1,126	675	0	0	74,900	42,617	46,958	0	15,870	8,767	215238
1984	21,412	13,303	498	0	0	95,878	51,637	19,944	32	20,787	22,893	276775
1985	10,777	12,278	1,941	840	0	96,406	54,991	76,205	36	48,649	9,298	327218
1986	7,996	7,252	637	0	0	62,585	91,854	1,745	0	42,813	6,228	230133
1987	11,278	2,324	933	865		109,622	26,246	55,713	0	57,897	16,286	293611
1988	18,142	2,350	15,056	641		59,544	38,823	61,680		32,593	18,267	238567
1989	9,956		7,408	25,939		70,376	24,848	26,963		21,453	14,602	202183
1990	8,647	6,722	7,772	58,697		96,080	8,890	138,077		23,120	16,234	362029
1991	7,127	8,258	10,102	36,464		185,725	30,014	136,537	566	64,475	13,782	494923
1992	16,033	1,227	6,584	41,021		81,280	29,594	163,973		29,402	3,660	375399
1993	23,648	2,220	1,050	45,480		113,353	46,187	151,873		29,202	10,706	431553
1994	11,379	2,010	12,190	56,698		95,055	29,468	185,137		28,943	7,252	417646
1995	8,591	4,436	9,348	34,532		42,116	4,544	153,266		66,796	3,371	320162
1996	11,370		13,390	44,741		62,348	6,332	87,183		56,156	4,643	279157
1997	30,614	3,991	8,200	26,160		67,924	4,796	44,562	1,104	32,265	5,740	220110
1998	9,740	7,561	3,732	33,783	500	26,304	20,756	92,780		66,453	4,111	281370
1999	5,901	2,820	15,588	18,262	350	49,968	13,946	75,423		14,711	8,000	190275
2000	10,907	5,000	22,176	10,328		96,716	31,991	29,966		38,652		234493
2001	17,636	2,770	18,535	3,907		49,055	24,201	19,859		42,087	6,000	175213

Table 7b Absolute annual quantities food aid, Sahel (mt), 1979-2001 (FAOSTAT)

	Burkina Faso	Chad	Gambia	GuineaBissau	Mali	Mauritania	Niger	Senegal	Total
1979	36,500	16,200	6,810	17,624	21,794	26,220	9,100	60,765	211478
1980	51,107	14,095	16,170	26,153	50,271	106,161	10,866	152,682	432468
1981	80,940	28,660	21,060	30,300	66,440	86,330	71,360	82,700	491120
1982	45,380	36,024	12,787	34,933	88,140	71,277	11,760	91,026	391171
1983	57,289	68,842	18,825	19,379	110,448	128,776	12,932	150,499	610160
1984	127,663	163,270	21,112	30,889	266,441	135,102	221,282	130,684	1115106
1985	116,356	81,615	18,512	17,738	82,806	136,512	107,318	117,486	711322
1986	22,247	28,673	15,196	9,660	76,823	38,385	17,043	80,247	338081
1987	41,473	22,452	16,971	13,380	25,890	54,429	22,932	109,022	347247
1988	38,193	19,428	10,467	6,528	52,304	47,397	39,672	48,284	306801
1989	19,051	14,912	10,745	8,046	18,811	70,372	22,345	61,263	272157
1990	48,600	30,206	13,091	5,562	30,839	72,130	65,943	35,094	355454
1991	68,962	48,470	10,498	11,976	32,383	48,285	32,463	58,371	357251
1992	22,174	389	5,865	9,209	21,136	40,744	14,309	70,485	219619
1993	28,682	13,009	7,335	8,885	23,631	58,205	24,655	35,853	248926
1994	24,266	14,517	2,356	1,704	11,085	21,840	12,814	16,376	167214
1995	25,044	10,508	4,076	2,511	5,393	24,165	8,580	9,241	137131
1996	12,824	27,628	5,976	6,384	17,154	19,658	17,048	2,976	161209
1997	21,146	21,528	4,263	2,955	24,098	29,760	25,023	8,475	184340
1998	38,452	10,136	5,536	19,882	2,669	22,966	37,626	9,486	187518
1999	35,339	12,365	5,541	1,243	2,640	23,426	6,397	46,091	185606
2000	10,028	29,797	2,842	10,933	7,293	28,276	20,508	24,116	176718
2001	30,641	12,245	5,333	9,698	2,551	29,024	28,197	16,362	155367

Table 7c Absolute annual quantities of food aid, Central and East Africa (mt) , 1979-2001 (FAOSTAT)

	Burundi	CAR	Congo DR	Ethiopia PDR	Kenya	Rwanda	Somalia	Sudan	Tanzania	Uganda	Total
1979	8,200	3,000	68,387	111,442	86,400	14,300	136,800	212,300	89,300	16,700	675,442
1980	11,613	2,518	76,969	227,986	172,889	14,830	330,061	194,516	235,776	56,924	1,244,595
1981	8,920	1,970	97,450	189,710	127,230	12,580	185,900	194,020	307,523	48,530	1,074,413
1982	6,605	4,458	109,578	356,362	164,504	12,706	188,492	330,015	171,367	14,335	1,244,386
1983	11,351	7,646	53,144	171,940	121,786	25,344	176,592	450,438	141,396	10,385	1,109,232
1984	17,055	11,585	137,558	868,932	339,782	34,864	247,942	814,502	124,932	31,237	2,479,246
1985	5,545	10,733	100,979	799,182	139,383	25,084	142,903	939,104	65,762	6,739	2,123,702
1986	2,148	5,935	56,153	570,413	106,597	15,695	160,948	889,867	55,422	15,013	1,816,103
1987	4,362	6,435	176,507	823,814	29,053	7,869	117,238	615,199	80,216	29,286	1,707,037
1988	2,510	4,126	51,323	626,799	85,126	2,033	94,229	302,936	56,477	16,881	1,186,991
1989	760	3,864	106,879	538,409	41,176	5,893	92,493	295,037	16,617	21,397	1,011,781
1990	3,526	3,258	83,658	860,926	76,151	8,380	80,468	489,047	13,337	14,445	1,546,281
1991	1,041	2,198	118,726	1,035,160	180,659	7,980	129,298	596,951	4,020	22,242	1,977,350
1992	5,505	2,761	23,668	865,289	281,885	88,254	371,259	337,703	26,176	11,544	1,987,614
1993	55,817	1,809	17,505	837,514	262,113	86,146	79,443	255,263	27,034	18,932	1,622,262
1994	57,080		91,334	862,965	109,014	289,195	32,582	117,055	108,670	28,364	1,604,925
1995	5,130		16,995	546,339	22,366	267,041	21,795	43,734	14,789	17,491	938,686
1996	366	50	10,775	128,857	48,228	347,223	2,616	83,609	13,536	46,950	671,385
1997		1,875	1,980	611,639	102,324	180,463	18,990	49,790	87,847	52,886	1,103,938
1998	110	9,616	13,269	566,014	77,596	162,891	33,519	226,780	33,929	38,004	1,138,844
1999	10,838	1,775	29,161	1,125,270	116,411	206,258	43,085	114,652	40,060	50,472	1,707,046
2000	31,181	1,939	41,618	1,446,753	348,665	43,117	16,689	176,614	71,438	48,079	2,182,536
2001	35,219	1,031	55,501	551,240	132,619	48,599	25,709	86,111	90,394	53,500	1,023,389

Table 7d Absolute annual quantities of food aid, Southern Africa (mt), 1979-2001 (FAOSTAT)

	Angola	Botswana	Lesotho	Madagascar	Malawi	Mauritius	Mozambique	Namibia	Zambia	Zimbabwe	Total
1979	10,880	20,000	28,600	13,600	4,717	21,500	151,021	0	166,500	0	366,718
1980	24,750	11,335	44,065	26,851	16,634	20,784	154,641	0	84,416	17,714	336,341
1981	74,534	6,540	34,170	87,150	2,010	42,570	148,465	0	100,010	0	418,709
1982	61,272	11,983	28,594	141,140	2,710	12,860	174,136	0	83,413	6,400	481,054
1983	68,929	31,804	50,236	74,025	3,823	21,933	310,619	0	71,629	75,919	636,748
1984	83,725	38,539	70,822	98,100	5,371	9,159	378,612	0	116,349	131,254	851,950
1985	52,542	49,266	40,370	64,598	5,135	4,945	261,744	0	84,629	0	517,914
1986	69,044	43,835	34,203	151,483	10,436	14,505	363,942	0	115,554	37,679	791,973
1987	108,696	25,099	55,329	80,815	110,253	31,481	422,730	0	145,420	4,542	897,555
1988	88,648	24,774	22,606	99,454	208,213	12,141	436,604	672	65,984	7,056	931,405
1989	98,384	5,000	27,056	21,074	136,368	9,093	479,924	1,365	2,849	11,122	756,086
1990	99,234		25,567	37,971	165,972	7,347	438,429	12,381	13,388		767,376
1991	108,342		14,366	42,312	234,113	8,659	532,025	3,946	338,360	76,699	1,335,797
1992	111,680	10,192	43,180	52,625	561,527	4,542	921,147	26,417	507,010	890,509	3,081,108
1993	222,189	8,211	25,242	34,242	28,260	1,925	264,609		3,360	9,037	569,908
1994	229,599	7,203	14,902	19,378	291,112	681	325,511		3,400	165	876,368
1995	231,163		45,898	25,009	102,099		229,044	10,000	60,815	7,000	665,131
1996	190,065	1,042	11,628	33,959	11,844	651	84,209		3,206	1,350	325,675
1997	132,179		13,164	8,656	21,447		178,475		2,324		343,081
1998	145,354		7,401	18,058	73,738		166,963	199	34,763	81,144	520,220
1999	174,477		3,116	8,251	27,929		115,216	749	18,026	9,410	354,058
2000	204,594		860	36,529	16,477		139,934	2,634	1,740	4,386	406,295
2001	180,677		5,308	26,221	45,304		181,220	1,792	57,412	59,340	551,966

Table 8a Per capita annual food aid, coastal West Africa (kg) (FAOSTAT)

	Benin	Cameroon	Congo Rep	Côte d'Iv	Gabon	Ghana	Guinea	Liberia	Nigeria	Sierra Leone	Togo	Mean
1979	1	0	3	0	0	10	5	2	0	11	3	2
1980	3	1	1	0	0	9	7	14	0	4	2	2
1981	2	1	0	0	0	4	8	22	0	9	2	2
1982	4	1	5	0	0	5	5	28	0	9	2	2
1983	1	0	0	0	0	6	8	22	0	5	3	2
1984	5	1	0	0	0	8	10	9	0	6	8	2
1985	3	1	1	0	0	7	10	35	0	14	3	3
1986	2	1	0	0	0	5	17	1	0	12	2	2
1987	3	0	0	0	0	8	5	25	0	15	5	2
1988	4	0	7	0	0	4	7	28	0	8	6	2
1989	2	0	3	2	0	5	4	12	0	5	4	1
1990	2	1	3	5	0	6	1	64	0	6	5	2
1991	1	1	4	3	0	12	5	65	0	16	4	3
1992	3	0	3	3	0	5	4	80	0	7	1	2
1993	5	0	0	3	0	7	7	76	0	7	3	3
1994	2	0	5	4	0	6	4	93	0	7	2	3
1995	2	0	4	2	0	2	1	75	0	16	1	2
1996	2	0	5	3	0	4	1	41	0	14	1	2
1997	5	0	3	2	0	4	1	19	0	8	1	1
1998	2	1	1	2	0	1	3	37	0	16	1	2
1999	1	0	5	1	0	3	2	28	0	3	2	1
2000	2	0	7	1	0	5	4	10	0	9	0	1
2001	3	0	6	0	0	2	3	6	0	9	1	1

Table 8b Per capita annual food aid, Sahel, 1979-2001 (kg) (FAOSTAT)

	Burkina Faso	Chad	Gambia	Guinea Bissau	Mali	Mauritania	Niger	Senegal	Mean
1979	5	4	11	24	3	17	2	11	7
1980	7	3	25	34	7	68	2	28	14
1981	11	6	32	39	9	54	12	15	15
1982	6	8	19	44	12	44	2	16	12
1983	8	14	27	24	15	77	2	25	18
1984	17	33	29	37	35	78	35	21	31
1985	15	16	25	21	11	77	16	18	20
1986	3	6	19	11	10	21	3	12	9
1987	5	4	21	15	3	29	3	16	9
1988	4	4	12	7	6	25	5	7	8
1989	2	3	12	9	2	36	3	9	7
1990	5	5	14	6	4	36	9	5	8
1991	7	8	11	12	4	24	4	8	8
1992	2	0	6	9	2	19	2	9	5
1993	3	2	7	9	3	27	3	5	5
1994	2	2	2	2	1	10	1	2	4
1995	2	2	4	2	1	11	1	1	3
1996	1	4	5	6	2	8	2	0	3
1997	2	3	4	3	2	12	3	1	4
1998	4	1	5	17	0	9	4	1	4
1999	3	2	4	1	0	9	1	5	3
2000	1	4	2	9	1	11	2	3	3
2001	3	2	4	8	0	11	3	2	3

Table 8c Per capita annual food aid, Central and East Africa, 1979-2001 (kg) (FAOSTAT)

	Burundi	CAR	Congo DR	Ethiopia PDR	Kenya	Rwanda	Somalia	Sudan	Tanzania	Uganda	Mean
1979	2	1	3	3	5	3	22	11	5	1	6
1980	3	1	3	6	11	3	51	10	13	5	10
1981	2	1	4	5	7	2	28	10	16	4	9
1982	2	2	4	9	9	2	28	16	9	1	10
1983	2	3	2	4	7	5	26	21	7	1	8
1984	4	4	5	21	18	6	37	37	6	2	18
1985	1	4	3	18	7	4	22	42	3	0	15
1986	0	2	2	13	5	3	24	39	2	1	13
1987	1	2	5	18	1	1	17	26	3	2	12
1988	0	1	1	13	4	0	14	13	2	1	8
1989	0	1	3	11	2	1	13	12	1	1	6
1990	1	1	2	17	3	1	11	20	1	1	10
1991	0	1	3	20	7	1	18	24	0	1	12
1992	1	1	1	16	11	15	52	13	1	1	12
1993	9	1	0	15	10	16	11	10	1	1	9
1994	9	0	2	15	4	57	4	4	4	1	9
1995	1	0	0	9	1	54	3	2	0	1	5
1996	0	0	0	2	2	67	0	3	0	2	4
1997	0	1	0	10	4	31	2	2	3	2	6
1998	0	3	0	9	3	25	4	8	1	2	6
1999	2	0	1	17	4	29	5	4	1	2	8
2000	5	1	1	22	11	6	2	6	2	2	10
2001	5	0	1	8	4	6	3	3	3	2	5

Table 8d Per capita annual food aid, Southern Africa, 1979-2001 (kg) (FAOSTAT)

	Angola	Botswana	Lesotho	Madagascar	Malawi	Mauritius	Mozam bique	Namibia	Zambia	Zimbabwe	Mean
1979	2	23	21	2	1	23	13	0	29	0	8
1980	4	13	32	3	3	22	13	0	14	2	7
1981	10	7	25	9	0	44	12	0	17	0	8
1982	8	12	20	15	0	13	14	0	13	1	9
1983	9	32	34	8	1	22	24	0	11	10	12
1984	10	37	48	10	1	9	29	0	17	16	15
1985	6	46	27	6	1	5	20	0	12	0	9
1986	8	40	22	14	1	14	27	0	16	4	14
1987	12	22	35	7	14	31	32	0	20	0	15
1988	10	21	14	9	24	12	33	1	9	1	15
1989	11	4	16	2	15	9	36	1	0	1	12
1990	10	0	15	3	18	7	32	9	2	0	12
1991	11	0	8	3	24	8	38	3	41	7	20
1992	11	8	25	4	57	4	63	18	60	83	44
1993	21	6	14	3	3	2	17	0	0	1	8
1994	21	5	8	1	29	1	21	0	0	0	12
1995	20	0	25	2	10	0	14	6	7	1	9
1996	16	1	6	2	1	1	5	0	0	0	4
1997	11	0	7	1	2	0	10	0	0	0	4
1998	12	0	4	1	7	0	9	0	3	7	6
1999	14	0	2	1	3	0	6	0	2	1	4
2000	16	0	0	2	1	0	8	1	0	0	5
2001	13	0	3	2	4	0	10	1	5	5	6

Section 6

Total per capita food availability

National level food security depends, in principle, on the in the previous sections described levels, trends and variability with respect to food production and food imports, whether commercially or in the form of food aid. As can be expected on the basis of the observed differences between regions in Sub Sahara Africa, both with respect to food production and with respect to food imports, also in terms of per capita kcal availability major differences between the four regions can be observed. Figure 6 shows that both for the coastal West African countries and for the Sahelian countries, over the period 1980-2000 there has been an increasing trend in per capita food availability. Largest increases in per capita food availability have been recorded for countries such as Ghana, Nigeria, Guinea Bissau, Burkina Faso and Mali, with gains in per capita kcal availability varying from 25% to 50%. On the other hand, for the Central and Eastern region and for Southern Africa, over past twenty years there has been, on average, no improvements at all in daily levels of per capita kcal availability. For some countries, such as Angola, Zambia, Zimbabwe, Rwanda, Burundi and Tanzania, there was even a marked decrease in per capita kcal availability.

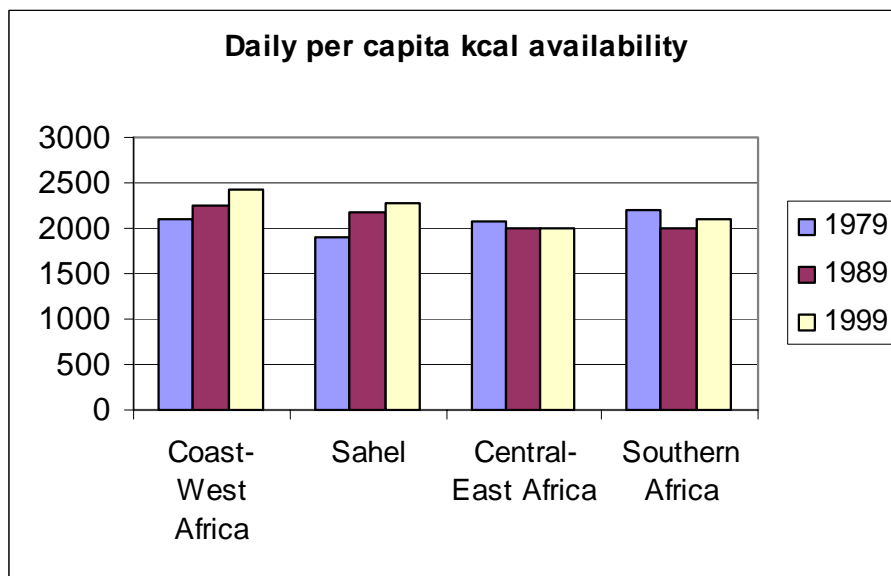


Figure 6 Trends in per capita food availability (kcal/cap/day)
Source: FAOSTAT.

Section 7

Outcomes: child nutrition, child mortality and life expectancy

The most directly health related indicator of food security is the nutritional condition of the population, which can be expressed on the basis of anthropometric indicators such as prevalence rates of low birth weight in newborns, low weight-for-age, low weight-for-height or low height-for-age in children, and low Body Mass Index in adults.

Figure 7 provides information on prevalence rates of undernutrition in children (children 0-5 years with a low weight-for-age), in combination with information on population density. The table shows relatively high levels of undernutrition in children in the Sahel countries and in Eastern Africa. Lowest levels of child undernutrition are recorded for the countries in Southern Africa. In West Africa there appears to be a rather clear gradient in worsening nutritional conditions when moving from the coast up northwards. This gradient is most likely related with the simultaneous reduction in rainfall when moving from the coast to the Sahel. In the other regions of Sub Sahara Africa, the relationship between natural resources conditions and undernutrition is much less evident, if not absent. In particular in Southern Africa, countries such as Mozambique and Malawi seem to benefit from the relatively favourable economic conditions in South Africa, with for example in 1998 an estimated migrant labour force of almost 500.000 from Zimbabwe, and approximately 50.000 from Mozambique, finding (temporary) employment in South Africa (ILO, 1997).

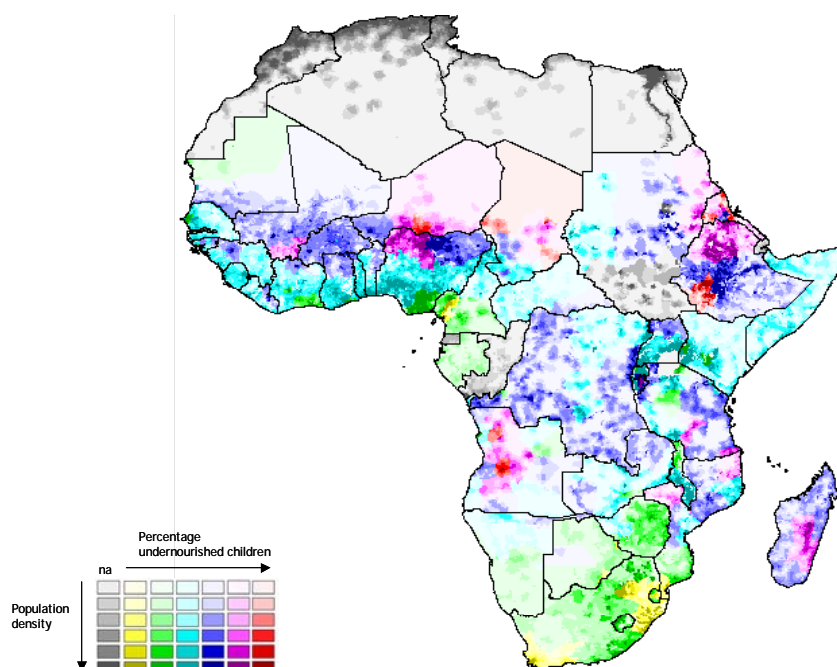


Figure 7 Prevalence rates of undernutrition (low weight-for-age) in children and population density in Sub Sahara Africa
Source: Keyzer et al., 2003 (figure prepared by B.G.J.S. Sonneveld and M.Nubé)

It is difficult to make an assessment of trends in undernutrition prevalence rates in the various regions of Sub Sahara Africa over the past 20 years. For such an assessment information from nutrition surveys held throughout the 1980s and 1990s would be required. However, it is only since the 1990s that with more regularity anthropometric surveys are being held in Sub Sahara African countries. For Africa as a whole it is estimated that overall undernutrition prevalence decreased between 1980 and 2000 from 40.5 to 35.2 % ³. In absolute numbers this still means that over these twenty years the number of undernourished children increased from 35 million to 47 million.

Another health indicator, partially determined by nutritional conditions, but also by other health related factors (water and sanitation conditions, quality of health services, general levels of education), is mortality and the related life expectancy (Figures 8a and 8b). The patterns of changes over time in these indicators are in line with the patterns of changes in indicators of food availability and consumption as described in previous paragraphs. Both in the coastal West African countries and in the Sahelian countries life expectancy increased considerably, on average by approximately six years. On the other hand, in Central and Eastern Africa life expectancy improved only by two years, while it decreased in Southern Africa, partially as a result of the AIDS epidemic. With respect to underfive mortality, improvements were recorded for all regions, but reductions in mortality were most marked in the Sahelian countries in comparison with the other three regions.

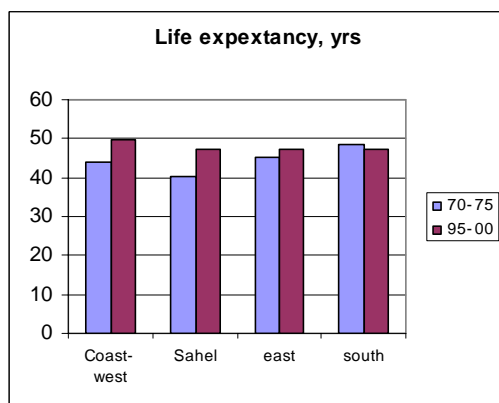


Figure 8a Life expectancy, unweighted regional means of country data for the periods 1970-1975 and 1995-2000
Source: UNDP, 2002.

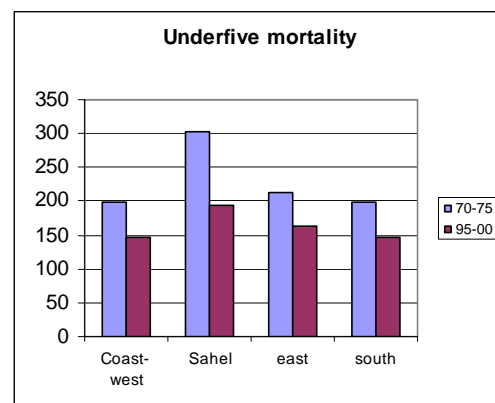


Figure 8b Underfive mortality, unweighted regional means of country data for the periods 1970-1975 and 1995-2000
Source: UNDP, 2002.

³ Undernutrition expressed in prevalence rates of children with stunting, that is a height-for-age below the median of a reference population minus 2 standard deviations (ACC/SCN, 2000).

Section 8

Concluding remarks

The present report, which reviews food security developments over past twenty years in Sub Sahara Africa, reveals that there are important regional differences. When dividing Sub Sahara Africa in four main regions, developments have been relatively positive in the coastal region of West Africa (exceptions are Liberia and Sierra Leone) and the Sahel , and relatively negative in Central and Eastern Africa and in Southern Africa.

Various regional factors seem to play an important role in the present situation and potential future developments with respect to food security in Sub Sahara Africa. In the first place differences in natural resources conditions between various regions of Sub Sahara Africa may account for differences in food security. For example, when comparing coastal West Africa and the Sahel, there appears to be a clear link between availability and quality of natural resources and health and nutrition conditions of the people. Also other aspects of geographic location may have their impact on food security. For example, most Sub Sahara African countries have both cereals and root crops as their staple food. In these countries the availability of root crops may well form an important component in the food security situation of households. In the Sahel, however, climatic conditions are highly unfavourable for root crops production and here staple food is only available in the form of cereals.

In the analysis specific attention is being paid to the occurrence of emergencies and disasters and related international flows of food aid, again considering the four regions of Sub Sahara Africa. While adverse climatologic conditions are an important factor causing acute food shortages, food aid shipments appear in particular to be related with manmade factors such as civil strife and war. Over past twenty years, food aid found in particular its way to Eastern and Southern Africa to provide assistance to victims of longlasting wars and conflicts in these regions. Even when countries are suffering from internal conflicts it may well have important regional implications as over the years hundreds of thousands or even millions of displaced people sought safety and food in neighbouring countries.

There may well be other regional factors not considered explicitly in the present analysis. For example, types and spreads of diseases such as malaria and AIDS differ between regions in Sub Sahara Africa, affecting each region in its own way. While in the coastal region of West Africa, in the Sahel region, and also in Central and Eastern Africa average life expectancy did increase over past twenty years, the absence of an increase in life expectancy in Southern Africa may well be partially explained by the AIDS crisis.

It is concluded that in Sub Sahara Africa regional factors can be identified which affect developments with respect to food security in different regions of Sub Sahara Africa. Such regional factors need to be taken into consideration in any further in depth analysis of the food security situation of Sub Sahara Africa.

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Annex

Estimating the calorie self-sufficiency ratio

For estimating the calorie self-sufficiency ratio of a country use is being made of the FAO Food Balance Sheets, which are based on the so-called Supply Utilization Accounts. In these Food Balance Sheets, the per capita food availability is determined on the basis of information on the various elements of supply (production, imports, from stocks) and utilization (food use, feed use, export, losses and waste, processing, to stocks).

The procedure being followed for calculating the food self-sufficiency ratio is given in the example below for the kcal self-sufficiency ratio of Angola in the year 2000:

Angola cereals imports in 2000 (FAOSTAT): 513,320 MT

Population 2000: 13,134,000

Cereals imports per capita per year: 39.1 kg, which is equivalent to 107 gram per capita per day.

A calorie conversion factor is needed to estimate the amount of kcal represented by these 107 gram of cereals. From a Food Balance Sheet for Sub Sahara Africa as a whole, it appears that 1 gram of cereals is, on average, equivalent to 3.15 kcal. This conversion factor is affected by the various factors of supply and utilisation, and may vary between countries and also between years. However, in practice the conversion factor varies within a rather narrow range, and is rarely lower than 3.0 or higher than 3.2. For the present study a rounded conversion factor of 3.0 has been used.

Conversion into kcal: $107 * 3.0 = 321$ kcal

Daily per capita kcal availability in 2000: 1902 kcal/cap/day (FAO)

Calorie import dependency ratio: $(321/1902) * 100\% = 16.9\%$.

Calorie food self sufficiency: $100 - 16.9 = 83.1\%$.

By following this procedure in estimating a calorie self-sufficiency ratio, the following assumptions have been made:

- 1) food imports other than cereals, when expressed as percentage of dietary kcal consumption, are negligible.
- 2) cereals imports for other purposes than human consumption are negligible.
- 3) countries' food exports, also expressed as percentage of dietary kcal consumption, are also negligible.

For the present report calorie food self-sufficiency ratio's were calculated as three year averages for the periods 1979-1981, 1989-1991, and 1999-2001 (Table 4 and Table 5).

The Centre for World Food Studies (Dutch acronym SOW-VU) is a research institute related to the Department of Economics and Econometrics of the Vrije Universiteit Amsterdam. It was established in 1977 and engages in quantitative analyses to support national and international policy formulation in the areas of food, agriculture and development cooperation.

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Centre for World Food Studies
SOW-VU
De Boelelaan 1105
1081 HV Amsterdam
The Netherlands

Telephone (31) 20 - 44 49321

Telefax (31) 20 - 44 49325

Email pm@sow.vu.nl

www <http://www.sow.vu.nl/>