production, increasing food prices and a depreciating local currency (the Dalasi), which makes imported food more expensive. With increasing urbanization and with most rural households being net food purchasers, access to food has become an important element in food security in The Gambia (CSAO-CILSS, 2008).

In this context, poverty is a key determinant of food insecurity. More than half of the Gambian population lives below the national poverty line (GoG, 2007). Moreover, the collapse of the groundnut market has drastically increased rural food insecurity (GoG, 2003). Since 1998, groundnut production has been plagued with serious marketing constraints resulting in a sharp income decline among groundnut farmers, who constitute 80% of the farming community (FAO/WFP, 2002; RoG and EC, 2007). In the urban areas economic access to food is being made worse by rising unemployment (NEPAD/CAADP and FAO, 2005).

In May 2008, the National Nutrition Agency (NaNA) in collaboration with CILSS and IRD conducted an assessment of Food Vulnerability in Urban Areas (Bah et al., 2009). This survey, conducted on a representative sample of the population in the city of Banjul and in Kanifing Municipality, assessed the food security situation of 1000 households using the Household Food Insecurity Access Scale questionnaire designed by FANTA[8] and FAO. More than 50% of the households surveyed in Banjul and Kanifing faced some form of food insecurity. Fifteen percents of the households were categorized as being mildly food insecure, 26% as being moderately food insecure and 13% as being severely food insecure. As expected, well-off households were less food insecure than middle class and poor households (Bah et al., 2009).

Following below average harvest during the agricultural season 2002, a Vulnerability Analysis and Mapping was conducted in The Gambia in May 2003 (WFP, 2003). The survey was conducted among rural populations from the five regions of The Gambia, covering 614 households (WFP, 2003). Results indicated that physical access to markets showed geographical disparities and most villages in North Bank and Central River regions do not have markets. Physical access to market is also problematic for many villages during the rainy season when the road is impassable for 2-3 months per year. The availability of food commodities was a problem at the time of the study (conducted in the dry season): only rice and palm oil were readily available, most other foods being only occasionally found in the market. This situation usually worsens in the rainy season (WFP, 2003).

At the time of the survey, 68% of the rural households were food secure[9]. This category of households had considerably more animals and sold assets, in particularly livestock, to handle difficult periods, but this sale did not represent a long-term risk. Another important strategy for the food secure group is looking for additional wage labour. About 11% of the households were considered very vulnerable to food insecurity (self-sufficiency ratio of less than 4 months per year) and 9% of the households were considered potentially vulnerable (self-sufficiency ratio of 4-7 months per year). The remaining 11% of households was considered not vulnerable to food insecurity. This group covers between 7 and 12 months of cereal needs (WFP, 2003).

Vulnerability was most pronounced in the central part of the country (Lower River, East North Bank and East Western regions). This area seems to be most affected by a reduction in agricultural production. In Central and Upper River regions, where levels of vulnerability to food insecurity were lowest, the population relies on cereal and cash crop production but has also developed livestock activities (WFP, 2003).

Overall, the most important coping strategies used were borrowing food and money (21% of the households indicated using this strategy), additional wage labour (16%), selling livestock (9%), selling firewood (15%) and petty trade (8%). The use of non-sustainable coping strategies (seed consumption, selling of productive assets, etc.) was limited (WFP, 2003).

[8] Food And Nutrition Technical Assistance. Details on the HFIAS tool on: http://www.fantaproject.org/publications/hfias.shtml

[9] i.e. their income or own production (expressed in rice equivalents) provided at least 12 months of food (self-sufficiency ratio of more than 12 months per year or self-sufficiency ratio of more than 6 months and more than 80% of income obtained from salaries).

Surveys of dietary diversity and variety

In May 2008 (at the end of the dry season), The Food Vulnerability in Urban Areas survey, conducted by NaNA in collaboration with CILSS and IRD, assessed the food security situation in the city of Banjul and in Kanifing Municipality (Bah et al., 2009). Information on the diversity of the diet was collected through a 24-hour individual recall questionnaire administered to the youngest mother of the household. A dietary diversity score based on 14 food groups was built to assess food diversity.

The mean number of food groups consumed by respondents (women or sometimes men) in this survey was 8. Both the wealth of the family and the presence of food stock in the form of cereals were significantly correlated with the diversity of foods groups consumed.

This survey showed that cereals remain the most commonly consumed food group in The Gambia (rice is the staple food in the country) followed by vegetables that are not rich in vitamin A. Fish and seafood, a cheap and easily available source of animal protein especially in these urban areas close to the Atlantic Ocean, were consumed by 89% of households. Oils and fats were consumed by 85%. Table 11 shows that even households whose diets were less diversified (2-6 food groups) consumed items among the oil and fat group. The widespread consumption of the oil and fat group clearly reflects the nutritional transition that The Gambia is undergoing. Vitamin A rich vegetables and tubers and vitamin A rich fruits were consumed by three-quarters of households; milk and dairy products were consumed by 53%. Offals was the group with the lowest frequency of consumption at 16%, followed by eggs (27%), and meat (37%) which may be attributable to the high cost of these foods (Bah et al., 2009).

Table 11: Food groups consumed by more than 50% of the households in urban Gambia (Banjul and Kanifing) by dietary diversity tercile

Less diversified (2-6 food groups)	Mildly diversified (7-8 food groups)	Highly diversified (9-13 food groups)
Cereals	Cereals	Cereals
Other vegetables	Other vegetables	Other vegetables
Fish and seafood	Fish and seafood	Fish and seafood
Oil and fats	Oil and fats	Oil and fats
	Vitamin A rich vegetables and tubers	Vitamin A rich vegetables and tubers
	Vitamin A rich fruits	Vitamin A rich fruits
	Roots and tubers	Roots and tubers
		Pulses, nuts and seeds
		Green leafy vegetables
		Milk and dairy products

Source: Bah et al., 2009

In May 2003 (at the end of the dry season), The Vulnerability Analysis and Mapping was conducted in The Gambia by WFP; this analysis provides information on dietary diversity (WFP, 2003). The survey was conducted in rural areas and covered 614 households within the five regions of The Gambia. In this assessment, the information collected included the frequency of consumption of foods by the household during the week preceding the survey (based on recall). Most households ate a relatively diversified diet. They ate on average three meals per day. Cereals were consumed three times a day and the majority of the households consumed fruit and vegetables and animal protein on a daily basis. Milk and eggs were consumed occasionally. Households with a less diversified diet ate few fruit and vegetables, and consumed animal protein only about 3 times per week. By region, the Central River region had the highest percentage of households with a less diversified diet (WFP, 2003).

In 1999, a survey investigating the consumption of iron-rich foods, iron absorption enhancers and inhibitors, was conducted among about 1000 pregnant and breastfeeding women and 1138 children across the country (Bah et al, 2001). The study found that one in three pregnant and breastfeeding woman did not recall eating meat in the seven days preceding the survey and regarding liver and heart, over 90% of pregnant and breastfeeding women did not eat them. As for dark green leafy vegetables, only 19% of the women consumed them between 3-4 days a week and up to 30% of them did not recall eating dark green leafy vegetables at all during the last seven days. Among children (age not specified) over 90% did not consume heart or liver while only 39% had meat in their diet during the week preceding the survey (Bah et al, 2001).

II.2 National food supply data

Supply of major food groups

Table 12: Trends in per capita supply of major food groups (in g/day)

Major food groups	Supply for human consumption in g/day								
	1963-65	1968-70	1973-75	1978-80	1983-85	1988-90	1993-95	1998-00	2003-05
Cereals (excl. beer)	465	421	356	344	389	415	361	356	349
Fruit and vegetables	50	52	48	46	42	75	92	93	89
Milk and milk products	29	38	37	43	87	53	43	62	71
Sweeteners	22	48	14	45	76	121	96	82	66
Fish, seafood	39	34	39	41	42	49	49	59	62
Vegetable oils	31	27	24	22	25	28	38	45	50
Starchy roots	44	44	42	25	22	20	19	22	27
Pulses, nuts, oilcrops	38	38	38	26	29	28	28	29	25
Meat and offals	35	37	36	30	25	25	20	17	21
Eggs	1	1	1	1	2	2	3	3	3
Animal fats	1	1	1	1	1	1	1	1	1
Other*	111	90	71	35	53	66	57	85	98

Source: FAOSTAT
**Largely composed of alcoholic beverages*

Cereals is the most important food group in the supply for human consumption. Nevertheless the per capita supply of this group has diminished since the early 1960s. This decrease appears to be primarily related to limited increase in cereal production (especially from 1963-65 to 1993-95) in a context of rapid population growth; however, in recent years, cereal production has increased considerably. Harsh climatic conditions (drought from the mid-1970s to the early 1980s and dry spell in 2002) may also have had a negative impact on cereal production. Another explanation for this trend is the increasing diversification of the food supply over the period, where the supply of several other food groups (milk and dairy, sweeteners, vegetable oil) has increased, causing a parallel decrease in the consumption of cereals.

The supply of cereals is mainly comprised of millet and rice, and, to a lesser extent, of wheat and sorghum. Millet and sorghum are locally produced while rice is mostly imported and wheat is totally imported. The per capita supply of rice increased until the late 1980s, largely supported by increasing imports (especially after the liberalization of food imports in 1986) (FAO, Faostat; CSAO-CILSS, 2008). However, over the last decade (1993-95 to 2003-2005), the per capita supply of rice has declined sharply while that of millet has increased.

The per capita supply of starchy roots (mainly locally produced cassava and imported potatoes) has declined over the whole period and is currently very low (FAO, Faostat). Nevertheless an upward trend can be noticed over the last ten years that may be related to the decline in the supply of cereals and to the development and promotion of improved roots/tuber varieties (DoSFEA, 2006).

Despite an overall increase over the whole period, the per capita supply of fruit and vegetables remains very low. Fruit and vegetables supply mainly comprehends tomatoes and onions, carrots, cucumber, cabbage and green beans, both locally produced and imported (FAO, Faostat).

The per capita supply of milk and milk products, although still very low, increased considerably over the whole period. Most of the supply of milk is constituted of imported milk and the increase in per capita supply of milk observed in 2003-2005 is mainly related to an upsurge in milk imports. Fish and seafood is an important food group in The Gambia and the per capita supply, although still low, has increased steadily over the whole period. On the contrary, the per capita supply of meat and offals has decreased between 1963-65 and 2003-2005 (FAO, Faostat). Although livestock production is carried out nationwide by almost all rural households (especially poultry birds), the livestock subsector faces severe constraints,

including high incidence of diseases, lack of improved breeds, under-developed markets etc. which may explain the low per capita supply of meat and offals (NEPAD/CAADP and FAO, 2005).

After a drop in the late 1970-early 1980s, the per capita supply of pulses/nuts/oilcrops (mainly groundnuts) has remained almost constant since the early 1980s. In recent years, while the per capita supply of groundnuts has decreased, that of sesame seeds has increased, representing 10% of the per capita supply of pulses/nuts/oilcrops in 2003-2005 (FAO, Faostat). The development of the sesame sector is closely linked to the actions that the NGO "Catholic Relief Services" has been implementing for the last two decades (SOFRECO, 2002).

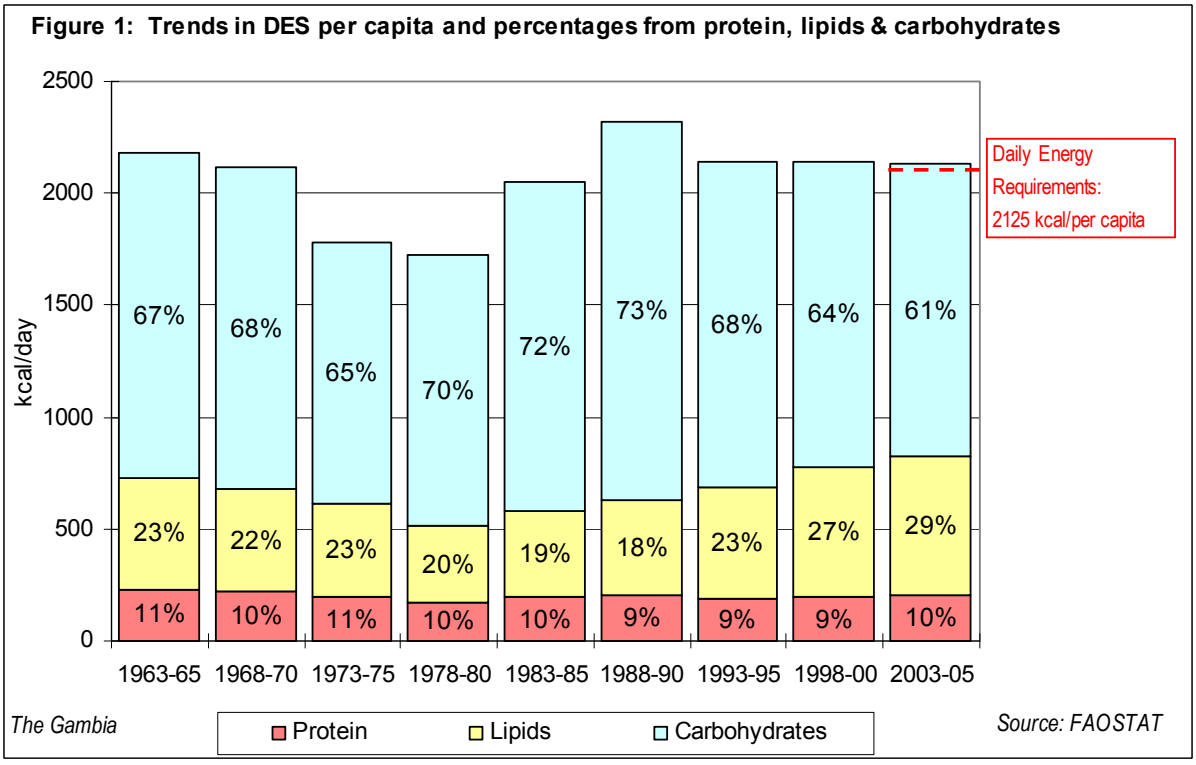
Between 1983-85 and 2003-2005, the per capita supply of vegetable oils doubled. This increase is primarily related to increasing importation of soybean oil. The supply is also comprised, to a lesser extent, of locally produced groundnut oil (FAO, Faostat). Recently an oil factory has been set up for bottling sunflower oil which is already in the market in large quantities.

The large increase in the per capita supply of food groups such as vegetable oils and sweeteners, which have tripled over the whole period, reflects major dietary changes. These changes in dietary patterns reflect the nutrition transition experienced by The Gambia, the key underlying factors being urbanization, industrialization, economic development and globalization. The use of edible vegetable oil is a marker of dietary changes across Africa, and there has indeed been a significant increase in oil consumption in The Gambia in recent years (Popkin et al., 2002; Prentice, 2006).

The per capita supply of the food group "other" was relatively high in 2003-2005. This food group comprises mainly alcoholic beverages. There is a growing concern about the rise in alcohol-related problems in The Gambia (WHO, 2004).

Dietary energy supply, distribution by macronutrient and diversity of the food supply

- Figure 1: Dietary energy supply (DES), trends and distribution by macronutrient



In 2003-2005, the dietary energy supply (DES) was 2135 kcal per capita/day, which is adequate with regard to the population energy requirements of 2125 kcal per capita/day[10] (FAO, Faostat). Nevertheless, because of unequal distribution of food supplies among the population, the prevalence of undernourishment remains very high, estimated at 30% in 2003-2005, according to "*The State of Food Insecurity in the World 2008*". It is worth noting that the prevalence of undernourishment in The Gambia increased by 10 percentage points during the last decade (20% in 1990-92, 31% in 1995-97 and 30% in 2003-2005) (FAO, 2008).

The prevalence of undernourishment in The Gambia is much higher than the West African average (14% in 2003-2005) (FAO, 2008). Because there is extensive cross-border food trade with Senegal, there are probably sizeable informal imports and re-exports (CILSS et al., 2010). This makes the quantification of the food supply locally available for the population to consume difficult to measure and there is probably a certain margin of uncertainty around the estimate of the prevalence of undernourishment.

After an important decline from the early 1970s to the early 1980s, caused by a decrease in agricultural output due to drought and uneven distribution of rainfall, the DES increased sharply during the mid-1980s, from only 1724 kcal per capita/day in 1978-80 to 2319 kcal per capita/day in 1988-90 (FAO, Faostat; UNICEF, 2001). However, after this period, the DES declined somewhat and remained steady between 1993-95 and 2003-2005 (FAO, Faostat).

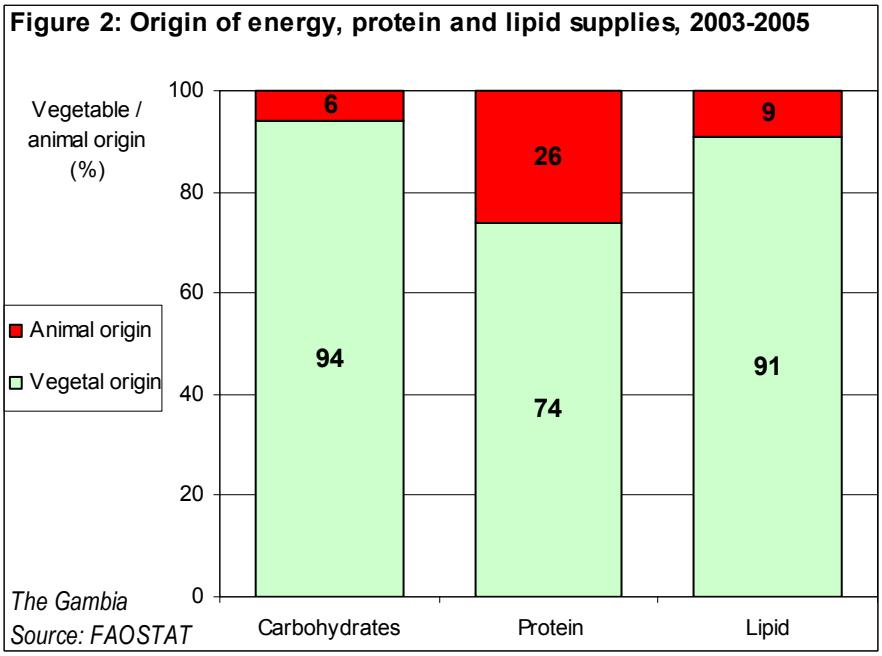
The contribution of carbohydrates to the DES has steadily decreased since the late 1980s to reach 61% in 2003-2005 while that of lipids increased sharply since 1988-90, reaching the upper limit of recommendations (15-30% of energy from lipids) in 2003-2005. This high increase in the contribution of lipids to DES primarily results from the rise in the per capita supply of vegetable oils, which doubled between 1983-85 and 2003-2005 (see Table 12). The share of protein in the DES has remained fairly constant over the years, being at the lower limit of recommendations (10-15% of energy from protein) in 2003-2005 (FAO, Faostat; WHO/FAO, 2003).

The recent increase in the share of lipids in the DES coupled with the reduction of the share of carbohydrates is reflective of the nutrition transition being experienced by The Gambia. Changes in the structure of the diet towards an energy dense diet with a greater role of fat and reduced intakes of complex carbohydrates and dietary fibre, along with changes in lifestyle patterns towards sedentary lifestyle, are the major factors contributing to the increasing prevalence of chronic non-communicable diseases including obesity, diabetes mellitus, cardiovascular disease, hypertension, etc. (WHO/FAO, 2003).

[10] Energy requirements are for a healthy and active lifestyle. Software default values attribute to 90 % of the urban adult population a light Physical Activity Level (PAL=1.55) and greater than light activity to the remaining 10% (PAL=1.85), and to 50% of the rural adult population a light activity (PAL=1.65) and greater than light physical activity (PAL=1.95) to the other 50% (FAO, 2004).

Vegetable/animal origin of macronutrients

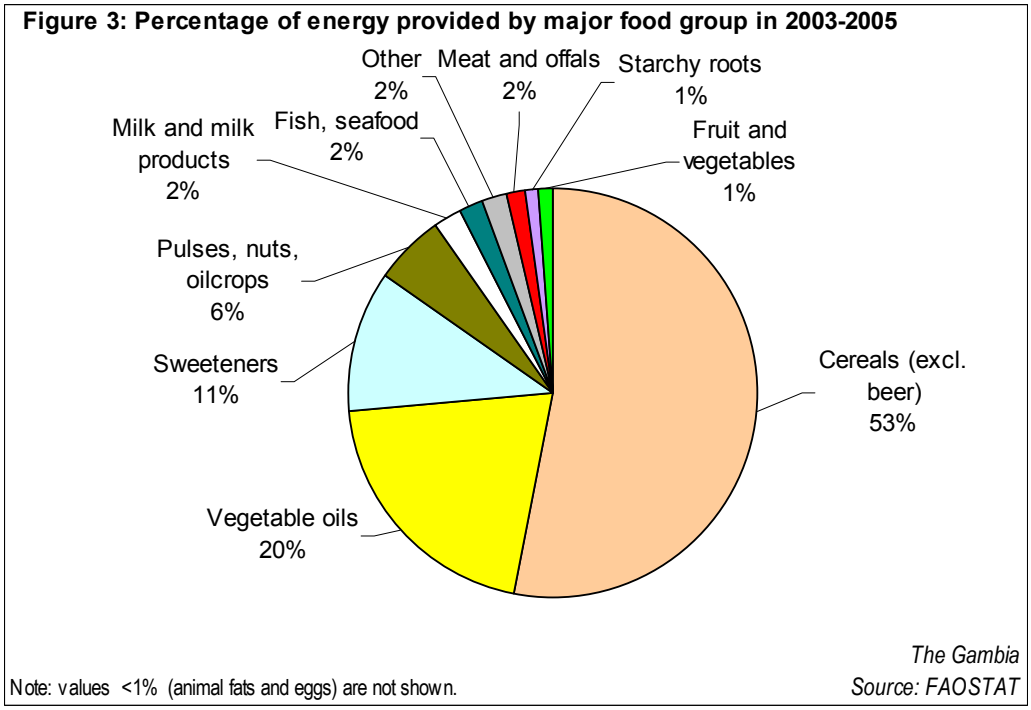
- Figure 2: Vegetable/animal origin of energy, protein and lipid supplies



In The Gambia, the diet is dominated by foods of vegetable origin, which provide a considerable share of dietary energy, protein and lipid supplies. However, animal sources of protein are significant as about 26% of total protein is from this source, mainly provided by the fish and seafood supply (FAO, Faostat). Nevertheless, the supply of foods of animal origin remains low which may entail a low intake and/or bioavailability of micronutrients in the diet, especially vitamin A, iron and calcium.

Dietary energy supply by food group

- Figure 3: Dietary energy supply by food group



Cereals contribute the largest proportion of dietary energy supply (53% in 2003-2005) in The Gambia. This is followed by vegetable oils, which provide one fifth of the DES, and by sweeteners (11%). These three food groups together represent 84% of the DES. The dietary energy supply provided by foods of animal origin is particularly low (6%) and only 1% of the DES is provided by fruit and vegetables (FAO, Faostat). The very low contribution of animal products and fruit and vegetables in the diet may entail various micronutrient deficiencies.

Table 13: Share of the main food groups in the Dietary Energy Supply (DES), trends

Food groups	% of DES								
	1963-65	1968-70	1973-75	1978-80	1983-85	1988-90	1993-95	1998-00	2003-05
Cereals (excl. beer)	66	62	64	63	61	57	54	52	53
Vegetable oils	12	11	12	11	11	11	15	18	20
Sweeteners	4	8	3	9	13	19	16	14	11
Pulses, nuts, oilcrops	9	9	10	7	7	6	6	7	6
Milk and milk products	1	1	1	2	2	1	2	2	2
Fish, seafood	1	1	2	1	1	2	2	2	2
Meat and offals	3	3	3	3	2	2	2	1	2
Starchy roots	2	2	3	2	1	1	1	1	1
Fruit and vegetables	1	1	1	1	1	1	1	1	1
Eggs	0	0	0	0	0	0	0	0	0
Animal fats	0	0	0	0	0	0	0	0	0
Other	2	1	1	1	1	1	1	1	2

Source: FAOSTAT

The share of cereals in the DES significantly declined over the years, from 66% in 1963-65 to 53% in 2003-2005. The share of micronutrient- and protein-rich foods, such as pulses/nuts/oilcrops, foods of animal origin and fruit and vegetables, has remained almost stagnant or slightly declined over the whole period. On the other hand, the share of vegetable oils and that of sweeteners in the DES has increased sharply (FAO, Faostat).

The diet diversification index, i.e. the contribution of food groups other than cereals and starchy roots to the DES, was estimated at 46% in 2003-2005. In 1963-65, this index was 32%. Hence, the diet is becoming more diverse. However, the diversification of the diet comes mainly from a substantial increase in the share of vegetable oils and sweeteners, while that of most micronutrient- and protein-rich foods has not increased (FAO, Faostat).

With urbanization, the diet is becoming more diverse because of better access to an increased food choice in markets. Although urbanization seems to bring about positive dietary improvements, it can also cause a number of unhealthy diet changes such as increased consumption of saturated and transfatty acids, sugar, salt and processed foods that contain excessive amounts of these components. At the same time, as the share of micronutrient-rich foods in the diet remains low, micronutrient deficiencies persist in The Gambia.

Food imports and exports

The Gambia is very dependent on food imports. In terms of quantity, the most important food groups imported are cereals, sweeteners and, to a lesser extend, vegetable oils (reference period 2003-2005; FAO, Faostat).

The import dependency ratio[11] (IDR) for cereals is very high: in 2003-2005, it was estimated at 38%. For rice, the IDR has remained very high, at approximately 80% since 1993-95. Wheat is entirely imported (FAO, Faostat).

[11] The import dependency ratio is defined as: IDR = (imports / (production + imports – exports)) * 100. It stands for the share of the domestic supply that has been imported.
The IDR takes into account supply as the whole, meaning for all uses, not only the part that is used for human consumption.

The IDR for vegetables is very high, estimated at 81% in 2003-2005. A similar ratio is observed for milk/milk products. The Gambia is also highly dependent on imports of vegetable oils (IDR of 69% in 2003-2005), which are mainly comprised of soybean oil). Other food groups with high IDR include starchy roots, pulses, and meat and offals. Sweeteners are entirely imported and partially re-exported (FAO, Faostat).

In terms of quantity, the most important food groups exported in 2003-2005 were sweeteners (imported and re-exported, no domestic production), and oilcrops (groundnuts) (FAO, Faostat).

Food aid

In 2008, The Gambia received a total food aid of 3 990 t, of which 2 515 t of cereals (mainly rice) and 1 475 t of non-cereals (mainly peas). This food aid was mainly delivered as project food aid[12] (WFP, FAIS). In 2003-2005, cereal food aid[13] (grain equivalent) represented approximately 5% of the national cereal supply for human consumption (FAO, Faostat; WFP, FAIS).

II.3 Food consumption

National level surveys

No quantitative surveys on food consumption were conducted in the past in the country.

II.4 Infant and young child feeding practices

Prior to the early 1990s infant feeding practices in The Gambia were not optimal, where late initiation of breastfeeding, erroneous beliefs on colostrum, non-exclusive breastfeeding, infrequent feeding and use of breastmilk substitutes were common. In the early 1990s the policy of optimal infant feeding was adopted with the objective of protecting, promoting and supporting breastfeeding. In 1992, the Nutrition Unit (now the National Nutrition Agency – NaNA) adopted the Baby Friendly Hospital Initiative (BFHI). The BFHI has been launched together with WHO and UNICEF to encourage hospitals and health care facilities, particularly maternity wards, to adopt practices that fully protect, promote and support exclusive breastfeeding from birth up to six months and continued breastfeeding throughout the first two years. The Initiative was piloted in four facilities before being expanded to 19 facilities throughout the country.

At that time, over 60% of the population in The Gambia lived in rural areas and the majority of births occurred in communities with the assistance of traditional birth attendants. Also, mothers who had normal deliveries at health facilities only stayed for a period of 24 hours or less in the facility.

In many rural settings, the mother-in-law is very influential on how the infant should be fed. In addition, there are many local beliefs and practices on breastfeeding, some of which are harmful such as discarding of colostrum. Therefore there was a need to extend the BFHI to the communities.

The Baby Friendly Community Initiative (BFCI), a concept developed by NaNA based on the BFHI model was then initiated in 1993 and piloted in 12 communities in the Lower River region with the aim of improving Infant Feeding Practices in rural Gambia. The BFCI has now been rolled out to all the regions and is still being expanded. The BFCI is a comprehensive nutrition and health education package,

[12] *Emergency* food aid is destined to victims of natural or man-made disasters; *Project* food aid aims at supporting specific poverty-alleviation and disaster-prevention activities; *Programme* food aid is usually supplied as a resource transfer for balance of payments or budgetary support activities. Unlike most of the food aid provided for project or emergency purposes, it is not targeted to specific beneficiary groups. It is sold on the open market, and provided either as a grant, or as a loan.

[13] Cereal food aid may include cereal-soy blend.

modelled on the UNICEF/WHO global strategy of BFHI. The BFCI package includes maternal nutrition, infant and young child nutrition, personal hygiene, environmental sanitation and growth monitoring. The goal of the BFCI is to empower all mothers to practice optimal feeding (i.e. early initiation of breastfeeding, exclusive breastfeeding for 6 months, timely complementation and continued breastfeeding up to 2 years and beyond). NaNA aims to make all health facilities including private facilities and communities Baby Friendly.

Three national surveys provide information on infant and young child feeding practices: *The Gambia Multiple Indicator Cluster Survey Report 2000* (MICS-II), the *Report of the Rapid Survey to Evaluate the PHPNP Nutrition Component Performance Indicators 2005* and *The Gambia Multiple Indicator Cluster Survey 2005-2006* (MICS-III) (GoG and UNICEF, 2002; NaNA, 2005; GBoS et al., 2007).

In 2000, 95% of Gambian children less than 12 months of age were breastfed for some time and the median duration of breastfeeding was 14 months (WHO Global data bank on breastfeeding and complementary feeding). The median duration in The Gambia was relatively low compared to other sub-Saharan countries.

The study conducted by NaNA in 2005 (*Report of the Rapid Survey to Evaluate the PHPNP Nutrition Component Performance Indicators*) indicated that nationally, 91% of children aged 0-24 months were being breastfed at the time of the survey. In Banjul the percentage of mothers currently breastfeeding (88%) was lower than the national average (NaNA, 2005).

According to the last MICS survey conducted in 2005-2006, among 3070 women with a live birth in the two years preceding the survey, only 48% started breastfeeding their infant within one hour of birth (i.e. early initiation) and 90% started within one day of birth (GBoS et al., 2007). The percentage did not vary according to place of residence (47% in urban area, 48% in rural area). By LGA (Local Government Area[14]), the percentage of children breastfed within one hour of birth varied from 33% in Janjangbureh (Central River region) to 78% in Kerewan (North Bank region) (GBoS et al., 2007).

Previous data on initiation of breastfeeding are not available, thus it is not possible to evaluate trends.

Exclusive breastfeeding concerned 41% of children under 6 months of age in 2005-2006 (Table 14). The rate was higher in urban areas (45%) than in rural areas (39%) (GBoS et al., 2007).

Great improvements have been made in exclusive breastfeeding during the last decade. Prior to the implementation of the BFHI (in 1992) and its sister programme the BFCI (in 1993), the rate of exclusive breastfeeding was zero (NaNA, 2005). In 2000, 26% of children under 6 months of age were exclusively breastfed and this rate increased to 41% in 2005-2006 (GoG and UNICEF, 2002; GBoS et al., 2007). Findings from the national survey conducted by NaNA in 2005 showed rather similar figures (nationally, 46% of children less than 6 months exclusively breastfed) and substantial regional disparities: the highest rate was found in the Lower River region which also has the highest number of BFCI communities. The lowest prevalence was found in the Banjul area. In BFCI regions, exclusive breastfeeding rate for 6 months was as high as 62% (NaNA, 2005).

Between 6 and 9 months of age, it is necessary to introduce complementary foods in addition to breastmilk. According to MICS 2005-2006, only 44% of children received complementary foods at that age (GBoS et al., 2007). Nevertheless this represents an improvement since 2000 when the timely complementary feeding rate (6-9 months) was only 36%. Important efforts are needed to improve this practice (GoG and UNICEF, 2002).

The majority of children (92%) were breastfed for at least one year but only half (53%) were still breastfed at 2 years of age (GBoS et al., 2007).

[14] In MICS surveys, Local Government Areas (LGAs) were used instead of regions. There are eight LGAs in The Gambia, each LGA being either a region or a part of one: Banjul, Kanifing, Janjanbureh (Central River region), Kuntaur (Central River region), Basse (Upper River region), Brikama (Western region), Kerewan (North Bank region), Mansakonko (Lower River region). When LGAs are reported in the text, corresponding region is indicated in brackets.

Table 14: Type of infant and young child feeding

Survey name/date (Reference)	Type of feeding in the 24 hours preceding the survey		
	Indicator by age	Sample size	Percentage of children
The Gambia Multiple Indicator Cluster Survey Report 2005-2006 (MICS-III) (GBoS et al., 2007)	**Exclusive breastfeeding rate**		
	<4 months	528	52.5
	<6 months	853	40.8
	Timely complementary feeding rate		
	6-9 months	411	43.8
	Bottle-feeding rate		
	0-11 months	n.a.	n.a.
	Continued breastfeeding rate		
	12-15 months (1 year)	616	92.3
	20-23 months (2 years)	401	53.2

n.a.: not available

It is believed that improvements in infant feeding practices, particularly the increase in exclusive breastfeeding rate, can be attributed to the implementation of the BFHI in 19 health facilities and BFCI in 283 communities, and to the use of information, education and communication to raise awareness on the importance and benefits of optimal infant feeding as well as to the enactment of a Breastfeeding Promotion Regulation in 2006 that regulates the promotion, sale and distribution of infant formula. The Regulation is a domestic version of the International Code of Marketing of Breastmilk Substitutes.

The types of complementary foods consumed are not documented at national level.

A local survey, the *Baseline Report of the Integrated Community-based Anaemia Control Pilot Project,* was conducted in 2006 in one rural area of a region in the country, the Upper River region. This survey documents complementary foods given to children aged 6-24 months (NaNA, 2006).

According to their mothers/carers, 65% of the children age 6-24 months were eating foods other than breastmilk at the time of the survey. About half of the respondents (48%) fed porridge to their children (cereal porridge using mostly local cereals such as millet, maize and rice), 23% gave fermented *ogi* (a cereal-based porridge), 11% cerelac (an imported dry cereal mix that is prepared by mixing with water) and 9% groundnut porridge, in the 7 days preceding the survey. Other foods given by 40% of respondents included custard, rice, meat, bananas, eggs, biscuits, tea, and fish. In preparing the complementary food (porridge), 49% of respondents used millet, 41% rice, 36% maize and 14% sorghum. Nine percent used other cereals to prepare the porridge (NaNA, 2006).

Among children who were receiving complementary food at the time of the survey, only 38% of children aged 6-24 months were given meat (beef, mutton, pork) at least once during the 7 days preceding the survey and barely 14% were given chicken. More than half of the children (51%) had not eaten fish at all during the past 7 days and three quarters of the children had not eaten eggs. Beans are not widely consumed by children. More than half of the children (52%) did not eat dark green leafy vegetables during the seven days prior to the survey and 45% of children did not have any fruit during this period. Rice was the cereal most commonly consumed by children, followed by millet, sorghum and maize. Millet was the preferred choice for most mothers as the cereal used in the preparation of the porridge (NaNA, 2006).

When asked how often the child was fed per day, 6% of respondents said once, 21% twice, 45% three times, 24% four times and 4% gave frequencies such as “ten times” and “whenever the child wants to eat” (NaNA, 2006).

In conclusion, although progress has been made, inadequate infant and young child feeding practices are still widespread. These inadequate practices are immediate causes for the high prevalence of malnutrition among young children and determining factors for the high infant mortality rate observed in the country. Hence, renewed efforts are needed to improve these practices.

II.5 Nutritional anthropometry

Low birth weight
(less than 2 500 g)

According to the 2005-2006 MICS, 52% of neonates were weighed at birth and among these 20% weighed less than 2 500 g (GBoS et al., 2007).

In The Gambia, many women do not deliver at a health facility. Moreover, in 2005-2006, only 57% of births were delivered by skilled health personnel (GBoS et al., 2007). As a result, neonates are often not weighed at birth. In addition, the majority of the children weighed at birth were born in a favourable environment, in an urban area and/or to mothers having a higher educational level (GBoS et al., 2007). Consequently, the prevalence of low birth weight may be underestimated because the newborns that were weighed were not representative of all births in the Gambia.

It is not possible to establish reliable trends for the prevalence of low birth weight as data from the consecutive MICS are not comparable.

Low birth weight (LBW) results from preterm birth and/or intra-uterine growth retardation (IUGR). The major attributable causes of IUGR include poor nutritional and health status of the mother, notably low weight gain during pregnancy, low body mass index (BMI), short stature and malaria. LBW is closely associated with neonatal mortality and morbidity, inhibited growth and cognitive development, and chronic diseases later in life (UNICEF and WHO, 2004; WHO, 2002b).

Anthropometry of preschool children

Two national surveys were conducted in The Gambia to assess the prevalence of malnutrition among preschool children: *The Gambia Multiple Indicator Cluster Survey 2000* (MICS-II) and *The Gambia Multiple Indicator Cluster Survey 2005-2006* (MICS-III) (GoG and UNICEF, 2002; GBoS et al., 2007).

According to 2005-2006 MICS estimates (based on WHO Child Growth standards 2006), the prevalence of stunting among children under five years of age was 28%, that of wasting was 7% and that of underweight was estimated at 16% (WHO, Global database on child growth and malnutrition; GBoS et al., 2007). According to the threshold defined by WHO, the severity of malnutrition is “medium” in the country (WHO, 1995).

More than a quarter of children under five years of age was stunted and 11% were severely stunted (Table 15). The prevalence of stunting was similar among boys and girls. Among children under 6 months of age, the high prevalence of 12% could be related to high proportion of low birth weight neonates, which was estimated to be at least as high as 20% in 2005-2006 (GBoS et al., 2007). As is typical, the prevalence of stunting increases rapidly during the first two years of life to peak at 37% among children aged 24-35 months. The prevalence of stunting decreases slightly among older children but remains at a high level (WHO, Global database on child growth and malnutrition; GBoS et al., 2007). Deterioration of the nutritional status after 6 months of age can be attributed to inappropriate complementary feeding practices, cumulative effects of illness and lack of access to quality health care.

The prevalence of stunting was significantly higher among children living in rural areas (32%) compared to those living in urban areas (19%). By LGA, variations in prevalence were substantial. The situation was particularly worrying in Kerewan (North Bank region) where 39% of preschool children were stunted and 16% were severely stunted. Prevalence was also high in Mansakonko (Lower River region) (34%) and Janjangbureh (Central River region) (36%) (WHO, Global database on child growth and malnutrition; GBoS et al., 2007). The North Bank region which corresponds to Kerewan LGA, and Lower River region which corresponds to Mansakonko LGA, are two regions that were among the most affected by high vulnerability to food insecurity according to the 2003 VAM (see II.1. Food security situation) (WFP, 2003). High vulnerability to food insecurity may be an important factor contributing, among others, to the high prevalence of stunting in these two regions.

Mother's education and nutritional status of children appear to be related: prevalence of stunting is higher among children of mothers with no education, compared to those of mothers with secondary or higher education (GBoS et al., 2007). This observation should not necessarily be interpreted as a direct effect of mother's education but more as a relationship between economic status of the family and the prevalence of stunting.

At national level, the prevalence of wasting was 7% in 2005-2006 and 2% of children were severely wasted (WHO, Global database on child growth and malnutrition; GBoS et al., 2007). Acute malnutrition (wasting) reflects the current nutritional situation at the time of the survey and hence can be strongly influenced by the season of data collection. In this survey, data collection took place between December 2005 and March 2006, outside of the period of food shortage which generally extends from the month of July to September.

The prevalence of wasting was similar among boys and girls. Contrary to the prevalence of stunting which was much higher in rural areas than in urban areas, the prevalence of wasting was only slightly higher in rural areas (8% versus 6% in urban areas). By LGA, disparities in the prevalence of wasting were marked, ranging from 4% in Banjul to 13% in Kuntaur (Central River region) (WHO, Global database on child growth and malnutrition; GBoS et al., 2007).

Comparison of the two national MICS surveys shows that the prevalence of stunting (chronic malnutrition) among children under five years of age increased slightly from 24% in 2000 to 28% in 2005-2006. Over this period, the prevalence increased by 5 percentage points in the rural areas and only 2 percentage points in the urban areas. The prevalence of wasting decreased from 9% in 2000 to 7% in 2005-2006, but this small difference might be due to seasonal differences since MICS-II was conducted in May-June, just before the hungry season while MICS-III was conducted in December-March, i.e. during the post-harvest season. Over the same period, the prevalence of underweight has remained steady (15% in 2000 and 16% in 2005-2006) (WHO, Global database on child growth and malnutrition; GBoS et al., 2007; GoG and UNICEF, 2002).

Malnutrition among preschool children remains a public health problem in The Gambia. Many factors have a negative impact on the nutritional status of young Gambian children, among which inadequate infant feeding practices and a high disease burden. If access to health services is fairly good in the country, the quality of health care remains low. Many households are vulnerable to food insecurity and poverty remains widespread. Overall prevalence of malnutrition is not declining or is perhaps increasing slightly, in particular regarding stunting; therefore more efforts are needed to combat it.

- Figure 4: Trends in underfive nutritional status

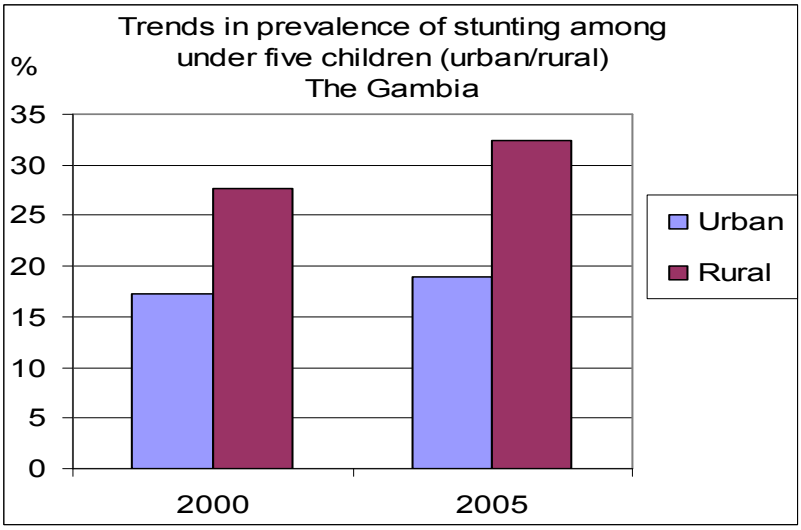


Table 15: Anthropometry of preschool children

Name/date of survey (month/year) (Reference)	Background characteristics	Age (years)	Sex	Sample size	Prevalence of malnutrition						
					Percentage of children with						
					Stunting Height-for-age		Wasting Weight-for-height		Underweight Weight-for-age		Overweight Weight-for-height
					< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	> +2 Z-scores
The Gambia Multiple Indicator Cluster Survey Report 2005-2006 (Dec. 2005- March 2006) (WHO Global database on child growth and malnutrition – GBoS et al., 2007)	**Total**	0-5.00	M/F	6424	10.6	27.6	1.8	7.4	3.9	15.8	2.7
	Sex										
		0-5.00	M	3289	11.8	28.6	2.2	8.1	4.3	16.7	2.9
		0-5.00	F	3135	9.3	26.6	1.4	6.6	3.5	15.0	2.5
	Age										
		0-0.49	M/F	905	3.9	12.4	3.9	11.0	4.0	11.0	7.0
		0.5-0.99	M/F	745	8.6	17.6	3.7	12.3	3.7	15.0	3.6
		1-1.99	M/F	1394	14.4	34.3	2.3	9.5	6.2	20.9	1.7
		2-2.99	M/F	1322	14.5	36.7	0.6	3.9	3.6	16.5	2.6
		3-3.99	M/F	1212	9.9	30.3	0.6	4.1	2.6	13.7	1.1
		4-5.00	M/F	847	8.0	23.8	0.9	5.6	2.6	15.3	1.5
	Residence										
	urban	0-5.00	M/F	2275	6.7	19.0	1.3	6.4	2.5	11.0	2.9
	rural	0-5.00	M/F	4149	12.7	32.4	2.1	7.9	4.7	18.5	2.6
	Local Government Area (LGA)										
	Banjul	0-5.00	M/F	196	9.4	20.0	0.6	4.4	5.0	13.8	1.3
	Kanifing	0-5.00	M/F	1498	5.6	16.5	1.3	6.7	1.9	9.3	2.7
	Brikama	0-5.00	M/F	1415	8.4	24.4	2.2	8.7	3.4	12.8	3.6
	Mansakonko	0-5.00	M/F	405	15.4	34.0	3.0	8.6	5.0	20.8	2.0
	Kerewan	0-5.00	M/F	822	15.9	39.1	2.2	7.3	5.7	19.8	5.4
	Kuntaur	0-5.00	M/F	478	13.3	31.3	3.7	12.5	6.0	22.4	1.4
	Janjabureh	0-5.00	M/F	682	13.1	35.6	0.8	4.7	4.2	20.3	0.9
	Basse	0-5.00	M/F	928	12.1	31.6	1.3	6.0	4.4	19.2	1.6
	Mother's education										
	no education	0-5.00	M/F	4788	n.a.	30.5	n.a.	8.1	n.a.	19.3	4.1
	primary	0-5.00	M/F	697	n.a.	24.0	n.a.	8.3	n.a.	17.3	2.9
	secondary or higher	0-5.00	M/F	902	n.a.	19.5	n.a.	6.7	n.a.	10.8	4.0

* Category <-2 Z-scores includes <-3 Z-scores

Data based on WHO Child Growth Standards (WHO, 2006). Prevalence by mother's education was taken from the MICS report (NCHS estimates) and converted into prevalence based on WHO Child Growth standards using the algorithms developed by Yang and de Onis (Yang and de Onis, 2008).

n.a.: not available

Table 15: Anthropometry of preschool children (cont'd)

Name/date of survey (month/year) (Reference)	Background characteristics	Age (years)	Sex	Sample size	Prevalence of malnutrition						
					Percentage of children with						
					Stunting Height-for-age		Wasting Weight-for-height		Underweight Weight-for-age		Overweight Weight-for-height
					< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	> +2 Z-scores
The Gambia Multiple Indicator Cluster Survey Report 2000 (May-June 2000) (WHO Global database on child growth and malnutrition - GoG and UNICEF, 2002)	**Total**	0-5.00	M/F	2653	8.4	24.1	2.3	8.9	4.4	15.4	3.0
	Sex										
		0-5.00	M	1347	10.5	25.9	2.6	9.4	5.5	16.5	3.0
		0-5.00	F	1306	6.3	22.1	1.9	8.4	3.4	14.3	3.0
	Age										
		0-0.49	M/F	298	4.9	9.0	3.3	11.5	4.4	11.8	5.0
		0.5-0.99	M/F	311	4.6	13.6	6.0	17.5	6.0	17.0	4.6
		1-1.99	M/F	687	8.3	26.0	2.2	9.5	2.5	15.3	1.9
		2-2.99	M/F	528	12.3	30.8	2.6	7.7	6.1	16.4	4.0
		3-3.99	M/F	470	10.9	31.1	0.6	6.6	4.7	17.2	1.8
		4-5.00	M/F	359	6.0	21.5	0.2	3.7	4.2	13.8	1.9
	Residence										
	urban	0-5.00	M/F	928	5.9	17.3	2.1	6.4	2.7	8.5	4.2
	rural	0-5.00	M/F	1724	9.8	27.7	2.3	10.3	5.4	19.2	2.3
	Local Government Area (LGA)										
	Banjul	0-5.00	M/F	-	-	-	-	-	-	-	-
	Kanifing	0-5.00	M/F	572	6.4	16.4	2.3	6.5	3.1	8.4	4.6
	Brikama	0-5.00	M/F	731	6.0	19.4	0.6	7.0	2.5	11.9	2.8
	Mansakonko	0-5.00	M/F	(91)	(11)	(26)	(2)	(9)	(4)	(16)	(5)
	Kerewan	0-5.00	M/F	501	10.2	32.3	4.2	9.2	7.0	17.4	2.4
	Kuntaur	0-5.00	M/F	(85)	(12)	(30)	(4)	(11)	(7)	(22)	(1)
	Janjabureh	0-5.00	M/F	(94)	(20)	(35)	(7)	(18)	(9)	(25)	(6)
	Basse	0-5.00	M/F	549	9.3	27.8	1.7	12.2	5.2	23.3	1.2
	Mother's education										
	no education	0-5.00	M/F	2071	n.a.	25.7	n.a.	10.4	n.a.	16.1	n.a.
	primary	0-5.00	M/F	203	n.a.	24.1	n.a.	4.0	n.a.	13.3	n.a.
	secondary or higher	0-5.00	M/F	280	n.a.	17.0	n.a.	9.5	n.a.	7.9	n.a.

* Category <-2 Z-scores includes <-3 Z-scores

Data based on WHO Child Growth Standards (WHO, 2006). Prevalence by mother's education was taken from the MICS report (NCHS estimates) and converted into prevalence based on WHO Child Growth standards using the algorithms developed by Yang and de Onis (Yang and de Onis, 2008).

Data in brackets are based on small samples (<100) and therefore should be interpreted with caution. Data for Banjul (n=31) are not shown.

n.a.: not available

Anthropometry of school-age children

Currently, anthropometry of school-age children is not documented in The Gambia.

Anthropometry of adolescents

Currently, anthropometry of adolescents is not documented at national level in The Gambia.

However, a survey to determine the anthropometric status and body fat composition of Gambian adolescents was carried out in two regions (one urban and one rural) of the Western part of the country in July 2004 (Jallow, 2004). The survey, conducted in 20 schools - 10 of the schools were rural and 10 were urban -, was carried out among pupils aged 11 to 20 years attending secondary schools. Data on weight, height, sex and age were obtained from 800 pupils (Jallow, 2004).

Among the study population, the prevalence of stunting, defined as height-for-age ≤-2SD, was 11%. There were large disparities between the urban and rural areas: in urban areas, 6% of adolescents were stunted compared to 15% in rural areas. Boys were more likely to be stunted than girls, prevalence being 19% among boys and 4% among girls (Jallow, 2004).

Thresholds used to define the prevalence of thinness and that of obesity (BMI for age ≤-2SD and ≥+2SD, respectively) are not standard; therefore, results regarding these indicators are not discussed here.

This survey was conducted among adolescents attending secondary schools. In The Gambia, the percentage of adolescents attending secondary schools remains low. According to the 2005-2006 MICS, only 37% of subjects of secondary school-age were effectively attending secondary school, a percentage that varies greatly with wealth status (GBoS et al., 2007). Consequently, it is assumed that prevalence of stunting might be higher among adolescents who do not attend school; a nationally representative survey should be conducted to assess the magnitude of malnutrition among adolescents.

Anthropometry of adults

The *Nationwide prevalence study of hypertension and related non-communicable diseases in The Gambia* conducted in 1996 in both urban and rural areas provided data on the prevalence of overweight, obesity and chronic energy deficiency (CED) among Gambians (van der Sande et al., 1997). Measurements of BMI were recorded for 6024 individuals, both men and women, aged 15 years and above.

The overall prevalence of overweight (BMI 25-29.99 kg/m²) among adults was 8% and that of obesity (BMI ≥30.0 kg/m²) was less than 5%. Obesity was significantly associated with being female, increasing age and urban residence. The overall prevalence of CED (defined in the study as BMI <18.0 kg/m²) was estimated at 18% (van der Sande et al., 1997). The high prevalence of CED among women, especially among rural women, could be related to the high prevalence of low birth weight and stunting among young children (van der Sande et al., 2001). These data indicated the coexistence of undernutrition and obesity among adults.

In May 2008, the National Nutrition Agency (NaNA) conducted an assessment of Food Vulnerability in Urban Areas in collaboration with CILSS and IRD. The assessment was conducted in the city of Banjul and Kanifing Municipality. Anthropometric measurements of adult women (aged 12 years and older) living in these urban areas showed that more than 40% of women in the two urban areas were overweight or obese. The prevalence of CED was 8% (Bah et al., 2009).

In conclusion, The Gambia is undergoing a nutritional transition and has to face a “double burden” of malnutrition[15]. In the urban sector, obesity is a growing emerging public health problem among women

[15] The double burden of malnutrition refers to the dual burden of under- and overnutrition occuring simultaneously within a population. Progress in improving water and sanitation systems has been slow and the development of

in particular. The rapid shift towards a more energy-dense diet containing more fat, more saturated fats and more sugar, coupled with decreasing physical activity - both associated with urbanization - is evidently contributing to the increasing incidence of chronic non-communicable diseases (obesity, cardiovascular disease, diabetes, etc.).

A major challenge in The Gambia is to develop effective strategies to combat both undernutrition and overnutrition.

II.6 Micronutrient deficiencies

Iodine deficiency disorders (IDD)

Prevalence of goitre and urinary iodine level

A national-representative survey on IDD was conducted in 1999 (Egbuta, 1999). In the survey design, 30 schools were randomly selected from the 5 administrative regions of the country with Banjul and Kanifing representing the urban population. On the whole 3010 pupils (boys and girls) aged 8-12 years were examined for goitre. Urine samples were collected from every 5th child, thus about 600 urine samples were collected for the measurement of urinary iodine (Egbuta, 1999).

The total goitre rate was estimated at 16% in 1999 (Egbuta, 1999). According to the WHO classification, the reported prevalence of goitre (falling within the range of 5.0-19.9%) indicated that IDD was a public health problem of mild importance in The Gambia (WHO, 2001a).

The prevalence of goitre showed substantial geographical disparities (Table 16): in Banjul/Kanifing municipality, Western and North Bank regions, the prevalence of total goitre was less than 3% (Egbuta, 1999). According to WHO classification, IDD was not a public health problem in these regions (prevalence of goitre <5%) (WHO, 2001a). In the other regions, the prevalence of total goitre was significantly higher, reaching 12% in Lower River, 17% in Central River, and 19% in Upper River (Egbuta, 1999).

Banjul/Kanifing Municipality, Western and North Bank regions are almost free of goitre. Of the 900 school children surveyed in Banjul/Kanifing Municipality, Western and North Bank regions only 11 cases of goitre were seen, showing a prevalence of 1%. This low total goitre rate can be due to the proximity of these regions to the Atlantic coast and the access of these communities to fish and seafood which are very rich in iodine (Egbuta, 1999). In goitre affected regions (Lower River, Central River and Upper River regions) the lack of access of these inland communities to fish and seafood could be responsible for the higher level of IDD (Egbuta, 1999).

The median urinary iodine of 41.8 µg/L, falling within the range of 20-49 µg/L indicated moderate iodine deficiency (WHO, 2001a; Egbuta, 1999).

It can thus be concluded from this survey that IDD was a public health problem in The Gambia in 1999. However, new data are needed to evaluate the current magnitude of IDD.

sound public health systems weak, thwarting efforts to reduce undernutrition. At the same time, increasing urbanization and changing dietary patterns and lifestyles are contributing to a rapid rise in overweight and diet-related chronic diseases (FAO, 2006).

Table 16: Prevalence of goitre and level of urinary iodine in school-age children

Survey name/date (Reference)	Background characteristics	Age (years)	Sex	Prevalence of goitre		Level of urinary iodine	
				Sample size	Percentage with goitre [Total Goitre]	Sample size	Median (µg/L)
Iodine deficiency survey in The Gambia [consultancy report] 1999 (Egbuta, 1999)	**Total**	8-12.99	M/F	3010	16.3	594	41.8
	Region						
	Banjul/Kanifing	8-12.99	M/F	301	0.6	(60)	(73.7)
	Central River	8-12.99	M/F	701	17.4	149	68.8
	Lower River	8-12.99	M/F	708	12.4	135	27.6
	North Bank	8-12.99	M/F	300	2.3	(60)	(47.5)
	Upper River	8-12.99	M/F	700	19.3	140	31.8
	Western	8-12.99	M/F	300	0.6	(60)	(35.9)

Results in brackets are based on small samples and therefore must be interpreted with caution.

Iodization of salt at household level

Prior to 2003, salt production in The Gambia was on a fairly small-scale level with only 10% of the estimated 8000 t consumed per year produced in the country and 80% coming from neighbouring Senegal. With assistance from PHPNP (Participatory Health Population and Nutrition Project) and UNICEF, NaNA started a Salt Iodization Programme in the country in 2003. Then, in 2006, The Gambia enacted the Food Fortification and Salt Iodization Regulation to ensure that all salt imported or produced locally for human and animal consumption was iodized. As well, the IEC (Information, Education, Communication) activities on consumption of iodized salt were intensified. These interventions have led to an increase production of locally iodized salt and to the importation of iodized salt.

Two national surveys document iodization of salt at household level: MICS 2000 and MICS 2005-2006 (GBoS et al., 2007; GoG and UNICEF, 2002).

In 2005-2006, only 7% of households used adequately iodized salt (salt containing 15 ppm or more of iodine). In urban areas, only 5% of households consumed adequately iodized salt compared to 8% in rural areas. Geographical disparities were substantial. Use of iodized salt was highest in the Eastern part of the country where 41% of the households in Basse (Upper River region) had adequately iodized salt. In all other LGAs, except Kuntaur and Janjangbureh (both in Central River region), less than 5% of households used adequately iodized salt (GBoS et al., 2007).

Comparison between the two national surveys reveals that the percentage of households consuming adequately iodized salt did not improve between 2000 and 2005-2006 (GoG and UNICEF, 2002; GBoS et al., 2007).

The very recent implementation of the salt iodization programmes may explain the low consumption of adequately iodized salt in The Gambia.

Table 17: Iodization of salt at household level

Survey name/date (Reference)	Background characteristics	Total number of households in the survey	Testing for iodine level in salt		
			No salt for testing (%)	Tested salt with inadequate level (%) (<15 ppm)	Tested salt with adequate level (%) (≥15 ppm)
The Gambia Multiple Indicator Cluster Survey Report 2005-2006 (MICS-III) (GBoS et al., 2007)	**Total**	5999	8.6	84.8	6.6
	Residence				
	Urban	2904	13.4	81.3	5.3
	Rural	3095	4.1	88.1	7.7
	Local Government Area (LGA)				
	Banjul	308	25.6	73.3	1.1
	Kanifing	1858	12.6	84.0	3.4
	Brikama	1636	7.1	91.4	1.5
	Mansakonko	354	7.3	90.5	2.2
	Kerewan	707	1.5	96.2	2.3
	Kuntaur	302	6.0	77.9	16.1
	Janjangbureh	368	3.1	86.9	10.0
	Basse	466	4.7	54.1	41.2

Note: ppm = parts per million

Vitamin A deficiency (VAD)

Prevalence of sub-clinical and clinical vitamin A deficiency

The nationwide survey conducted by Bah et al. in 1999 documents the prevalence of vitamin A deficiency among young Gambian children (Bah et al., 2001).

The survey included 405 children (boys and girls) aged 1-5 years. The results showed that 64% of study children had a concentration of serum retinol <0.70 µmol/L, indicating sub-clinical VAD, and 9% had a concentration of serum retinol <0.35 µmol/L. Only one child (i.e. 0.3% of children) showed Bitot spots, a sign of clinical VAD (Bah et al., 2001).

The prevalence of low serum retinol (serum retinol <0.70 µmol/L) was largely above the WHO threshold of 20% that defines VAD as a severe public health problem (WHO, 2009).

At national level, among 315 pregnant women (aged 15-49 years), the prevalence of low serum retinol (serum retinol <0.70 µmol/L) was 34%, and 3% of the women had a serum retinol concentration <0.35 µmol/L. There were no reports of night blindness. Among 409 breastfeeding women, the prevalence of low serum retinol was 16% and 1% had a serum retinol concentration <0.35 µmol/L (Bah et al., 2001).

New data are needed to evaluate the current magnitude of VAD among young children and women of childbearing age.

Table 18: Prevalence of sub-clinical and clinical vitamin A deficiency in children from 1 to 5 years

Survey name/date (Reference)	Background characteristics	Age (years)	Sex	Prevalence of low level of serum retinol	
				Sample size	Percentage with serum retinol <0.70 µmol/L
Nationwide survey on the prevalence of vitamin A and iron deficiency in women and children in The Gambia 1999 (WHO Database on vitamin A deficiency - Bah et al., 2001)	**Total**	1-5.99	M/F	405	64.0
	Region				
	Banjul	1-5.99	M/F	-	-
	Kanifing	1-5.99	M/F	(94)	(54)
	Central River	1-5.99	M/F	(82)	(77)
	Lower River	1-5.99	M/F	-	-
	North Bank	1-5.99	M/F	-	-
	Upper River	1-5.99	M/F	(90)	(69)
	Western	1-5.99	M/F	(55)	(47)

Results in brackets are based on small samples and therefore must be interpreted with caution. Resulted based on sample < 50 are not shown (-).

In The Gambia, the low contribution of animal products, which contain high amounts of retinol – i.e. preformed vitamin A –, to the diet and insufficient intake of fruit and vegetables rich in provitamin A carotenoids may contribute to high levels of VAD. Beta-carotene, the main provitamin in vegetable sources of vitamin A, which are more affordable than animal products, is less well absorbed than retinol.

In rural parts of the country, communal gardens are being promoted. In addition to promoting the consumption of food of animal origin and fruit and vegetables rich in vitamin A, other food-based approaches such as food fortification need to be implemented. In the short-term, alternatives such as the provision of vitamin A supplements are required to control VAD.

Vitamin A supplementation

The MICS 2000 and the MICS 2005-2006 document vitamin A supplementation among young children and mothers at national level (GoG and UNICEF, 2002; GBoS et al., 2007).

In 2005-2006, 80% of children aged 6-59 months had received vitamin A supplements in the six months preceding the survey. Surprisingly, children living in urban areas were slightly less likely to have received supplements than children living in rural areas (Table 19). Supplementation coverage was lowest in Kerewan (North Bank region) (72%) (GBoS et al., 2007).

Among mothers with a birth in the two years preceding the survey, overall 78% had received vitamin A supplements within 2 months postpartum. Supplementation coverage was lowest in Kanifing (67%) and Janjangbureh (72%) (Central River region) (GBoS et al., 2007).

Comparison with the previous MICS survey conducted in 2000 reveals that vitamin A supplementation among children under-five has increased drastically. In 2000, only 4% of children age 6-59 months received vitamin A supplementation in the 6 months preceding the survey while in 2005-2006 the percentage had increased to reach 80%. Vitamin A supplementation of mothers also increased sharply: while in 2000, only 14% of women with a birth in the 12 months preceding the survey had received vitamin A supplements in the 2 months postpartum (GoG and UNICEF, 2002), in 2005-2006, 78% of women with a birth in the 2 years preceding the survey had received such a supplement (GBoS et al., 2007). Although the samples are not strictly comparable, it is obvious that vitamin A supplementation among mothers has increased very significantly.

These large increases in vitamin A supplementation coverage are due to the implementation of The Gambia's Vitamin A Supplementation (VAS) programme. The programme commenced in 2000 following recommendations based on the findings of the survey conducted by Bah et al. in 1999. All children 6-59 months and post-partum mothers within eight weeks after delivery are supplemented with high-dose vitamin A, routinely administered through MCH/EPI services. As seen in Table 19, coverage for children's routine supplementation is 80%. Routine supplementation is supported by annual National Immunization Days with a coverage of over 90% in the past five years.

Although regional disparities still persist, the vitamin A supplementation coverage in The Gambia is relatively high.

Table 19: Vitamin A supplementation of children and mothers

Survey name/date (Reference)	Background characteristics	Children				Mothers		
		Age (months)	Sex	Number of children	Percent of children who received vit. A supplements in the 6 months preceding the survey	Age (years)	Number of mothers[1]	Percent of mothers who received vit. A supplements within 2 months postpartum
The Gambia Multiple Indicator Cluster Survey Report 2005-2006 (GBoS et al., 2007)	**Total**	6-59	M/F	5690	80.1	15-49	3070	78.0
	Sex							
		6-59	M	2936	80.1	15-49	-	-
		6-59	F	2755	80.0	15-49	-	-
	Residence							
	urban	6-59	M/F	2012	77.2	15-49	1037	71.5
	rural	6-59	M/F	3679	81.7	15-49	2033	81.3
	Local Government Area (LGA)							
	Banjul	6-59	M/F	178	74.7	15-49	(75)	(84)
	Kanifing	6-59	M/F	1315	76.7	15-49	694	67.4
	Brikama	6-59	M/F	1219	89.5	15-49	750	83.6
	Mansakonko	6-59	M/F	356	76.0	15-49	167	85.4
	Kerewan	6-59	M/F	719	72.4	15-49	377	77.3
	Kuntaur	6-59	M/F	439	87.3	15-49	232	82.8
	Janjangbureh	6-59	M/F	594	74.6	15-49	313	71.7
	Basse	6-59	M/F	869	81.3	15-49	463	83.1

[1] Women with a live birth in the 2 years preceding the survey.
Results in brackets are based on small samples and therefore must be interpreted with caution

Iron deficiency anemia (IDA)

Prevalence of IDA

In The Gambia, a national survey conducted in 1999 documents iron deficiency anemia among young children, pregnant women and breastfeeding mothers (Bah et al., 2001).

According to this survey, more than three-quarters (76%) of children aged 1-5 years were anemic (hemoglobin <11.0 g/dL) and 15% were severely anemic (hemoglobin <7.0 g/dL) (Bah et al., 2001). Therefore, according to WHO criteria, anemia constitutes a severe public health problem in The Gambia (prevalence of anemia ≥40%) (WHO, 2001b).

Survey results revealed regional differences in prevalence, but due to small sample size in most regions, differences should be interpreted with caution (Table 20) (Bah et al., 2001).

Table 20: Prevalence of anemia in preschool children

Survey name/date (Reference)	Background characteristics	Age (years)	Sample size	Percentage of children with	
				Any anemia (Hb<11.0 g/dL)	Severe anemia (Hb<7.0 g/dL)
Nationwide survey on the prevalence of vitamin A and iron deficiency in women and children in The Gambia 1999 (Bah et al., 2001)	**Total**	1-5.99	515	76	15
	Region				
	Banjul	1-5.99	-	-	-
	Kanifing	1-5.99	124	60	3
	Central River	1-5.99	(95)	(81)	(20)
	Lower River	1-5.99	-	-	-
	North Bank	1-5.99	-	-	-
	Upper River	1-5.99	(94)	(93)	(35)
	Western	1-5.99	(81)	(81)	(9)

Hb: Hemoglobin
Results in brackets are based on small samples and therefore must be interpreted with caution. Resulted based on sample < 50 are not shown (-).

In the same survey, anemia was investigated among pregnant and breastfeeding women (15-49 years) (Bah et al., 2001).

Among pregnant women, the prevalence of anemia (any anemia) was 73% and severe anemia affected 5% of the women[16] (Bah et al., 2001). During pregnancy, iron deficiency is associated with multiple adverse outcomes for both mother and infant, including an increased risk of haemorrhage, maternal mortality, perinatal mortality and low birth weight (WHO, 2001b).

Among breastfeeding women, the prevalence of anemia was 56% and severe anemia affected 2% (Bah et al., 2001).

Table 21: Prevalence of anemia in women of childbearing age

Survey name/date (Reference)	Background characteristics	Age (years)	Sample size	Percentage of women with	
				Any anemia (pregnant women Hb<11.0 g/dL; breastfeeding women Hb<12.0 g/dL)	Severe anemia (all women Hb<7.0 g/dL)
Nationwide survey on the prevalence of vitamin A and iron deficiency in women and children in The Gambia 1999 (Bah et al., 2001)	**Pregnancy/Breastfeeding status**				
	Pregnant	15-49	322	73	5
	Breastfeeding	15-49	441	56	2

Hb: Hemoglobin

The 1999 nationwide survey also provides data on serum ferritin levels among young children, pregnant women and breastfeeding mothers (Bah et al., 2001). Serum ferritin is an indicator of body iron stores. The survey showed that 23% of children age 1-5 years had low serum ferritin (<10 µg/L). Among women, one quarter of pregnant women and one fifth of breastfeeding women had low serum ferritin (<10 µg/L) (Bah et al., 2001). Interpretation of serum ferritin levels is however difficult in populations where the incidence of infection or inflammation is high which causes serum ferritin to increase markedly. Consequently, prevalence of iron deficiency is probably higher than what appears indicated by the proportion of subjects with low serum ferritin.

Anemia can result from both nutrition-related causes (insufficient intake and/or absorption of iron) and from infectious and parasitic diseases.

Bioavailability of heme iron found in foods of animal origin is high, while the bioavailability of non-heme iron from foods of vegetable origin is low (e.g. from cereals, legumes and vegetable). Moreover,

[16] The definition of anemia is hemoglobin < 11.0 g/dL in pregnant women, hemoglobin <12.0 g/dL in breastfeeding women; severe anemia is defined as hemoglobin <7.0 g/dL in all groups of women.

effective absorption of iron is determined by the presence in meals of dietary factors that enhance (heme iron, ascorbic acid or vitamin C) or inhibit (phytates present in cereal bran and cereal grains; phenolic compounds) its absorption (WHO, 2001b).

The Gambian diet is cereal-based. The supply of foods of animal origin remains low and the high cost of these products limits their consumption by households. The high prevalence of anemia in The Gambia may therefore be primarily related to low dietary intake of bioavailable iron, compounded by chronic infections and inflammation. Malaria, which is endemic in the country, intestinal helminths such as hookworm, and schistosomiasis are also important causes of anemia.

In 1999, a seven-day food recall on foods rich in heme iron was conducted at national level (see II.1 Surveys of dietary diversity and variety) (Bah et al., 2001). The survey revealed that during the seven days prior to the survey, about one third of pregnant and breastfeeding women (sample size 1000) had not eaten meat and 90% had not eaten liver or heart (Bah et al., 2001). This was due to a combination of factors including foods habits, lack of nutrition knowledge and low purchasing power. Over 50% of pregnant and breastfeeding women did not eat fruit and only 19% ate dark green leafy vegetables for 3-4 days during the week. Forty-five percent of breastfeeding mothers and 40% of pregnant women did not recall taking tea, an iron absorption inhibitor. Also, 95% of breastfeeding mothers and 90% of pregnant women did not recall taking coffee, also an iron absorption inhibitor (Bah et al., 2001).

In 2002, Bah investigated the relationship between hookworm prevalence and high prevalence of anemia among 300 children aged 1-5 years in rural Gambia, in the Upper River region where the prevalence of anemia is highest. The study concluded that hookworm infestation was not a major contributing factor in the high prevalence of anemia in this part of the country (Bah, 2002). The other contributing factors were not investigated in this study. However, low dietary intake of heme iron rich foods and probably infection due to malaria could be the most important factors (Bah, Personal communication).

Interventions to combat IDA

Various interventions to combat IDA are implemented in The Gambia. Under the Reproductive and Child Health (RCH) Programme, all pregnant women upon registration at health facilities (both public and private) are given iron/folate tablets until 6 weeks postpartum. Supplementation with iron only started around 1960 but policy to use iron/folate combined tablets started in 1979 (Bah, Personal communication). Morevoer, there is ongoing and intensive IEC for the consumption of heme iron-rich foods. Communities are encouraged and assisted (where possible) to have communal/individual gardens. Food fortification is not yet implemented in the country.

At national level, iron supplementation coverage among pregnant women is not documented. However, according to the VAM analysis of 2003 conducted in rural areas, only 6% of the women received iron-folate supplements during pregnancy, yet almost all women (99%) attended antenatal care (WFP, 2003). Moreover, according to MICS 2005-2006, only a third of pregnant women took intermittent preventive malaria treatment (GBoS et al., 2007).

With funding from the Canadian Impact Grant through the WFP, the National Nutrition Agency (NaNA), piloted in 2006 an integrated community-based anemia project in Upper River region (NaNA, 2006). Ten communities were selected. The main objectives of the pilot project were to enhance the capacity of community extension workers in promoting better nutrition, health and sanitation; to reduce anemia among pregnant women, breastfeeding mothers and children less than five years old; and to enhance knowledge, attitude and practices toward better nutrition, health, sanitation, good maternal and child caring practices.

This project was designed as a community-based approach based on the Baby Friendly Community Initiative (BFCI), as an entry point. The target groups were pregnant women, breastfeeding mothers and children under five years of age. The project provided: iron supplementation to pregnant women and to breastfeeding mothers throughout the post-partum period; multi-vitamin-mineral sprinkles ("Anuka[17]") for children 6-24 months; insecticide-treated bednets; deworming tablets for the target population; environmental sanitary materials; gardening materials for

[17] Anuka is sprinkle-like multi mineral, multi vitamin powder in 5g sachets

communal gardens as means of food diversification; training in health and nutrition including child caring practices. Project duration was nine months, with a baseline survey conducted at the start of the project (April 2006). An end-line (evaluation) survey was conducted in March 2007. The baseline survey involved 259 pregnant women, 1170 breastfeeding women and 1170 children 0-24 months. The end-line survey involved 297 pregnant women, 1169 breastfeeding women and 1169 children 0-24 months.

Some of the objectives of the project have been met: the capacity of community extension workers to promote better nutrition, health and sanitation has been enhanced; maternal and child caring practices have been enhanced; a slight reduction in the prevalence of anemia among pregnant women, lactating mothers and children less than five years old was noted. Among children, the prevalence of moderate anemia remained unchanged, but the prevalence of severe anemia decreased from 13% (baseline evaluation) to 3% (end-line evaluation). This reduction could be attributed to a number of factors such as the greater awareness of mothers and use of the multivitamin-mineral mix, Anuka, etc. Among pregnant women, the prevalence of moderate anemia decreased from 73% to 68% and among breastfeeding mothers, this percentage decreased from 64% to 60%[18]. However, these differences were not statistically significant (NaNA, 2006).

Overall, the project has been hailed as a success by the communities, the health facility staff and Divisional Health Team. According to them, some of the gains from the project include: a reduction in the incidence of malaria due to the increased use of insecticide-treated bednets (ITN); an increase in early antenatal bookings (these are part of the IEC sessions) where the opportunity is seized by village health workers to talk about the benefits of exclusive breastfeeding, personal and environmental hygiene, the use of ITNs etc.; a high compliance rate in the use of iron/folate tablets as the women are now aware of the benefits of the tablets (which are given for free in antenatal centres – women just have to pay five Gambian Dalasi, equivalent to a few US cents, at registration); a reduction in childhood illnesses and an increased understanding and awareness of health in the communities; the assessment of hemoglobin levels taking place at community level which saves travel time and money; the availability of iron/folate tablets (for free) at all times, etc.

Other micronutrient deficiencies

Currently, other micronutrient deficiencies are not documented in The Gambia.

II.7 Policies and programmes aiming to improve nutrition and food security

Nutrition policies and programmes:

The Gambia Nutrition Policy 2000-2004 was adopted in December 1999 by the government. The Policy is a framework, demonstrating nutrition as a crosscutting issue, involving all partners working in development (GoG, 2000b). The goal of the policy is to cover the basic nutritional requirements of the Gambian population and ensure a healthy and productive lifestyle to be realized through 7 priority substantive areas: protecting, promoting and supporting breastfeeding; improving food security at the national, community and household levels; improving food standards, quality and safety; preventing and managing infectious diseases; preventing and managing micronutrient deficiencies; preventing and managing diet related non-communicable diseases; caring for the socio-economically deprived and nutritionally vulnerable.

A fundamental instrument in the operation of the Policy is the establishment of a permanent mechanism to co-ordinate the implementation of the policy and national plan of action. Consequently, the National Nutrition Agency (NaNA) was established by an Act of the National Assembly in 2005. NaNA is mandated and charged with the responsibility of coordinating all nutrition and nutrition related activities in the country. NaNA is located under the Office of the Vice President to remove the sectoral bias of nutrition being either a health or an agricultural issue and ensure that nutrition is regarded as an issue of development with all sectors being partners. Furthermore, this will provide for the effective

[18] Among children and pregnant women, moderate anemia was defined as hemoglobin concentration between 7 and 11.0 g/dL; severe anemia was defined as hemoglobin concentration <7.0 g/dL. Among lactating mothers, moderate anemia was defined as hemoglobin concentration between 7 and 12.0 g/dL; severe anemia was defined as hemoglobin concentration <7.0 g/dL.

co-ordination of nutrition activities in the country, resulting in the optimum use of resources for the well being of all Gambians. A National Nutrition Council, Technical Advisory Committee and 5 Divisional Coordinating Committees support the Agency.

Since its establishment, NaNA has recorded some major achievements and successes such as: the Formulation and Enactment of the Food Act, 2005, leading to the enactment of the Breastfeeding Regulation and the Food Fortification and Salt Iodisation Regulation (2006); revitalization of the National Codex Committee (NCC), which is made up of all government departments and organizations, concerned with food production, quality, safety and trade; the coordination of IBFAN (International Baby Food Action Network) activities in the country. IBFAN is a pro-advocacy network of professionals, institutions, organizations and individuals that advocate for the protection, promotion and support of optimal infant and young child feeding practices. The network has established a chapter in The Gambia that requires the involvement of all stakeholders.

Some of the activities carried under the National Nutrition Agency (NaNA) are the following:

- Clinic-based Nutrition Education
NaNA staff conducts bi-weekly clinic-based nutrition education at the Royal Victoria Teaching Hospital for diabetic and hypertensive patients referred by their doctors. The aim is to inform, educate and counsel patients and their families on the management of diet related non-communicable diseases.

- Nutrition and Health Education
NaNA, in collaboration with the Health Education Unit of the Department of State for Health (DoSH), has been using the electronic media (radio and television) for informing and educating the Gambian population on various aspects of nutrition and health related issues. Training of community representatives including traditional communicators has been an integral part of the IEC/BCC (Information, Education and Communication / Behaviour Change Communication) interventions of NaNA.

- The Gambia National Nutrition Surveillance Programme (GNNSP)
From 1985 to date, the then National Nutrition Unit, now NaNA, has been collecting twice-yearly (rainy and dry seasons) anthropometric (weight-for-height) data on all children less than five years old living in Primary Health Care villages. In these assessments, malnourished children are detected at an early stage and intervention decisions are taken to prevent and manage malnutrition. The GNNSP is unique in comparison to other countries in the sub-region. However, the assessment does not investigate the causes of malnutrition.

- Health Facility-based Growth Monitoring
All health facilities (both public and private) giving MCH/EPI services conduct growth monitoring of the children who visit the facilities for diagnosis and intervention purposes.

<u>Food security policies and programmes:</u>

- Policy and National Investment in Food Security

From the mid-1970s to the mid-1980s, policies focused on food self-sufficiency. Improving the nutritional standards of rural households, reducing food imports (cereals), increasing cash crop production and diversifying the production base were the main objectives of this policy. Towards achieving food self-sufficiency, the country developed an organized market for traditional grains at controlled prices, promoted cereal banks, introduced subsistence credit, etc. Mid-1985, a comprehensive Economic Recovery Programme (ERP) was adopted, followed by a 10-year successor programme, the Programme for Sustained Development (PSD) in 1990. These programmes continued to emphasize food self-sufficiency towards encouraging domestic crop production (particularly coarse grains, groundnut and swamp rice), expanding horticultural and livestock production, ensuring regular supply of agricultural inputs, etc. Improper sequencing of the implementation of some macro-economic reforms (especially privatization, credit and interest rates liberalization and removal of subsidies) hindered the translation of these policies into positive food security effects. Although some marginal improvements have been obtained, the policy measures have failed to develop sustainable production systems and to boost the agricultural sector. Combined with low economic growth and limited structural changes, this has caused some deepening of poverty and food insecurity during the post ERP period (CSAO-CILSS, 2008).

- Food Policy Actions of the Department of State for Agriculture (DoSA)

The goal of DoSA is “to assure access for all Gambians to sufficient food of a quality that allows them to satisfy their energy needs for living a healthy life by the year 2020”. This is complemented by the Sahelian Goal, which is to ensure sustainable food security and reduce poverty and inequalities in the Sahel by 2015. The DoSA Goal encompasses specific objectives: to develop a productive, sustainable, and diversified agriculture; to develop National and Regional Markets for Agricultural products; to improve access to food and basic social services for vulnerable groups; to improve systems of prevention and crisis management; to enhance the capacity of actors and to promote food security related Good Governance.

For the successful improvement of food security, key challenges must be fully addressed. These challenges include low agricultural production and productivity; inadequate rural infrastructure; large proportion of rural dwellers particularly women in the poorest segments of the population; low institutional capacity and human resource base at farmer, extension and research levels; high population growth rate and urbanization; limited Gambian participation in the fishing industry; low value-added for the sector; absence of strategic food reserves at national level; limited access of vulnerable groups to secure food supplies; limited access to investment resources and limited access to adequate information concerning food security matters.

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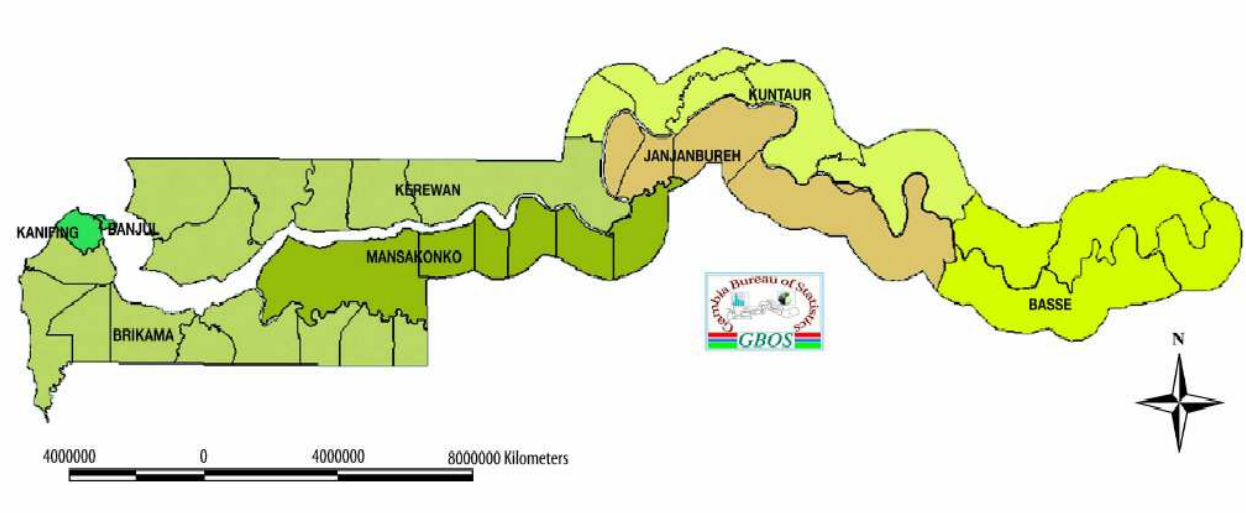
Annex

Annex 1: Map of The Gambia



Source: GBoS et al., 2007

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