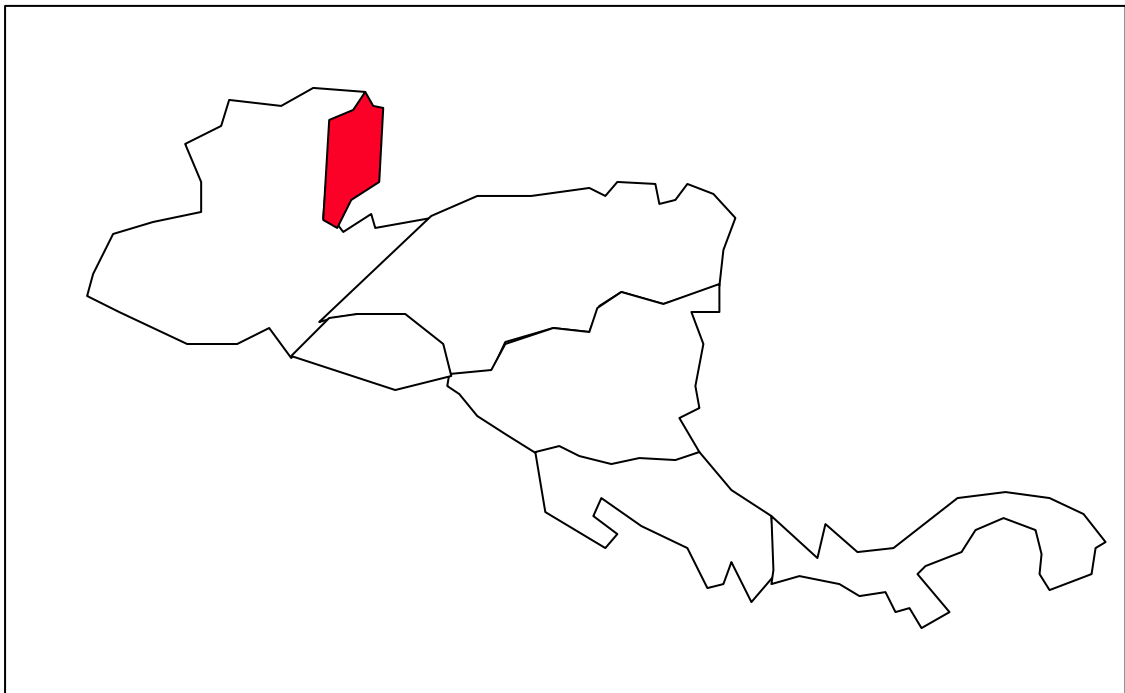


FAO - NUTRITION COUNTRY PROFILES

BELIZE



**FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS**

Note for the reader

The objective of the Nutrition Country Profiles (NCP) is to provide concise analytical summaries describing the food and nutrition situation in individual countries with background statistics on food-related factors. The profiles present consistent and comparable statistics in a standard format. This pre-defined format combines a set of graphics, tables and maps each supported by a short explanatory text. Information regarding the agricultural production, demography and socio-economic level of the country are also presented.

In general, data presented in the NCP are derived from national sources as well as from international databases (FAO, WHO...).

Technical notes giving detailed information on the definition and use of the indicators provided in the profile can be obtained from ESNA upon request. An information note describing the objectives of the NCP is also available.

Useful suggestions or observations to improve the quality of this product are welcome.

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Nutrition Country Profile of Belize

prepared for the Food and Agriculture Organization of the United Nations by Ms. Gilda Richardson from the Caribbean Food and Nutrition Institute (CFNI) in collaboration with Rosanne Marchesich (ESNA-FAO).

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers .

FAO, 2003



Table of contents

SUMMARY-----	3
TABLE 1: GENERAL STATISTICS OF BELIZE -----	4
I. OVERVIEW -----	5
1. Geography	5
2. Population.....	5
3. Level of development: poverty, education and health.....	6
4. Agricultural production, land use and food security.....	7
5. Economy	8
II. THE FOOD AND NUTRITION SITUATION -----	9
1. Trends in energy requirements and energy supplies	9
2. Trends in food supplies	10
3. Food consumption.....	12
4. Infant feeding practices.....	13
5. Anthropometric data	14
6. Micronutrient deficiencies	16
REFERENCES -----	18

MAPS are presented after the <REFERENCES>

General Map

Map 1: Prevalence of stunting in school children (6 to 9 years) by district (1996).

Map 2: Prevalence of anaemia among pregnant women by district (1984).

Graphs, tables and maps can be visualised by clicking on the words in bold and underline, only in the “Full profile” pdf file.

SUMMARY

Food availability is not a problem in Belize, but large numbers of households living in poverty are prone to food insecurity, due to a lack of access to food because purchasing power is low (Palacio et al., 1997). It is estimated that 25% of Belizean households live in poverty (KAIRA, 1996).

Although little is known about the actual food consumption pattern of Belizeans, it is clear that marked differences exist between the consumption patterns of different ethnic groups and classes. Lifestyle changes in Belize have also had a significant impact on how and what people eat.

Regarding infant feeding practices, in the Toledo district, the late introduction of complementary foods for infants was reported in 1994. A 1997 study found that breast-feeding is more practiced in the rural areas than in the urban areas (PAHO/WHO, 1997). Recently, an infant and young child feeding programme has been initiated (PAHO/WHO, 2001).

National data on nutritional status are lacking. A 1992 National Survey showed that 6% of children less than 5 years were underweight (MOH, 1992). According to WHO classification the prevalence of stunting and wasting are low, however special attention should be directed to the district of Toledo with has a high prevalence of stunting among under fives (39%) (MOE, 1996).

*However, in 1996, the National Height Census reported that 15% of male and female children aged 6 to 9 years were stunted (MOE, 1996) (**Table 5** and **Map 1**).*

*Regarding micronutrient deficiencies, high prevalences of both anaemia and vitamin A deficiency (VAD) were reported. The prevalence of anaemia (Hb<11µg/dL) at the national level was 19% among children (2 to 8 years) and 52% among pregnant women (**Map 2** and **Table 6**) (Makdani et al. 1996; McDonald, 1996). The prevalence of VAD among children (2 to 8 years) at the national level was 24% based on serum retinol levels. In the district of Toledo prevalences of both VAD among children (2 to 8 years) and anaemia among pregnant women are high.*

The prevalence of iodine deficiency is low.

TABLE 1: GENERAL STATISTICS OF BELIZE

Last updated: #####

Indicator (\$)	Year	Unit	Indicator (\$)	Year	Unit																								
A. Land in use for agriculture			G. Average Food Supply																										
1. Agricultural land	2000	ha per person	0.615																										
2. Arable and permanent crop land	2000	ha per person	0.394																										
B. Livestock			1. Dietary Energy Supply (DES)																										
1. Cattle	1998-2000	thousands	59	1998-2000	kcal/caput/day																								
2. Sheep & goats	1998-2000	thousands	4		2886																								
3. Pigs	1998-2000	thousands	24																										
4. Chickens	1998-2000	millions	1																										
C. Population			<p>Percentage of DES by major food groups</p> <table border="1"> <thead> <tr> <th>Food Group</th> <th>Percentage</th> </tr> </thead> <tbody> <tr><td>Cereals (excl. beer)</td><td>30.9%</td></tr> <tr><td>Sweeteners</td><td>24.1%</td></tr> <tr><td>Meat & offals</td><td>8.8%</td></tr> <tr><td>Fruits & Vegetables</td><td>7.2%</td></tr> <tr><td>Pulses, nuts, oilcrops</td><td>7.0%</td></tr> <tr><td>Animal Fats</td><td>6.7%</td></tr> <tr><td>Milk & Eggs</td><td>7.7%</td></tr> <tr><td>Other</td><td>2.4%</td></tr> <tr><td>Starchy roots</td><td>1.6%</td></tr> <tr><td>Fish & seafood</td><td><1%</td></tr> <tr><td>Vegetable oils</td><td><1%</td></tr> </tbody> </table> <p>Note: Value not indicated if below 1%</p>			Food Group	Percentage	Cereals (excl. beer)	30.9%	Sweeteners	24.1%	Meat & offals	8.8%	Fruits & Vegetables	7.2%	Pulses, nuts, oilcrops	7.0%	Animal Fats	6.7%	Milk & Eggs	7.7%	Other	2.4%	Starchy roots	1.6%	Fish & seafood	<1%	Vegetable oils	<1%
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Vegetable oils	<1%																												
1. Total population	2000	thousands	241																										
2. 0-4 years	2000	% of total pop.	12.9																										
3. 5-14 years	2000	% of total pop.	25.4																										
4. 15-24 years	2000	% of total pop.	21.5																										
5. >= 60 years	2000	% of total pop.	6.0																										
6. Rural population	2000	% of total pop.	45.8																										
7. Annual population growth rate, Total	2000-2005	% of total pop.	2.1																										
8. Annual population growth rate, Rural	2000-2005	% of rural pop.	0.5																										
9. Projected total population in 2030	2030	thousands	396																										
10. Agricultural population	2000	% of total pop.	30.5																										
11. Population density	2000	pop. per km ²	9.8																										
D. Level of Development			% Energy from:																										
1. GNP per capita, Atlas Method	1998	current US\$	2660	2. Protein	1998-2000 % of total energy																								
2. Human Development Index rating (new)	1999	min[0] - max[1]	0.776	3. Fat	1998-2000 % of total energy																								
3. Incidence of poverty, Total	1996	% of population	33.0																										
4. Incidence of poverty, Rural	1996	% of population	42.5	4. Proteins	1998-2000 g/caput/day																								
5. Life expectancy at birth (both sexes)	200-2005	years	74.4	5. Vegetable products	1998-2000 % of total proteins																								
6. Under-five mortality rate	2000	per 1,000 live births	41	6. Animal products	1998-2000 % of total proteins																								
E. Food Trade			H. Food Inadequacy																										
1. Food Imports (US \$)	1998-2000	% of total imports	9.2	1. Total population "undernourished"	1997-99 millions																								
2. Food Exports (US \$)	1998-2000	% of total exports	64.4		NA																								
3. Cereal Food Aid (100 t)	1998-2000	% of cereals imports	NA	2. % population "undernourished"	1997-99 % of total pop.																								
F. Indices of Food Production			NA																										
1. Food Production Index	1998-2000	1989-91=100	158.8	§ see References for data sources used																									
2. Food Production Index Per Capita	1998-2000	1989-91=100	133.0																										

BELIZE

I. OVERVIEW

1. Geography

Belize is located on the eastern Caribbean coast of Central America, bounded by Mexico to the north, and Guatemala to the west. Its landmass includes 450 tiny islands called cays that are located in the inner coastal waters. Belize's total land area is 22 963 km² (EIU, 2003) (**General Map**).

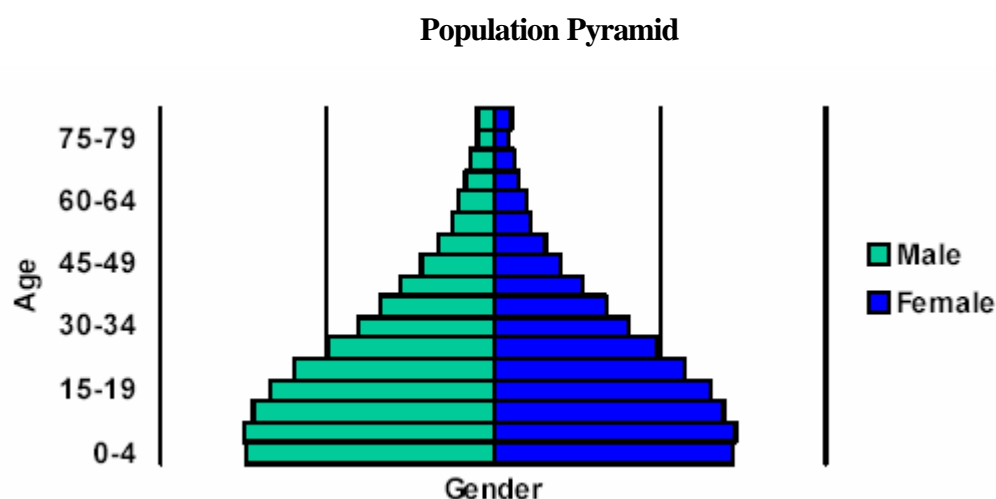
The country has low coastal plains in the north and south, with mangrove swamps. The Maya Mountains stand in the south, taking up much of the country. The highest point is Victoria Peak at 1128 m. The Mountain Pine Ridge in the west ranges from 305 to 914 m. Sixty five percent of the land is forested, of which 36% are protected areas.

The climate is sub-tropical, tempered by trade winds. Temperatures in coastal areas range from 10°C to about 35°C. The average mean rainfall varies from 1295 mm in the north to 4445 mm in the extreme south. The dry season usually extends from February to May, with an occasional dry spell in August.

The country is divided into six administrative districts: Belize, Cayo, Corozal, Orange Walk, Stann Creek and Toledo. The capital city is Belmopan.

2. Population

The total population was estimated at 241 000 in 2000 and is growing at an annual rate of 2.1% projected for the period 2000-2005 (**Table 1**) (UN, 2001). In 2000, 45.8% of the population lived in rural areas and 54.2% in urban areas. The population density in 2000 was 9.8 persons per km² (up from 5.4 in 1970 and 8.2 in 1990), which reflects one of the lowest population densities in the world and the lowest in Central America. However, the total fertility rate of 3.4 children per women in 1995-2000 implies that there will be a population increase (EIU, 2003). In 2030, the projected total population is estimated at 396 000 (UN, 2001). Most of the population lives on the coast which includes one half of the Belize City population and its surrounding districts. Plus, one half of the rural population live in villages in the north. Inland areas in the centre and south are sparsely inhabited (EIU, 2003). Belize is made up of a young population with 8% of its population below the age of 14. Only 6% of the total population is more than 60 years (UN, 2001) (**Table 1**). The official language is English but Creole and Spanish are commonly spoken. Belize's population is multi-ethnic. According to the 2000 census the traditionally dominant ethnic group of Creoles now comprise 30% of the total population, while the Mestizo represent 44%, Maya represent 11% and the Garifuna and others represent 7 % (EIU, 2003). From 1995 to 2000 the crude birth rate and crude death rate were 28 and 5 per 1000 population, respectively (UN, 2001).



Source: UNAIDS/ WHO, 2002.

3. Level of development: poverty, education and health

The Poverty Assessment Report of 1996 was based on both food and non-food item expenditure. It concluded that 25% of the Belizean households and 33% of the individuals were living in poverty. Of those, 10% and 13% of the households and individuals, respectively, were considered to be extremely poor. Female-headed households were found to be more vulnerable to poverty (KAIRA, 1996). Toledo and Cayo were the poorest districts. Forty three percent of the poor live in rural areas. They are mainly Mayan and/or immigrants. Poverty in urban areas had a prevalence of 21% in 1996 (**Table 1**).

In Belize, the education system provides 2-3 years of pre-school, 8 years of primary school, 4 years of secondary school and a range of options for tertiary education, including two universities. It is estimated that 36% of the population does not complete primary education (MED, 1996). The literacy rate for the population group of 14 years and above was of 90% in the 1980's but due to the influx of Central American immigrants, it was reduced to 75% in 1996 (Palacio et al., 1997). In urban areas the literacy rate was of 87%, with the Belize district showing a literacy rate of 92%. This difference may have been due to the low literacy of the majority of immigrants in rural areas. In these areas, the lowest literacy rate was registered in Toledo (59%) and the highest in Orange Walk (72%) (MED, 1996). However, in 2000, the adult literacy rate recovered to 93% with the same percentage for both males and females (UNICEF, 2003; EIU, 2003).

Like many Caribbean countries Belize is experiencing an epidemiological transition. The Government of Belize is the main provider of health services, and efforts by the Ministry of Health to control diarrhoea, respiratory and communicable diseases have had a considerable impact in reducing infant mortality and under-five mortality rates, which are respectively 34 per 1000 live births for the period 1995-2000 and 40 per 1000 live births in 2001 (UNICEF, 2003) (**Table 1**). Life expectancy increased from 71.9 years in 1991 to 74.4 years in 2000-2005 (UN, 2001). Maternal mortality rate in 1995 was 140 per 100 000 live births (UNAIDS/WHO, 2002).

According to UNICEF, 100% of routine EPI (expanded programme on immunization) vaccines were financed by the government in 2001. The percentage of children under one year, immunized against TB, DPT3, polio3, measles and HepB3 in 2001 were 95%, 89%, 89%, 96% and 75%, respectively (UNICEF, 2003).

Asphyxia accounted for 36% of deaths in 1996 and was the most common cause of death during the peri-natal period, followed by low birth weight (28%) and infectious diseases (24%), with 12% of deaths due to respiratory diseases. Respiratory and intestinal diseases were responsible for 63% and 32% of admissions in hospitals, among children under one year, respectively. The leading cause of death among children under four years old was road traffic accidents (24%), followed by infectious diseases (22%); 65% accounting for respiratory diseases. Among older children (5 to 9 years) respiratory diseases were the leading cause of morbidity for both males and females (21%). Respiratory infections, cerebro-vascular diseases and neoplasms were the leading causes of death for adults 50 years and older (Department of Statistics, 1997). According to UNICEF, 96% of women received antenatal care from 1995 to 2001 (UNICEF, 2003).

Communicable diseases such as malaria, gastro-enteritis, gonococcal infection, syphilis and tuberculosis, are still major contributors to morbidity. However, chronic diseases were the leading causes of death in Belize in 1996, with heart disease being the main cause, followed by accidents, pneumonia, cardiovascular diseases and cancers. Gastro-enteritis and Diabetes Mellitus are among the ten leading causes for hospitalisation (Department of Statistics, 1997). The incidence of AIDS is high. The estimated number of adults and children living with HIV/AIDS at the end of 2001 was 2200 adults (15-49 years) with 1000 being women. One hundred and eighty were children under 15 years (UNAIDS/WHO, 2002).

4. Agricultural production, land use and food security

Agriculture accounted for 11% of GDP in 2000 (EIU, 2003). The agricultural population represented 31% of the total population in 2000 (FAOSTAT, 2003) (**Table 1**). There has been an increased production of citrus fruits (213 414 t/year), bananas (43 030 t/year) and farmed shrimp (value unknown). The production of sugar cane (1 150 656 t/year) has decreased due to low productivity and low world prices (FAOSTAT, 2003). Also, Hurricane Keith in October 2000 caused damage to sugar crops and to the marine environment. Hurricane Iris, which hit in 2001, caused further damage to the banana industry (EIU, 2003). Moreover, since the export earning of these products are decreasing, efforts to diversify into non-traditional crops such as papaya, soybean, cashew and chilli peppers are being made (EIU, 2003).

The food production index was 154 in the period 1996-98 and increased to 159 in 1998-2000 from a set base of 100 in the period 1989-91 (FAOSTAT, 2003) (**Table 1**).

Belize has a low rate of land cultivation but it is rising due to the imposition of taxes on land not used for agricultural purposes (EIU, 2003). In 2000, agricultural land consisted of 0.615 ha per person of which 0.394 ha per person was arable and permanent cropland (FAOSTAT, 2003) (**Table 1**). Large commercial farmers cultivated 85% of the agricultural land for export. They are responsible for the major part of the food supply for the internal market (Palacio et al., 1997).

Food insecurity is largely determined by household income and food prices. As far as food prices are concerned, the annual national inflation rates averaged 3% over the period 1991–1995. Food prices in relation to minimum wage are not monitored in Belize. The large numbers of households living in poverty are prone to food insecurity, especially indigent households. On this basis, several population groups were identified as being particularly at risk of food insecurity, i.e. rural residents of Toledo and Cayo districts, single income and/or women headed households in urban centres, the Maya people, pregnant women, as well as Garifuna women in Stann Creek (Palacio et al., 1997).

5. Economy

Reduced agricultural and industrial production contributed to a decrease in GDP in 1998. However, the results of the government's expansion policies have contributed to an increase of 11% and 5% in 2000 and 2001, respectively. One policy encourages investment in non-traditional areas of production and the export of bananas, citrus, and marine products, as well as sugar (EIU, 2003).

Compared to other Caribbean countries the overall growth in Belize's economy since 1980 has been significant, with a GNP per capita in 2001 of US\$2730 (EIU, 2003). The country started a process of structural change in 1991 in order to move towards a more open competitive economy. In 1999, the Value Added Tax (VAT), which was introduced in 1996, was replaced by a sales tax (8%). Basic food, medicines, public transport, electricity and water services are exempt from the tax, along with small businesses. This change was implemented to stimulate business activity (EIU, 2003).

II. THE FOOD AND NUTRITION SITUATION

1. Trends in energy requirements and energy supplies

Per caput energy requirements¹ increased from 1965 to 2000 and are expected to increase further by 2030. In the year 2000, the per capita energy requirement in rural areas was 2187 kcal/day and in urban areas it was 2086 kcal/day. Trends in food requirements reflect the changes in population structure and in particular the age, sex and urban-rural distribution. The percentage of people living in urban centres has increased slightly between 1965 and 2000 and the total population more than doubled in the same time period. The per caput dietary energy supply (DES) has followed population growth and the trends in energy requirements, increasing from 2236 kcal/day in 1965 to 2886 kcal/day in 2000, exceeding per caput energy requirements (FAOSTAT, 2003) (**Table 2**).

Table 2: Total population, urbanisation, energy requirements and dietary energy supplies (DES) per person and per day in 1965, 2000 and 2030

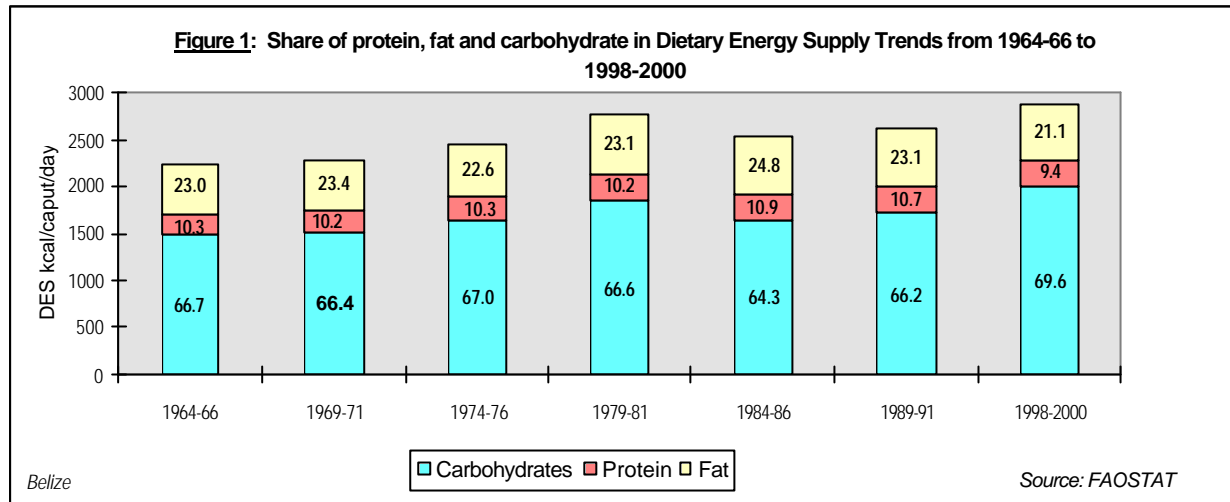
Year	1965	2000	2030
Total population (<i>thousands</i>)	107	241	396
Percentage urban (%)	52.5	54.2	59.7
Per caput energy requirements (<i>kcal/day</i>)	2090	2135	2185
Per caput DES (<i>kcal/day</i>)*	2236	2886	—

Note: The DES is expressed for an average-person of the country.

Source: FAOSTAT, 2003

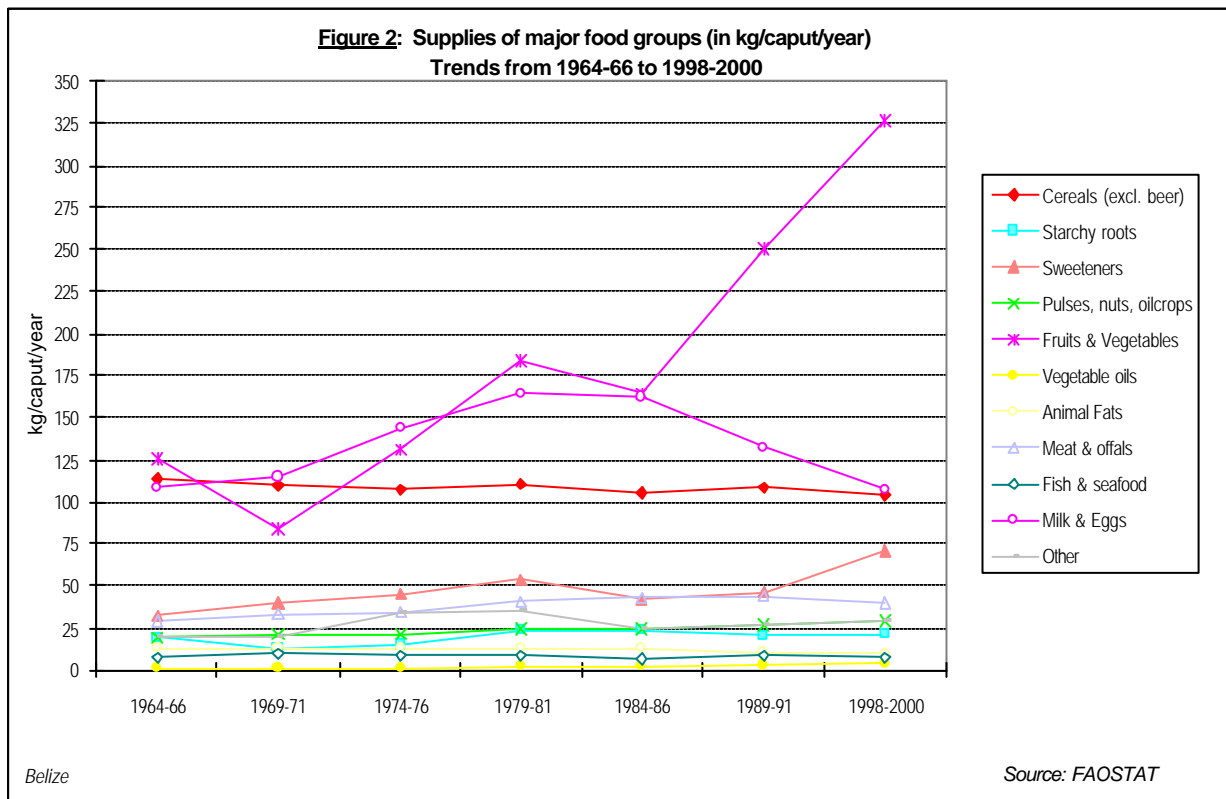
The share of fat in total DES has decreased slightly from 23% to 21% in the period 1964-2000 while the percentage of carbohydrates increased slightly from 67% to 70% during the same period (**Figure 1**). The share of protein in total DES has decreased slightly from 10% to 9% over the 36 year period (FAOSTAT, 2003).

¹ Per caput energy requirements are calculated on the basis of the sex and age distribution of the population, using references for body size, physical activity levels (higher among the rural population, lower among the urban), energy needs for pregnancy and lactation. The method of calculation is derived from James & Schofield (1990). The requirements are expressed per average person of the country. Thus requirements are low in young and/or urbanized populations and higher in older or rural populations.

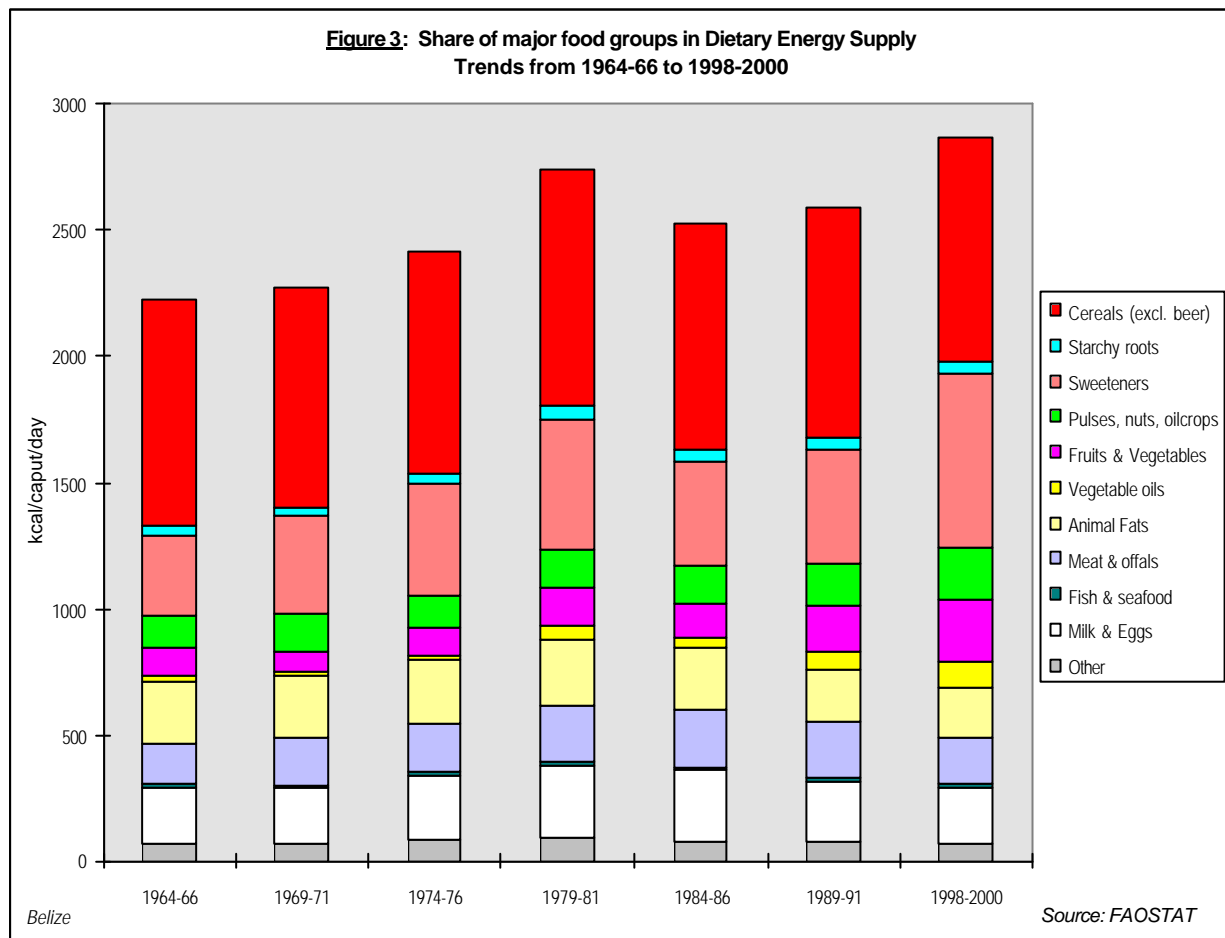


2. Trends in food supplies

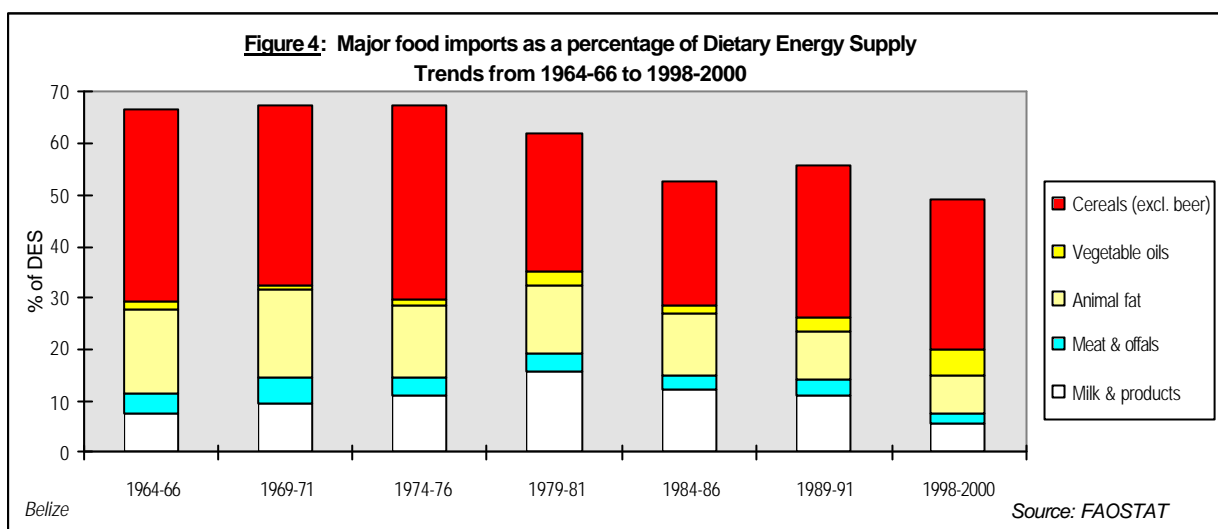
Quantity: During the 1964–2000 time period, the supply of fruit and vegetables, showed a sharp increase from 1969–71 to 1979–81 from 84 kg/caput/year to 183 kg/caput/year and again from 1984–1986 to 1998–2000 from 165 kg/caput/year to 326 kg/caput/year. This increase can be attributed to the government expansion policies mentioned earlier. **Figure 2** also shows that the supply of sweeteners increased from 1989–91 to 1998–2000 from 47 kg/caput/year to 71 kg/caput/year despite the decline in the production of sugar cane since 1997. This increase could be attributed to the low cost and therefore increased consumption. The supply of the milk and eggs food group remained the same when comparing 1964–66 and 1998–2000, however, it gradually increased until 1979–81 and then gradually decreased again. The supply of all other food groups remained relatively constant for the time period.



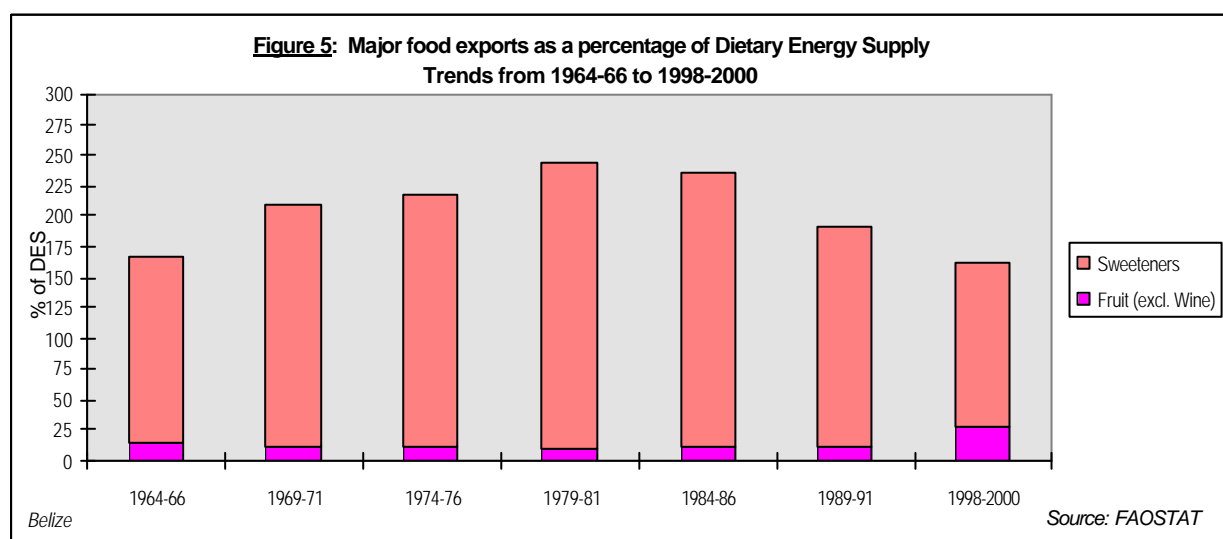
Energy: **Figure 3** shows that cereals have been the major share of total DES over the 36 year time period. The cereals group, consists mostly of wheat, which is not produced in Belize, followed by rice (one third is imported). Belize produces most of the maize consumed. The second largest group in terms of contribution to total DES is sweeteners, which increased from 14 % to 24 % of the total DES, for the same time period. In addition, the share of total DES for fruits and vegetables grew from 5 % to 9 %. This can be attributed to the economic policy to increase the production of bananas and citrus fruits (oranges and grapefruit), along with other non-traditional crops, in order to increase total domestic export earnings (EIU, 2003). Vegetable oil, as a share of total DES, also increased, while animal fat decreased.



Major food imports and exports: Belize has a high degree of dependence on imported goods that supply the population with 60% of its food. Since the 90s, attempts to decrease imports in order to decrease the deficit have only had moderate success because farmers are reluctant to change and because of poor marketing strategies. Belize imports most of its cereal (21 849 t/year in 1998–2000), although as a proportion of total imports it decreased from 22% in 1964-66 to 9% in 1998-2000. Imports of animal fat as a percentage of total DES decreased steadily, while vegetable oil imports increased after 1989–91. Meat and offals imports decreased slightly. The import of milk and milk products peaked in 1979-81 (16% of total DES) but decreased to 6% of total DES in 1998-2000 (**Figure 4**) (FAOSTAT, 2003).



Food export as a percentage of total DES has varied over the period 1964–2000 (**Figure 5**), with sweeteners being the primary export food product. The export of sweeteners has increased from 37 148 t/year in 1964–1966 to 99 343 t/year in 1998–2000. However, the decrease between 1984-86 and 1989-91 can be attributed to the decreased productivity and low world prices for these foods (EIU, 2003). Fruit, mainly citrus (oranges and grapefruit) and bananas, showed an increase from 37 328 t/year in 1964-66 to 196 260 t/year in 1998-2000. Since 2000, citrus and banana export earnings have exceeded sugar crop export earnings, as a result of an economic policy to diversify fruit export-orientated production. Although, marine products (lobster and shrimp) accounted for less than 1 percent of DES in 1998–2000 they are still an important export earning product in Belize (EIU, 2003).



3. Food consumption

Data were collected in 1967–68, based on 24-hour recalls from 141 households of agricultural families, mainly Mayans. Average daily intake per capita was 2960 kcal, for energy, and 84 g for protein. However, the age and sex composition of the sample was not stated. Wheat contributed 33% of total DES and 33% of protein. Corn supplied 22% of total DES and 19% of protein. On

average, fish or meat was eaten daily, and vegetable intake was low. Vitamin A and C intakes were also reported to be low, which could be a result of low fruit consumption (Grant, 1974).

A 1975 study, carried out by the Caribbean Food and Nutrition Institute (CFNI) found that individuals from all districts were at risk of Vitamin A and C deficiency, while in Toledo and Stann Creek intake of Calcium, Iron, Thiamine, Riboflavin and Niacin were also low. Wheat flour was the main provider of energy, followed by rice. Cereals which are not produced in the country and must be imported account for half of the DES. However, the National Household Survey carried out by CFNI should be interpreted carefully, since the survey was limited to less than 20 households per district (CFNI, 1975).

Government figures indicated that the average household spent at least 29% of its budget on imported food during the 1980s. Urban and upper-income groups averaged higher percentages. Food consumption from imported foods include items such as dairy products, canned meats, and vegetables, but also staples such as rice and red kidney beans, which are also produced locally. Diet varied by culture as well as class, with Maya and rural Mestizos consuming large amounts of corn, and Garifunas consuming large quantities of fish. The national dish, however, consisted of rice and beans.

Lifestyle changes in Belize have had a significant impact on how and what people eat. Fast foods and the ready availability of prepared foods have compounded these problems. Currently a Gender Analysis of Diet, Exercise and Lifestyles Practices in Belize are being conducted in order to establish guidelines for the development of health promotion strategies to encourage healthy lifestyle practices. Also, a Nutrition Surveillance System is being developed to improve data collection for nutrition information at the local level (PAHO/WHO, 2003).

4. Infant feeding practices

Food patterns in the weaning period vary among the different ethnic groups. The Mayans breast-feed longer, and their infants typically receive tortillas as their first solid food. Garifuna infants were first offered porridge, made from cassava starch. Some Mayans, Mestizo and Creole omitted the semi-solid step in weaning. The most common first solid food was mashed potato. Bottle-feeding also included cereal gruels, custard or juice. Complementary food was usually introduced between 3 to 6 months (Foster, 1982).

Common weaning foods are rice, white corn tortilla, beans and beef soup. Diets were deficient in Vitamins A and C, followed by deficiencies in riboflavin, iron and calcium. The main iron sources were from vegetable origin and therefore had a low bioavailability (Government of Belize, 1997).

According to UNICEF, the percentage of all infants aged 0-4 months who were exclusively breast-fed in 1993 was only 24% (UNICEF, 1999). A 1997 study on breast-feeding and infant feeding, found that breast-feeding is more practiced in the rural areas than in the urban areas, and that “mixed” feeding (breast-feeding combined with bottle-feeding) is practiced among infants under six months (PAHO/WHO, 1997).

Currently none of the eight hospitals or maternities have officially been designated by UNICEF as “Baby Friendly” (having fulfilled 10 criteria supportive of breast-feeding). The length of maternity leave is 12 weeks and social security pays 80% of wage as cash benefit for maternity leave (ILO, 1998). In 2002-2003, the infant and young child feeding program was initiated which includes the promotion of breast-feeding, training of breast-feeding, baby-friendly hospital initiative and the development of national guidelines for young child feeding (PAHO/WHO, 2001).

Women's share of the adult labour force (15 years and above) is 23% (UNDP, 1998).

5. Anthropometric data

In 1992, the Assessment of the Food Nutrition and Health Situation of Belize study was carried out on 8516 children under 5 years. It found that the national prevalence of underweight among male and female children was 6%. In Toledo, the surveys found a 16% prevalence of underweight among male and female pre-school children in 1992 (MOH, 2002; PAHO/WHO, 2001) (**Table 5**).

In 1996, the National Height Census was carried out on school children, both males and females from 6 to 9 years, and found that the prevalence of stunting at the national level was 15%, (18% for males and 13% for females). The national prevalence of stunting is considered to be low according to WHO international classification (WHO, 1996). However; the prevalence is much higher in rural areas (23%) than in urban areas (7%). It is important to note that the Toledo district had a stunting prevalence of 39%, while the lowest prevalence was in the Belize District (4%) (MOE, 1996) (**Table 5** and **Map 1**).

In 2002-2003 special efforts are being made to facilitate the flow of nutrition information from local and national levels, which will provide policy makers with nutrition information necessary for programmatic action via the Nutrition Surveillance System (PAHO/WHO, 2001).

Table 5: Anthropometric data on children

Source/ Year of survey	Location	Sample			Percentage of malnutrition							
		Size Numbe	Sex	Age Years	Underweight % Weight/Age < -3SD < -2SD*		Stunting % Height/Age < -3SD < -2SD*		Wasting % Weight/Height < -3SD < -2SD*		Overweight % Weight/Height > +2SD	
MOH, 1992	National	8516	M/F		1.3	6.2	NA	NA	NA	NA	NA	
1992	<u>District:</u>											
	Corazal	1815	M/F	0.4-9.9	1.8	6.9	NA	NA	NA	NA	NA	
	Orange Walk	1172	M/F	0.4-9.9	0.6	6.1	NA	NA	NA	NA	NA	
	Belize	2454	M/F	0.4-9.9	1.1	3.9	NA	NA	NA	NA	NA	
	Cayo	2384	M/F	0.4-9.9	1.4	6.5	NA	NA	NA	NA	NA	
	Toledo	369	M/F	0.4-9.9	2.2	15.5	NA	NA	NA	NA	NA	
	Stann Creek	619	M/F	0.4-9.9	1.8	7.6	NA	NA	NA	NA	NA	
MOE, 1996	National**	22436	M/F	6.0-9.0	NA	NA	NA	15.4	NA	NA	NA	
NHCSC, 1996	Urban	NA	M/F	6.0-9.0	NA	NA	NA	7.0	NA	NA	NA	
	Rural	NA	M/F	6.0-9.0	NA	NA	NA	23.0	NA	NA	NA	
	National**	11370	M	6.0-9.0	NA	NA	NA	18.2	NA	NA	NA	
	National**	11056	F	6.0-9.0	NA	NA	NA	12.5	NA	NA	NA	
	<u>District:</u>											
	Corazal	NA	M/F	6.0-9.0	NA	NA	NA	15.8	NA	NA	NA	
	Orange Walk	NA	M/F	6.0-9.0	NA	NA	NA	16.8	NA	NA	NA	
	Belize	NA	M/F	6.0-9.0	NA	NA	NA	4.1	NA	NA	NA	
	Cayo	NA	M/F	6.0-9.0	NA	NA	NA	17.8	NA	NA	NA	
	Toledo	NA	M/F	6.0-9.0	NA	NA	NA	39.0	NA	NA	NA	
	Stann Creek	NA	M/F	6.0-9.0	NA	NA	NA	13.5	NA	NA	NA	

Source for 1992 data: available at <http://www.who.int/nutgrowthdb/>

Notes: NA Data not available. Each index is expressed in terms of the number of standard deviations (SD) units from the median of the NCHS/CDC/WHO international reference population.

* Includes children who are below -3 SD.

** National Census in schools.

6. Micronutrient deficiencies

Iodine Deficiency Disorders

A National Iodine Survey was carried out in 1994-95 among male and female school children (7 to 14 years), which assessed the levels of urinary iodine, using a cut-off point of 5 µg/dL. The results reported in **Table 6** indicate a national prevalence of 6%, with a slight difference between rural (7%) and urban (5%) areas. Although the cut-off point used was not the one internationally recommended (10 µg/dL) (WHO, 1993), the prevalence of IDD appears to be low. Interestingly, over-consumption of iodine was of greater concern, as stated in the final report of the National Iodine Survey. In 1994, one hundred percent of Belize's salt was imported and 98% of salt consumed was iodised (MOH/MOE, 1995) (**Table 6**).

Vitamin A deficiency

Vitamin A deficiency (VAD) is of concern in Belize as indicated by the results of a national survey (1989-90) conducted among male and female children aged 2 to 8 years. In this study a fasting serum retinol level was measured, and a cut-off point of 0.87 µmol/L. A serum retinol concentration of < 20µg/dL (0.70 µmol/L) was used to determine the prevalence of VAD (Makdani et al, 1996). Still, a national prevalence of 24% indicates a public health problem (WHO, 1995). Among children, the highest prevalence of VAD was found in the district of Toledo (28%) and the lowest in Cayo and Corozal (20%) (**Table 6**).

In 1999, a Vitamin A supplementation programme was initiated for children under 5 years (PAHO/WHO, 2001).

Iron Deficiency Anaemia

In 1984 and 1994-95, the IDA (Iron Deficiency Anaemia) status of 1379 and 6402 pregnant women attending health clinics, was assessed using a haemoglobin cut-off point of less than 11 g/dL. Among pregnant women, the national prevalence of anaemia was 43% in 1984 and it rose to 52% in the 1994-95 (Farnum, 1984; McDonald, 1996). According to WHO/UNICEF when a prevalence of anaemia among pregnant women is greater than 30% supplementation programmes for communities are recommended. At the district level, the highest prevalence in 1984 was found in Stann Creek (78 %), followed by Toledo (67 %) (**Map 2**). However, this data presents limitations since it does not include women who are unable to access clinics in Toledo, Cayo and Stann Creek (due to far distances and lack of transportation). Moreover, the study does not include women in the Orange Walk and Corozal District, who are crossing the border over to Mexico for their antenatal care (Farnum, 1984) (**Table 6**).

In 1989-90 a national survey was carried out on 503 male and female children between the ages of 2 and 8 years, using a haemoglobin cut-off point of less than 11 g/dL. The prevalence of anaemia among children was 19% (Makdani et al, 1996) (**Table 6**). In 1999, an iron supplementation programme was initiated for children under 5 years (PAHO/WHO, 2001).

Table 6: Surveys on micronutrient deficiencies

Source/ Year of survey	Deficiency	Location	Sample			Percentage
			Size Number	Sex	Age Years	
	Iodine					
MOH/ MOE, 1995	Urinary Iodine	National	1656	M/F	7.0-14.0	5.5
1994-1995	< 5µg/dL	Rural	696	M/F	7.0-14.0	6.5
		Urban	960	M/F	7.0-14.0	4.8
	Vitamin A					
Makdani et al, 1996	< 0.87 µmol/L	National	503	M/F	2.0-8.0	24.0
1989-90		District:				
		Corazal	NA	M/F	2.0-8.0	20
		Orange Walk	NA	M/F	2.0-8.0	25
		Belize	NA	M/F	2.0-8.0	24
		Cayo	NA	M/F	2.0-8.0	20
		Toledo	NA	M/F	2.0-8.0	28
		Stann Creek	NA	M/F	2.0-8.0	23
	Iron					
		Antenatal clinics:				
McDonald, 1996	Hb < 11 g/dL	Total	6402	F	Pregnant	51.7
1994-95						
Makdani et al, 1996	Hb < 11 g/dL	National	503	M/F	2.0-8.0	19.0
1989-90						
		Antenatal clinics:				
Farnum, 1984	Hb < 11 g/dL	Total	1379	F	Pregnant	42.5
1984		Belize	296	F	Pregnant	58.3
		Corazal	296	F	Pregnant	25.6
		Orange Walk	308	F	Pregnant	34.0
		Cayo	319	F	Pregnant	39.8
		Stann Creek	106	F	Pregnant	78.3
		Toledo	81	F	Pregnant	67

Notes: NA Data not available.

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References of data presented in Table 1, unless otherwise stated:

<i>Source:</i>	<i>Indicator:</i>
FAOSTAT. 2002	<i>A.1 and 2, B, C.10 and 11, E.1 to 3, F, G</i>
UN. 1999/2000 rev.	<i>C.1 to 9, D.5</i>
World Bank. 2001.	<i>D.1</i>
UNDP. 1999.	<i>D.2</i>
KAIRA. 1996.	<i>D.3 and 4</i>
UNICEF. 2002.	<i>D.6</i>
FAO/WFS. 2002.	<i>H</i>

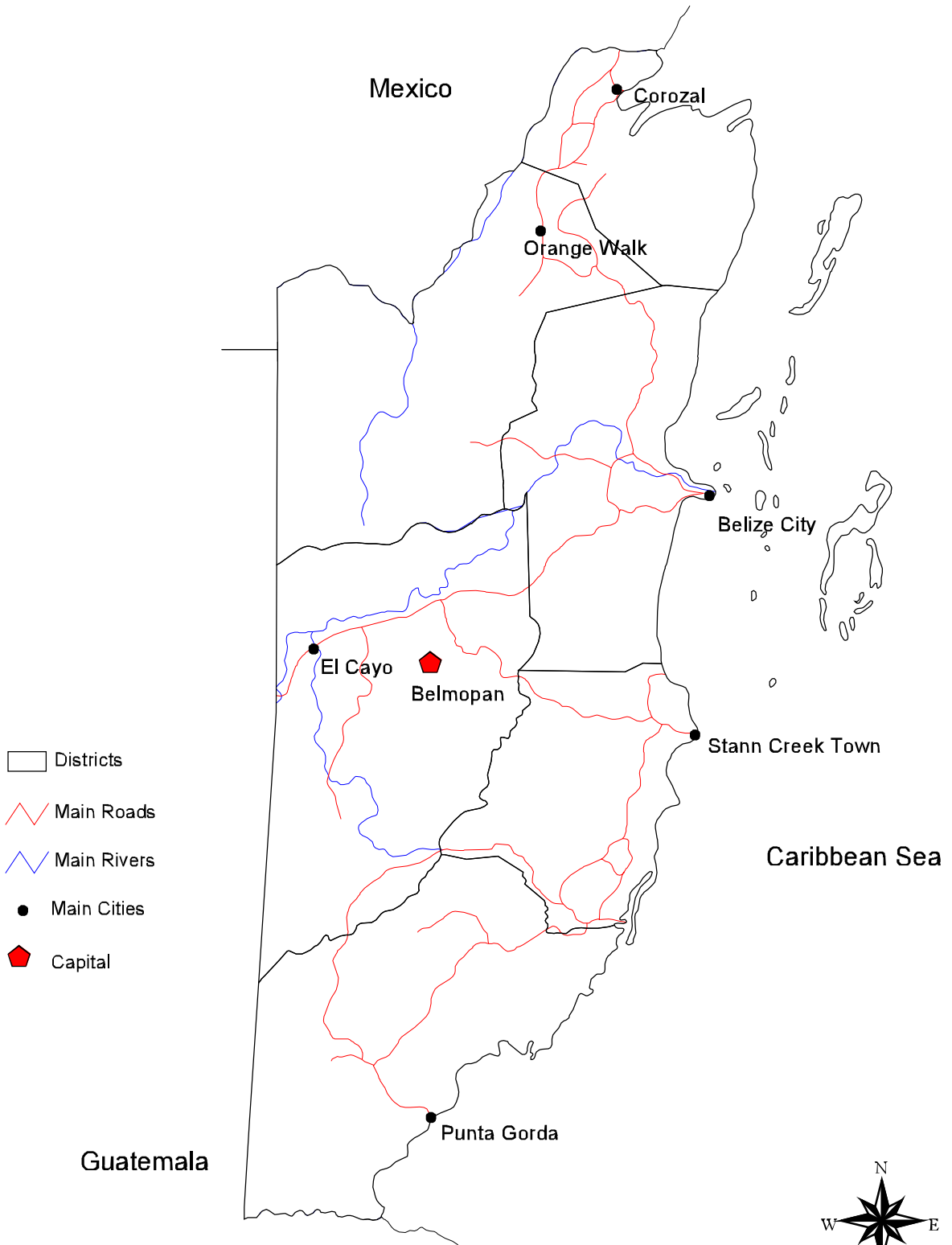
**NCP of BELIZE
MAPS**

General Map

Map 1: Prevalence of stunting in school children (6 to 9 years) by district (1996).

Map 2: Prevalence of anaemia among pregnant women (*) by district (1985).

General Map of Belize



Scale 1:1 500 000 (approx.)
Geographic Projection (Lat/Long)

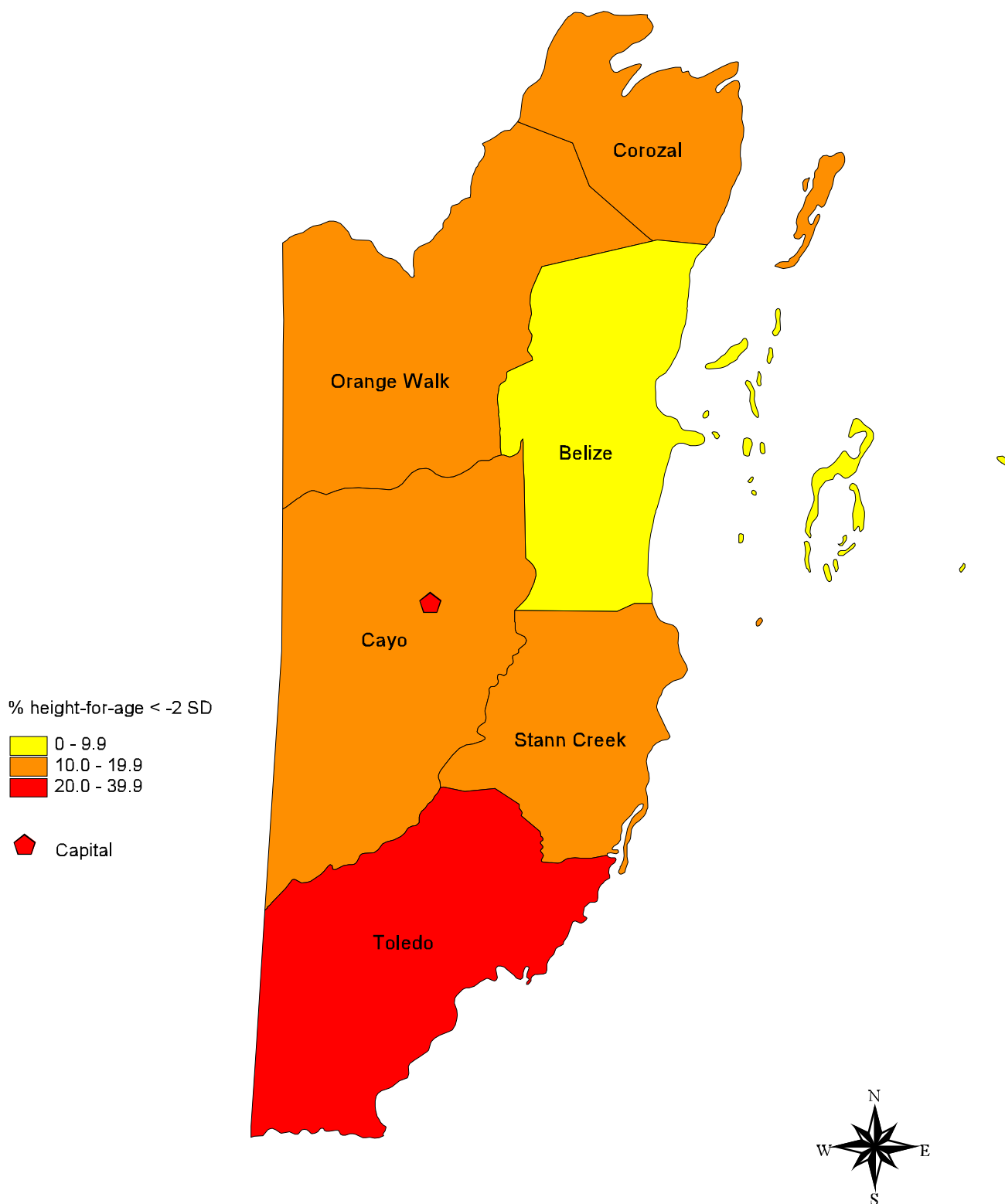
FAO-GIS (SDRN)/ESNA, July 1998

Belize

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Map 1: Prevalence of stunting in school children (6 to 9 years of age) by district

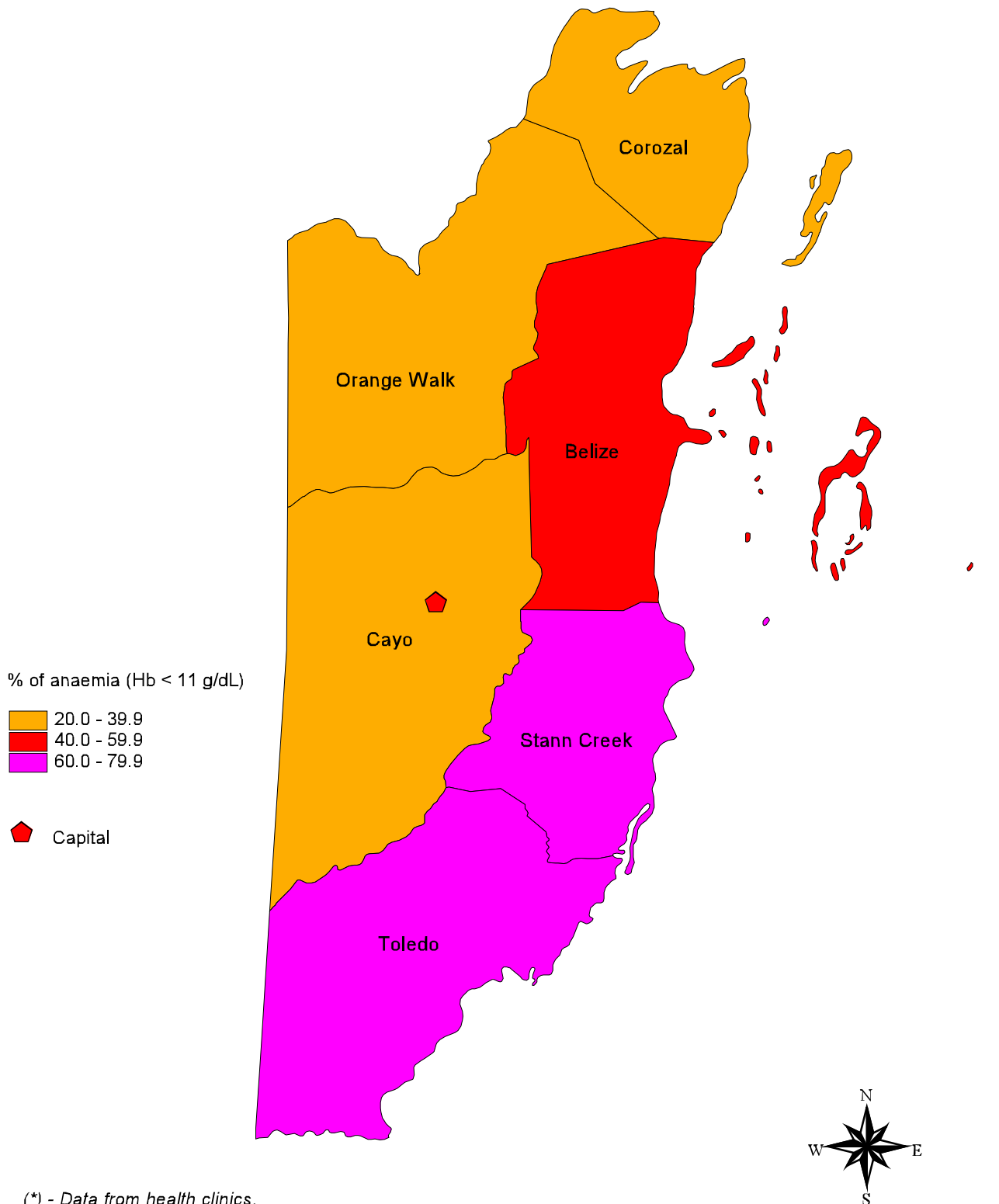
Source: MOE, 1996



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Map 2: Prevalence of anaemia among pregnant women (*) by district

Source: Farnum , 1984



(*) - Data from health clinics.

Scale 1:1 500 000 (approx.)
Geographic Projection (Lat/Long)

FAO-GIS (SDRN)/ESNA, July 1998

Belize

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