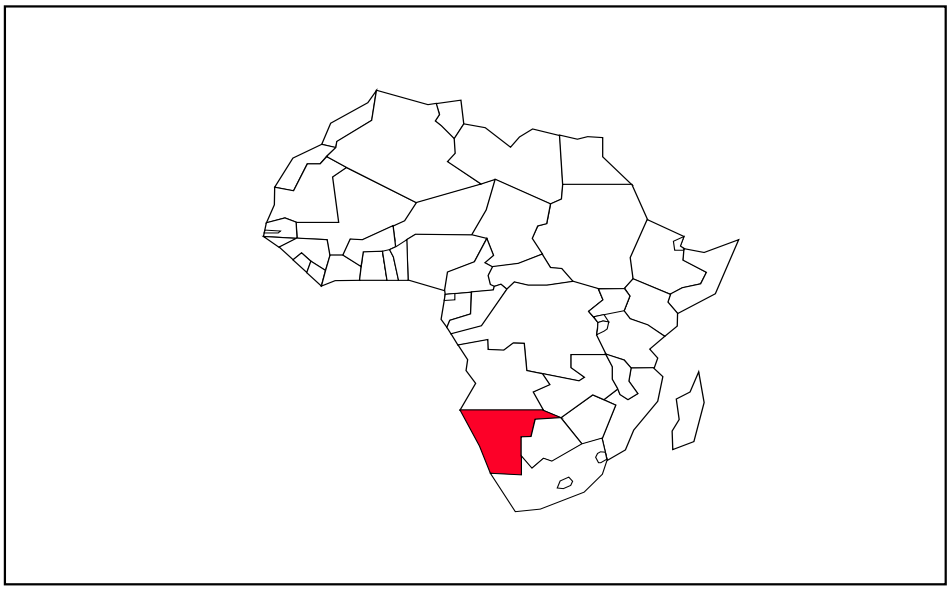
FAO - NUTRITION COUNTRY PROFILES

NAMIBIA



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.

The data used to prepare the maps are available in Excel upon request at:

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

SUMMARY

The Gross National Product (GNP) in Namibia accounted for 2,210 US$ in 1997, well above average GNP in Sub-Saharan-Africa (480) and Lower-middle income countries (1,710). However, Namibia's income distribution is one of the most unequal in the world.

In 1996 AIDS overtook tuberculosis as the main killer disease. There were 1,539 registered deaths from AIDS in 1998, compared with 847 from TB and 723 from malaria, which is endemic in the north. The epidemic has dramatically reduced averaged life expectancy from 57 years in 1990 to 50 in 1998 and is expected to decrease to 46.5 in 2000.The Infant Mortality Rate was 63 per 1000 life births in 1995. In 1995-98, 85% of one year old infants were immunised for TB, 74% for DPT, 74% for Polio and 63% for measles. The maternal mortality rate reached 230 per 100,000 life births. Data collected in 1991 revealed that only 43% of the rural population could access safe water supply while less than 20% had toilets.

*There is widespread undernutrition among children less than five years of age throughout Namibia. In the 1992 National Demographic and Health Survey, 28% of children were found to be stunted, almost 9% of the children in the survey were wasted and 26% of the children nation-wide were underweigh (**Table 3a**)(**Map 2**, **Map 3**, **Map 4**). Children in the north-eastern region experienced the highest rates of underweight and stunting, while wasting was most prevalent in the Central region.*

*According to the DHS survey, the mean BMI in non-pregnant women was 22.5 and 14% had a BMI below 18.5, indicating Chronic Energy Deficiency (**Table 3b**). Women in the Central and South regions were much better nourished than women in the two northern regions.*

*Around one third of the Namibian population between 6 and 21 years old suffered from iodine deficiency in 1990 (**Table 4**), while 22% of 1,831 school-aged children were found to be iodine deficient in 1992 (**Table 4**). The prevalence ranged from 1.8% in Gobabis in the South Central region to 61.4% in Choi, which is situated in Caprivi. Children below 5 years of age were most at risk. In the north-western and north-eastern areas, the prevalence of goitre in children below 5 years reached 65% and 27%, respectively (**Table 4**).*

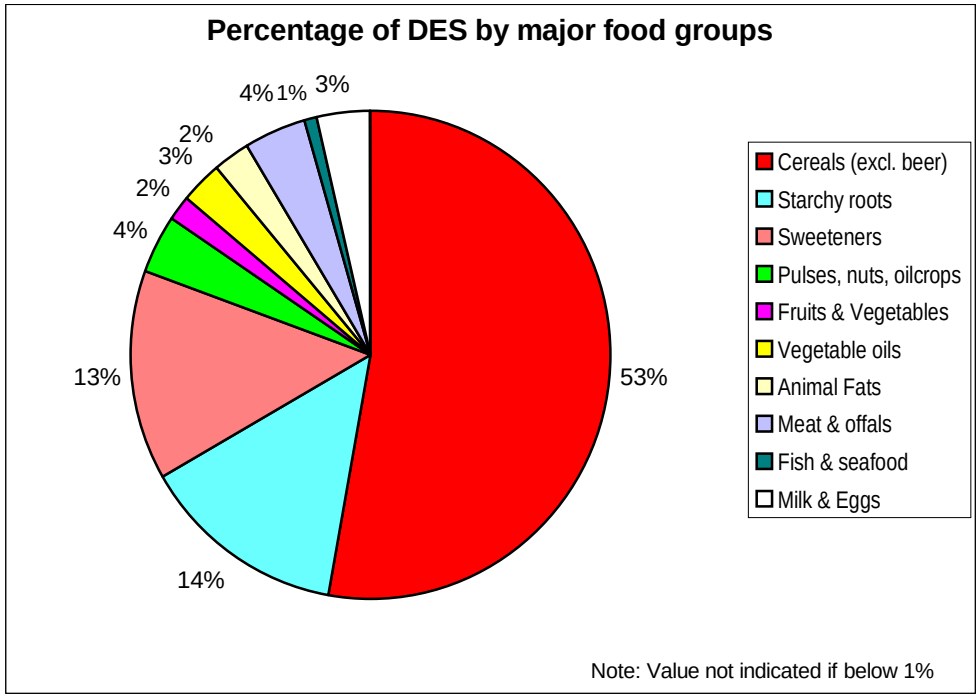
*The report of the Health Information System, 1993, report the prevalence of xerophthalmia to be highest in the north-west regions of Namibia, both in children under (73%) and in adults (65%) (**Map 6**) (**Table 4**). Most cases of anaemia have also been reported in the north-western regions, where 55% of children under five years and 59% among five years and older seem to suffer from anaemia (**Map 7**) (**Table 4**).*

TABLE 1: GENERAL STATISTICS OF NAMIBIA

Last updated: 24-09-00

Indicator (§)	Year	Unit	
A. Land in use for agriculture			
1. Agricultural land	1995	ha per person	25,113
2. Arable and permanent crop land	1995	ha per person	0.531
B. Livestock			
1. Cattle	1996-98	thousands	2081
2. Sheep & goats	1996-98	thousands	4009
3. Pigs	1996-98	thousands	17
4. Chickens	1996-98	millions	2
C. Population			
1. Total population	1998	thousands	1659
2. 0-5 years	1998	% of total pop.	18.6
3. 6-17 years	1998	% of total pop.	29.7
4. 18-59 years	1998	% of total pop.	45.9
5. >= 60 years	1998	% of total pop.	5.9
6. Rural population	1998	% of total pop.	61.1
7. Annual population growth rate, Total	1995-2000	% of total pop.	2.3
8. Annual population growth rate, Rural	1995-2000	% of rural pop.	0.7
9. Projected total population in 2030	2030	thousands	2495
10. Agricultural population	1995	% of total pop.	52.8
11. Population density	1995	pop. per sq Km	1.9
D. Level of Development			
1. GNP per capita, Atlas Method	1997	current US$	2,110
2. Human Development Index rating (new)	1997	min[0] - max[1]	0.638
3. Incidence of poverty, Total	1991	% of population	39.7
4. Incidence of poverty, Rural	1988	% of population	60
5. Life expectancy at birth (both sexes)	1998	years	50.1
6. Under-five mortality rate	1998	per 1,000 live births	74
E. Food Trade			
1. Food Imports (US $)	1996-98	% of total imports	5.6
2. Food Exports (US $)	1996-98	% of total exports	12.0
3. Cereal Food Aid (100 MT)	1996-98	% of cereals imports	0.2
F. Indices of Food Production			
1. Food Production Index	1996-98	1989-91=100	99.7
2. Food Production Index Per Capita	1996-98	1989-91=100	82.9

Indicator (§)	Year	Unit	
G. Average Food Supply			
1. **Dietary Energy Supply (DES)**	1996-98	Kcal/caput/day	2125



% Energy from:			
2. Protein	1996-98	% of total energy	11.1
3. Fat	1996-98	% of total energy	14.2
4. **Proteins**	1996-98	g/caput/day	58
5. Vegetable products	1996-98	% of total proteins	72.4
6. Animal products	1996-98	% of total proteins	27.6
H. Food Inadequacy			
1. Total population "undernourished"	1995-97	millions	0.5
2. % population "undernourished"	1995-97	% of total pop.	30.0

... no data available § see References for data sources used

See Technical Notes for definitions used.

NAMIBIA

I. OVERVIEW

1. Geography

Namibia covers a land area of 824,269 square kilometres. The Pacific coast is situated on the western part of the country, while the country borders South Africa to the south and south east, Angola to the north and Zambia and Botswana to the north-east and east, respectively (**General map of Namibia**). Topographically is Namibia divided into three main regions. The first is the western coastal plain of the Namib desert, which occupies about 15% of the total land area. To the east of the Namib, altitude rises rapidly to the interior plateau, which covers more than half of the total land surface area and stretches across the country from the northern to the southern border. This is the most fertile area of the country and the most suitable for human settlement. The third area is the Kalathari semi-arid zone which covers most of the eastern part of the country.

Major urban areas besides the capital Windhoek include Ondangwa, Oshakati, Walvis Bay and Swakopmund. The country enjoys a subtropical climate. The average daily temperature in Windhoek in the hottest months, January and February, ranges from 17 to 19° C and in the coldest months, June and July, from 6 to 20° C. The country is characterised by low average rain falls, high mean temperatures and the absence of perennial rivers except along the northern and southern borders, making Namibia highly susceptible to droughts. Rainfall is at its lowest along the coastal Namib Desert (20mm) and in the southern interior, where it averages less than 100 mm per year. The Caprivi area in the northeast receives an average of 600mm.

2. Population

In 1998, the total population in Namibia was estimated to be more than 1.6 million inhabitants (**Table 1**). In 1995 the generally very low population density was about 1.9 persons/km^2 (**Table 1**). According to the 1991 census, 73% of the population live in rural areas, with some 60% residing in the seven northern regions (EIU, 1999, Ref.). The most densely inhabited region is Oshana, which includes the biggest northern towns, Ondangwa and Oshakati (CSO, 1995) (**Map 1**). The population in Namibia is growing at an annual rate of 2.3% and is estimated to reach 2.4 million inhabitants by the year 2030. The rapid population growth continues despite the high under five-mortality rate (74 % in 1998) and the low life expectancy at birth (50.1 years) (**Table 1**). Namibia is characterised by a young age structure (48% of the population are less than 18 years of age). 61% of the population resided in rural areas and 53% lived from agriculture in 1995 (**Table 1**).

English, which is the official language and is predominantly used in business, is the first language of only 1-2% of the population. Further languages spoken include German, Lozi, Afrikaans, Kwangali and Tswana and four principal indigenous languages, Oshivambo, Nama, Herero and Rukavango (EIU, 1999).

3. Level of development: poverty, education and health

While the incidence of poverty was 39.7% in 1991 in the total population, it was 60% in 1988 for people residing in rural areas (**Table 1**). Namibia's income distribution is one of the most unequal in the world. Based on the 1994 population estimate of 1.4 million, total expenditures of the richest 7000 people (0.5 % of the population) equal the total expenditures of the poorest 800,000 people (57 % of the population) (World Bank, 1999a).

According to international standards, households with a long-term food consumption of 60% or more of total household consumption are regarded as poor (NFSNAR, 1993). If the ratio is 80% or above, the poverty level is considered severe. According to this poverty indicator, the CSO survey found that 47% of Namibia's households are poor, of which 13% are severely poor (CSO, 1994).

At independence Namibia inherited massive inequalities in educational provision, as the South African administration had allocated disproportionate funding to urban schools educating mainly white children, while most state-run primary and secondary schools attended by black children were understaffed and had high drop-out rates (EIU, 1999). The adult literacy rate was estimated to be 78 in 1995, 80 for males and 77 for females (UNICEF, 2000). However, meanwhile a national education system has been successfully established and education receives the biggest share of government spending, peaking at 28% of the total in 1997/98 (EIU, 1999). Gross primary school enrolment ranged at 130 and 132 for male and female children in the period 1990-97, respectively. However, drop-out rates remain high, and the gross enrolment ratio reduce to 55 and 66 of male and female pupils in secondary-level education, respectively (UNICEF, 2000).

At independence, Namibia further had to deal with large racial inequalities in the delivery of health care services and a health structure that was based entirely on curative health services. The government's declared priorities are to increase access to clinical facilities in rural and deprived urban areas, and reduce vulnerability to poverty-related illness by expanding primary health care services (EIU, 1999). 1993 hospital bed availability averaged seven per 1,000 people, while the doctor:patient ratio, at 1:3,600, is one of the best in Africa (CSO, 1995). However, there are marked regional disparities, and there is no national insurance provision for Nambians, who are not covered by private medical schemes.

In 1996, AIDS overtook tuberculosis as the main killer disease. There were 1,539 registered deaths from AIDS in 1998, compared with 847 from TB and 723 from malaria, which is endemic in the north (EIU, 1999). The epidemic has dramatically reduced averaged life expectancy from 57 years in 1990 to 50 in 1998 and is expected to decrease to 46.5 in 2000 (UN, 1998). The Infant Mortality Rate was 63 per 1000 life births in 1995 (UN, 1998). In 1995-98, 85% of one year old infants were immunised for TB, 74% for DPT, 74% for Polio and 63% for measles (UNICEF, 2000). The maternal mortality rate reached 230 per 100,000 life births (UNICEF, 2000). Data collected in 1991 revealed that only 43% of the rural population could access safe water supply while less than 20% had toilets (National Food Security and Nutrition Council, 1995).

4. Agricultural production, land use and food security

Agriculture's share of Gross Domestic Product (GDP) at constant factor cost declined to under 7% in 1998 compared with 10% in the early 1990s, owing to the cumulative impact on output of three severe droughts, the latest during the 1997/98 growing season (EIU, 1999). Nonetheless, an estimated 49% of the labour force are involved in farming, and 70% of the

population are partly dependent on agriculture for their livelihood (EIU, 1999). There are extensive forests of teak and other hardwood in the north-east.

About 53% of the total land mass is classified as "arable" (**Table 1**), though even in areas of relatively high rainfall, agriculture production is precarious. In other regions, an erratic rainfall pattern, saline and sodic soils, with high absorptive capacity and poor fertility, leave the land generally unsuitable for cultivation. Namibia's low agricultural potential has been compounded by a high population growth rate in excess of 3% per annum and by administrative neglect in the so called "communal areas" by the former colonial government (EIU, 1999).

Cattle farming is predominantly in the northern parts of the country and beef production is the largest contributor to commercial farming income. In 1998 total landings of fish represented 600,000 tones (EIU, 1999) and earnings from the export of fish equalled 30% of total exports. Agriculture in Namibia can be divided into two distinct systems: the commercial farming sector, which is well-developed, capital intensive and oriented to export, and the traditional or communal farming sector, which is subsistence-based and labour intensive, with limited use of technology and external inputs. Their major agricultural activities are subsistence cropping (dryland farming with very little irrigation) combined with cattle, sheep and goat production. This distinction is linked to the formal communal land tenure system in Namibia, recommending the creation of black homelands and stressing the expropriation of usable or fertile land occupied by the indigenous people. Government is now in the process of revising its land policy to change the past inequalities in access to land.

Chronic food insecurity at the household level is related to both geographic and socio-economic factors, which may be reinforced by drought. Vulnerable groups have been defined to include the aged, the very young, disabled, single mothers, pregnant and lactating women, individuals totally dependent on subsistent farming, female headed households and families with more than three children per adult. Households whose main source of income is pensions (N$2,790 per year) and subsistence farming (N$ 3,820), are much worse off, as indicated by food expenditure than those who are engaged in business (cash cropping and non-farm) and wag employment (CSO, 1994).

5. Economy

The Gross National Product (GNP) in Namibia accounted for 2,210 US$ in 1997, well above average GNP in Sub-Saharan-Africa (480) and Lower-middle income countries (1,710) (World Bank, 1999) (**Table 1**). In 1998, GDP in Namibia reached US$ billions 3.1 and between 1988 and 1999 annual GDP growth averaged 3.4 % (World Bank, 1999a).

Productive capacity in the Namibian economy is concentrated in primary sector activities – mining, large-scale commercial livestock farming and fishing. However, services account for the major share of GDP. Mining and quarrying accounted for about 30 % of GDP in 1986-89 and decreased to 20% in 1990-93 (MoF, 1994). Namibia is the world's fifth largest producer of uranium and a primary source of gem-quality diamonds. Agriculture is dominated by cattle and sheep raising. The country has one of the richest potential fisheries in the world. Industrial development is still at an early stage and food processing for both the domestic and the export market is the main activity. One third of all manufacturing is engaged in the fish- and meat-processing, brewing and soft drinks, dairy and other food products. Policies adopted since independence have aimed at sustaining economic growth, diversifying the country's productive base, and attracting foreign investors.

II. THE FOOD AND NUTRITION SITUATION

1. Trends in energy requirements and energy supplies

Per caput energy requirements have decreased from 2145 kcal/day in 1965 to 2135 kcal/day in 1996 and are expected to be 2201 kcal/day in 2030 (**Table 2**). 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 from 16.8% to 37% between 1965 and 1996 and the total population also doubled in the same period. The per caput DES have not followed population growth and the trends in energy requirements, decreasing from 2189 kcal/day in 1965 to 2125 kcal/day in 1997 (**Table 2**). FAO Sixth World Food Survey estimated that the DES did not cover the requirements of 30% of the population in 1995-97 (FAO/WFS, 1996). Between 1996 and 2030, great efforts will be required to satisfy the population's energy requirements.

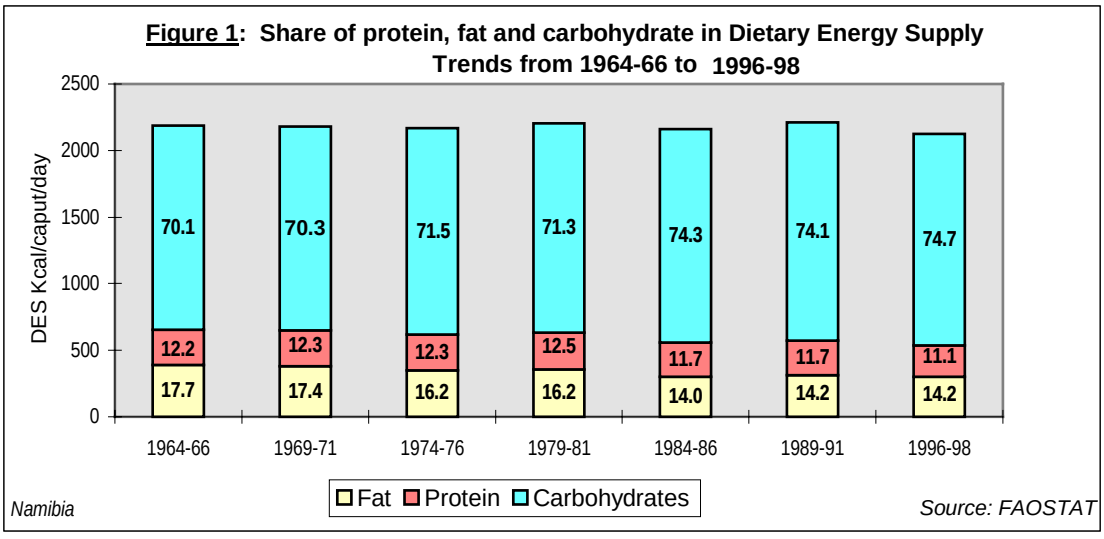
Table 2: Total population, urbanisation, energy requirements and dietary energy supplies (DES) per person and per day in 1965, 1997 and 2030

Year	1965	1997	2030
Total population *(thousands)*	701	1583	2495
Percentage urban *(%)*	16.8	37.0	61.6
Per caput energy requirements *(kcal/day)*	2145	2135	2201
Per caput DES *(kcal/day)* *	2189	2125	—

* Three-year average calculated for 1964-66 and 1996-98 (*Source*: FAOSTAT)

This decrease in DES from 1964 to 1998 was preceded by a peak of 2212.8 kcal/caput/day in 1989-91 (**Figure 1**). The share of fat in total DES has decreased from 17.7% to 14.2% over the period from 1964 to 1998 while the percentage of carbohydrates increased during the same period (**Figure 1**). The share of protein in total DES has decreased slightly from 12.2% in the period 1964-66 to 11.1% in the period 1996-98. The protein daily per caput intake decreased from 64.9 g in 1964 to 57.6 g in 1998 (**Figure 1**).

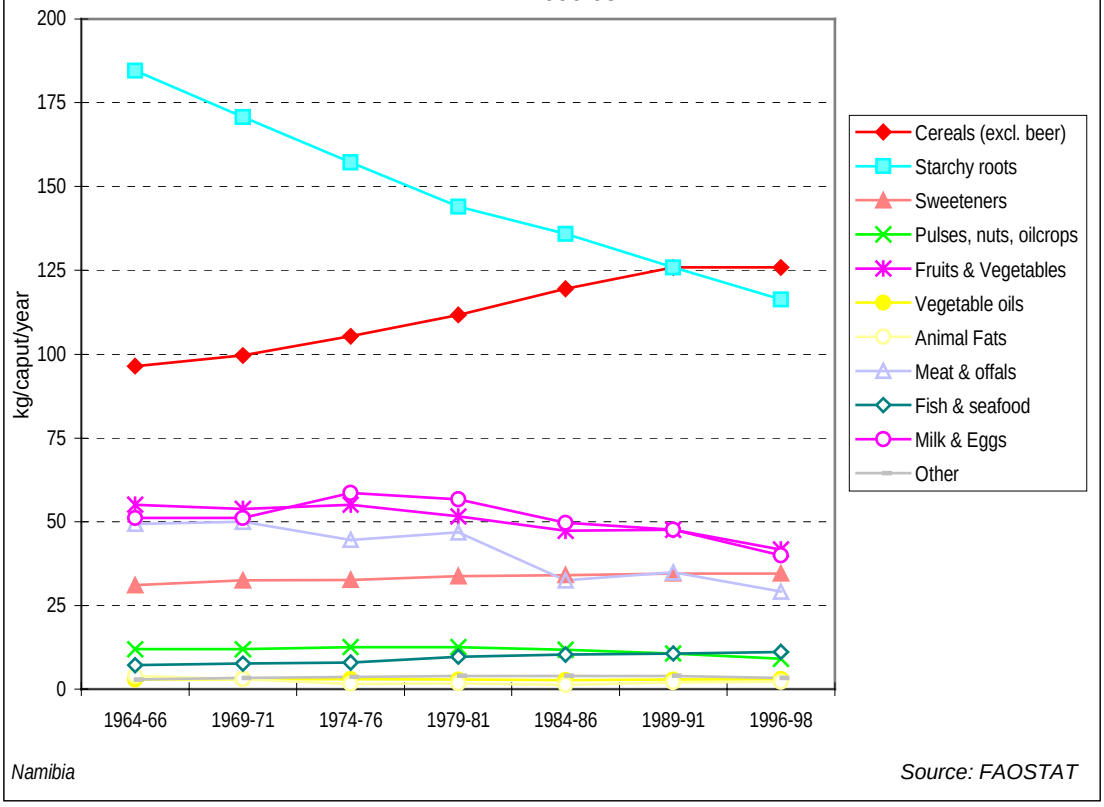
Figure 1: Share of protein, fat and carbohydrate in Dietary Energy Supply Trends from 1964-66 to 1996-98



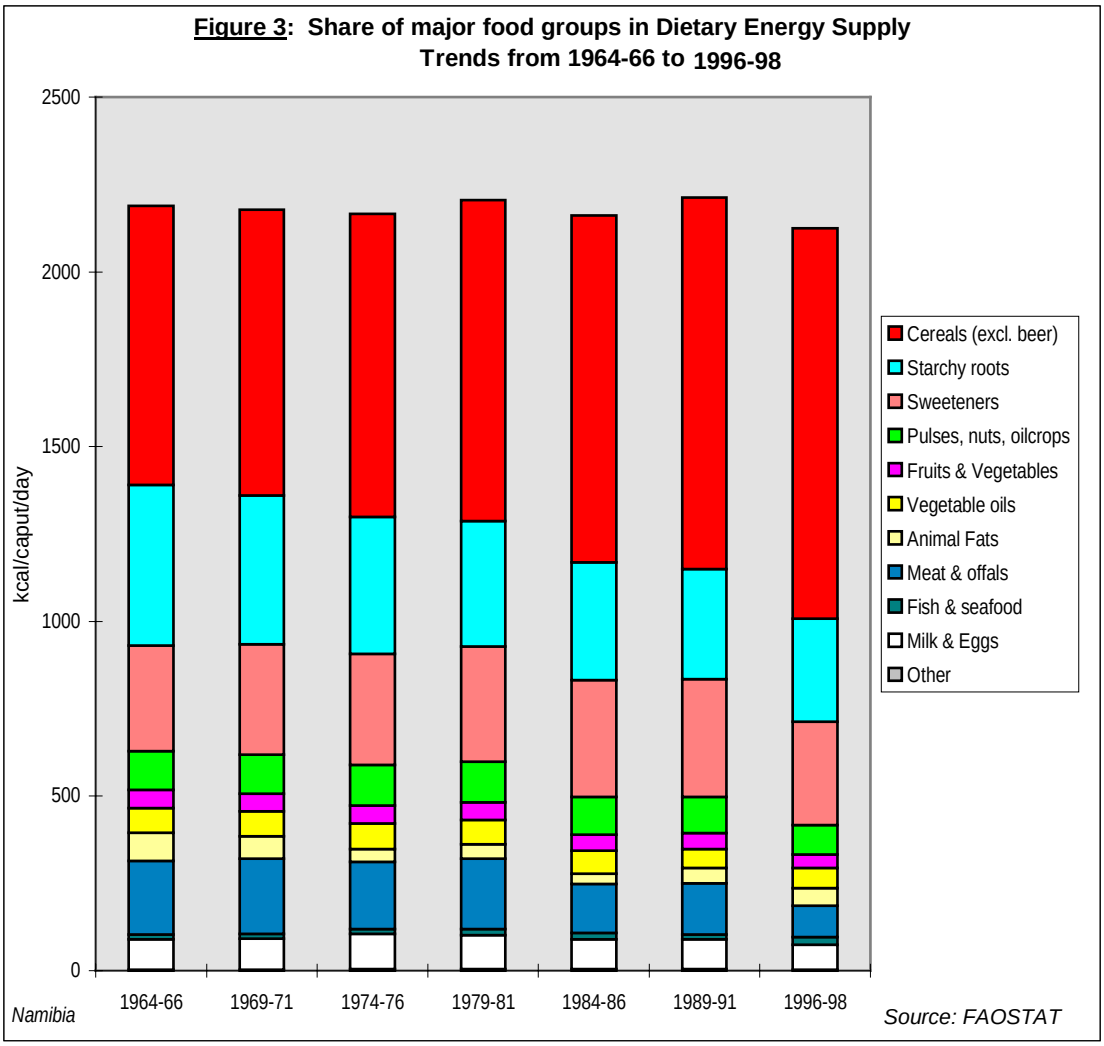
2. Trends in food supplies

Quantity - The per capita availability of food is a function of population and food production, with adjustments made for exports, imports, food aid, wastage and livestock feed. Since 1964-66, annual per caput availability of starchy roots as the major food item in Namibia (till 1989-91), has decreased from 184 kg/caput/year to 116 kg/caput/year in 1996-98 (**Figure 2**). Over the same period the supplies of cereals, representing the second major food item, have increased from 96 kg/caput/year to 126 kg/caput/year in 1996-98 (**Figure 2**). The availability of fruits and vegetables decreased continuously from 55 kg/caput/year in 1964-66 to 41 kg/caput/year in 1996-98 (**Figure 2**). The availability of animal products, meat, offals, milk and eggs showed a decreasing trends over the period.

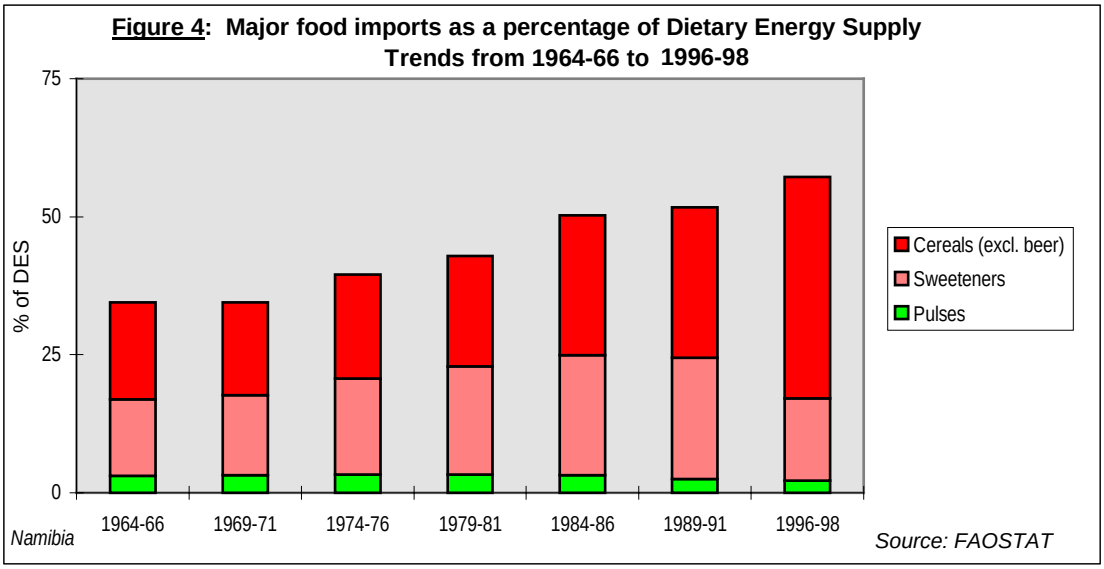
Figure 2: Supplies of major food groups (in kg/caput/year)
Trends from 1964-66 to 1996-98



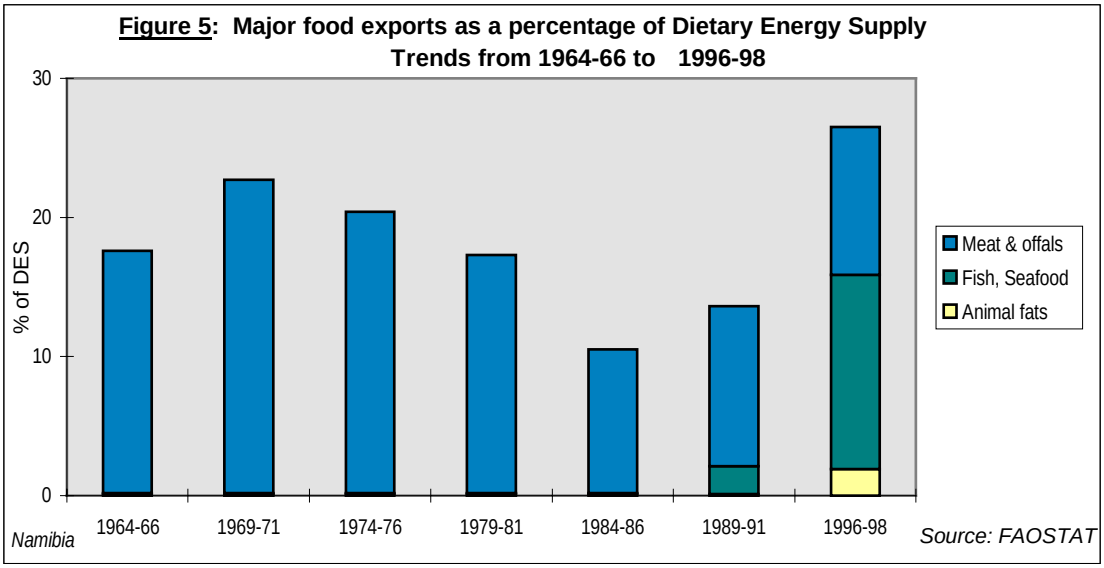
Energy - Cereals represent the main source of energy in Namibia. Their share in DES increased from 797 kcal/caput/day in 1964-66 to 1117 kcal/caput/day in 1996-98 contributing 52.6% to the total DES (**Figure 3**). Starchy roots represent the second largest food group providing energy. Their share in DES decreased from 459 kcal/caput/day in 1964-66 to 295 kcal/caput/day in 1996-98, contributing 13.9% to the total DES. Energy derived from sweeteners decreased from 302 kcal/caput/day in 1964-66 to 296 kcal/caput/day in 1996-98 (also representing 13.9% of the total DES) (**Figure 3**). Energy provided by meat and offals decreased from 211 kcal/caput/day in 1964-66 to 90 kcal/caput/day in 1996-98. Vegetable products in general supplied 1892 kcal/caput/day in 1996-98, while 233 kcal/caput/day were drawn from animal products.



Major food imports - Namibia normally imports about half its cereal requirement, although in drought-free years coarse grain output covers about 70% of demand (EIU, 1999). The import of cereals as a percentage of Dietary Energy Supply, representing by far Namibia's major food import item, showed an increasing trend over the period from 1964-66 to 1996-98 mainly resulting from drought periods in the country (**Figure 4**). The amount of cereal imports increased from 32,659 Mt in 1964-66 to 169,118 Mt in the 1996-98 period, representing 40.1% of total DES. Sweeteners represent the second largest (52,642 Mt in 1996-98) food import item. Generally food imports as a percentage of DES showed a marked increase in the period from 1964 to 1998 (**Figure 4**).



Major food exports – The export of meat and offals, representing Namibia's major food export item, also showed marked fluctuations over the period from 1964-66 to 1996-98 (**Figure 5**). In 1996-98 84,961 Mt of meat and offals have been exported, representing 10.6% of DES. The export of fish and seafood, the second major export item, showed an increasing trend from 46,311 Mt in 1989-91 to 273,252 Mt in 1996-98 (**Figure 5**). The fish biomass showed strong signs of recovery after a longer period of decline due to adverse oceanic conditions. The fisheries sector is considered to hold high potential for creating not only export earning but also formal employment opportunities. In 1996-98 also 1.9% of DES animal fats have been exported. Overall, food exports as a percentage of DES showed great fluctuations over the years (**Figure 5**).



3. Food consumption

The size of the country, the varied climatic conditions and its heterogeneous population greatly influence food consumption patterns. Pearl millet is the major staple food produced and consumed locally in the communal areas of Ohanguena, Omusati, Oshana, Oshikoto and Okavango, while maize and sorghum are the main staples produced and consumed in Caprivi. In general terms, food consumption patterns are more or less homogeneous within the following regions: Hardap, Karas, Omaheke and Otjozondjupa, where the majority of households depend primarily on food purchases. Therefore, food security in these regions is closely related to income. Most of the people eat meat and maize porridge with a sauce, fat or sour milk. Supper was identified as being the main meal in most cases.

The average energy supply in the southern and eastern communal areas was estimated according to the quantity of basic food items acquired by the household during one month by 2 surveys (MOAWRD, 1992 and 1994). In the southern communal areas the reported energy supply per capita per day was as low as 1,548 kcal with 54 grams of protein consumed per capita per day. In the eastern communal areas, the energy supply per capita per day was even lower: 1,470 kcal with 50.4 grams of protein consumed per capita per day. An analysis of average household food consumption expenditure by region reveals that the Central/Southern Regions spend N$ 4,530 per year compared to only N$ 3,560 in Northern Regions (CSO, 1994).

In Kunene, where the Ovahimba live a nomadic existence, the diet consists of maize, meat and milk. Maize products are regularly supplemented by generous amounts of milk, meat or cooked butter. The traditional subsistence strategy of people living in the Ohanguena, Omusati, Oshana and Oshikoto regions is livestock rearing. Maize porridge, millet (mahango), sugar, oil, meat and milk are eaten regularly. Fish is eaten seasonally, usually fresh, or salted and dried. Wild cabbage (ombidi), indigenous fruits and termites gathered locally provide other sources of food.

For the vast majority of households in the Okavango region, the farm and the river provide the bulk of consumed food. Sales of millet, fish and livestock provide the cash income, from which other food needs such as maize meal, millet, salt and sugar are met. Millet and maize meal are eaten every day, often with meat or fish.

In Caprivi, maize meal is the commodity most eaten, followed by vegetables for relish, fish and meat. To the east, fish and meat, together with sorghum and meat constitute the dominant diet. The major sources of household income in Caprivi are from cropping, fishing and livestock. The north-central areas derive their food and cash income predominantly from maize, the east from fish and livestock, while the west derives their food and cash income mainly from sorghum.

Limited data on food consumption patterns are available for the Khomas region including the nation’s capital, Windhoek. Maize and millet are, however, the main staple foods and meat and milk the main sources of protein. In the Khomas region, wage employment, old age pensions and trade activities are the most important sources of income, through which food is accessed.

Subsistence agriculture provides the economic base of the Erongo region. Due to the arid climate, this is restricted mainly to livestock. Households keep cattle, donkeys, goats and sheep. Other food commodities must be purchased. Therefore, farmers depend on cattle, goats and sheep not only as direct supply of food (meat and milk), but also as an income earned from livestock sales, which typically finances purchases of staple food grains.

Based on data from the Namibia Demographic and Health Survey of 1992, the median duration of breastfeeding was estimated at 17.3 months (Katjiuanjo P et al., 1992). Rural women breastfeed longer than urban women: 18.5 and 12.9 months, respectively. The duration of breastfeeding varies substantially by region (11months in the south compared to 22 months in the north-east) and by the level of the mother's education: higher levels of education are associated with shorter duration of breastfeeding. UNICEF reports, that 22% of infants below 3 months are exclusively breast-fed, while 65% of the 6 to 9 months old are partially breast-fed and 23% are continued to be breast-fed up to 23 months (UNICEF, 2000). According to the DHS, only 29% of infants below 2 months were exclusively breastfed, as 33% in that age group received plain water along with breast-milk and supplements were introduced in 36% of the infants surveyed (Katjiuanjo P. et al., 1992). Around 50% of the mothers seem to initiate breastfeeding within 1 hour in Namibia, while around 30% and 20% of infants receive breast-milk in the first day and after the first day, respectively. These figures vary regionally.

Solid or mushy food was introduced into the diet at the age of 4 to 5 months by 37% of mothers surveyed (Katjiuanjo P. et al., 1992). By 6-7 months, the majority of children (68%) received supplementary foods in addition to breast-milk, rising to 80% by the age of 8 to 11 months. In Oshakati and Ondangwa, thick mahangu (millet), soup, sugar or sour milk were the main foods given to the children. The optimum number of daily feeds during the weaning period is 4-6, and the majority of children in the sample were on average receiving the ideal, or better, for the first 18 months. At the beginning of the first year, however, the frequency of feedings began to drop fairly rapidly, levelling off to a standard pattern of three times a day, at 22 to 24 months of age.

4. Anthropometric data

The nutritional status of children under five is commonly assessed using three indices: weight-for-height (wasting) which reflects acute growth disturbances, height-for-age (stunting) which reflects long-term growth faltering and weight-for-age (underweight) which is a composite indicator of both long and short term effects. Weights and heights of children are compared with the reference standards (NCHS/CDC/WHO) and the prevalence of anthropometric deficits is usually expressed as the percentage of children below a specific cut-off point such as minus 2 standard deviations from the median value of the international reference data.

There is widespread undernutrition among children less than five years of age throughout Namibia. Children in the north experience nearly twice the level of wasting, stunting and underweight than children of Katutura in the central region (Cogill B. et al. 1990) (**Table 3a**). As wasting reflects short-term malnutrition, these patterns suggest that Katutura children suffer less short-term malnutrition, although the data suggest that many still suffer from chronic malnutrition. Rates of malnutrition among urban and peri-urban children are higher than the rates of children residing in rural areas.

In the 1992 National Demographic and Health Survey, 28% of children were found to be stunted, while 8% were severely stunted (Katjiuanjo P. et al. 1992) (**Map 3**) (**Table 3a**). The prevalence of stunting increased with age, from 13% in children under six months to 33% in children two years old. Urban children had lower levels of stunting than rural children. Stunting levels were highest in the north-east regions (42%) and lowest in the Central region (20%). The impact of educational differences was also pronounced: children whose mothers

had secondary school education were 50% less stunted than children of mothers with only primary school education or no formal education.

Almost 9% of children from this survey were wasted, while 2% suffered severe wasting (**Map 4**) (Katjiuanjo P. et al. 1992) (**Table 3a**). Wasting was most common among children aged 12 to 23 months (13%). The rates of wasting were highest in the central regions (13%) and lowest in the south (5%). The high level of wasting in Namibia during the Demographic and Health Survey may have been affected by the drought of 1992. Wasting is a sensible indicator reflecting an immediate or recent inadequacy in food intake and depends therefore on the time of survey - e.g. short-term fluctuations in food availability, peak of infectious diseases, etc.

Nation-wide, 26% of children were underweight, while 6% were severely underweight (Katjiuanjo P. et al. 1992) (**Map 2**) (**Table 3a**). The prevalence of underweight was lower among children under six months of age (5%). Children of educated mothers were less likely to be underweight than children of mothers with little or no education. The prevalence of underweight children was highest in the northern regions and lowest in the southern regions.

Data from the Demographic and Health Survey of Namibia suggest that the mean birth weight of children in Namibia is 3 071 g and the prevalence of low birth weight is 15.9% (Katjiuanjo P. et al. 1992). According to the Health Information System report for the period January to June 1994, the low birth weight rate per 1,000 deliveries nation-wide was 80.61 (MOHSS, 1993).

Table 3a: Anthropometric data on children

Source/ Year of survey	Location	Sample Size Number	Sex	Age Years	Underweight % Weight/Age < -3SD	Underweight % Weight/Age < -2SD*	Stunting % Height/Age < -3SD	Stunting % Height/Age < -2SD	Wasting % Weight/Height < -3SD	Wasting % Weight/Height < -2SD	Overweight % Weight/Height > +2SD
Cogill B., Kingu S.,	**Regional**	1501	M/F	0.5-4.99	6.0	29.0	…	30.0	…	9.0	…
1990	Engela		"	"	10.0	36.0	…	38.0	…	10.0	…
1990	Katutura	367	"	"	1.0	12.0	…	21.0	…	5.0	…
	Onyaanya		"	"	7.0	35.0	…	30.0	…	12.0	…
	Peri-urb. Ovambo	385	"	"	9.0	35.0	…	32.0	…	9.0	…
	Tsandi		"	"	4.0	35.0	…	33.0	…	8.0	…
	Katutura and										
URBAN	peri-urb. Ovambo	752	"	"	5.1	23.8	…	26.6	…	7.0	…
	Engela, Onyaanya										
RURAL	and Tsandi	749	"	"	7.0	35.0	…	34.0	…	10.0	…
Katjiuanjo P. et al.	**National**	2430	M/F	0-4.99	5.8	26.2	8.4	28.5	1.5	8.6	3.3
1992	Central region	263	"	"	4.6	20.5	7.8	19.6	3.2	13.2	4.1
1992	Northeastern region	447	"	"	8.8	31.2	14.9	42.4	1.5	7.8	4.7
	Northwestern region	1093	"	"	6.4	30.3	6.8	27.1	1.5	9.8	2.7
	Southern region	627	"	"	3.1	17.8	6.7	24.7	0.8	5.2	3.1
		339	"	"	0.6	5.0	3.4	13.1	0.6	4.7	11.9
		322	"	0.5-0.99	4.5	20.0	8.2	24.4	0.7	7.2	6.3
		594	"	1	8.8	36.0	12.3	37.6	2.8	12.6	1.3
		451	"	2	8.6	32.9	9.9	32.9	1.1	8.4	1.4
		384	"	3	4.2	25.0	5.8	26.3	2.4	8.0	0.9
		340	"	4	4.9	28.5	7.5	28.4	0.3	7.7	0.6
	URBAN	737	"	0-4.99	2.8	17.6	5.4	21.8	0.6	6.6	4.0
	RURAL	1693	"	"	7.1	29.9	9.7	31.4	1.9	9.4	3.0
		1203	M	"	6.0	26.8	8.6	30.3	1.8	8.7	3.6
		179	M	0-0.49	0.0	5.8	2.7	12.6	0.5	4.7	11.8
		163	M	0.5-0.99	5.4	19.1	10.4	26.3	0.6	7.2	6.6
		296	M	1	10.5	37.1	12.5	41.4	3.4	13.0	1.8
		222	M	2	8.2	32.5	9.3	33.4	1.6	8.5	1.6
		183	M	3	2.9	25.6	6.8	27.8	2.6	6.9	0.0
		160	M	4	5.2	32.8	7.6	32.1	0.7	9.2	1.3
		1227	F	0-4.99	5.6	25.6	8.1	26.7	1.2	8.5	3.1
		161	F	0-0.49	1.2	4.2	4.2	13.8	0.6	4.8	12.1
		159	F	0.5-0.99	3.6	21.0	5.9	22.5	0.8	7.2	6.0
		297	F	1	7.1	34.9	12.0	33.8	2.3	12.2	0.7
		229	F	2	9.0	33.3	10.5	32.3	0.7	8.2	1.3
		201	F	3	5.3	24.5	4.9	25.0	2.2	9.1	1.8
		181	F	4	4.7	24.6	7.5	25.2	0.0	6.4	0.0

Notes: ... no data 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.

The nutritional status of adults is usually assessed using the Body Mass Index (BMI) calculated as weight (kg) over height squared (m^2). For classifying individuals according to their nutritional status, cut-off levels of BMI have been proposed. Adults with a BMI less than 18.5 kg/m^2 are considered to suffer from chronic energy deficiency. A BMI of over 25 indicates overweight.

During the DHS survey, data was collected on weight and height of women not pregnant at the time of the survey with living children under 5 years of age (Katjiuanjo P. et al. 1992) (**Table 3b**). The mean BMI of the women was 22.5, 12.7% had a BMI below 18.4 and 16.1% had a BMI above 26. Almost 14% had a BMI below 18.5 indicating chronic energy deficiency. Women in the Central and South regions were much better nourished than women in the two northern regions, matching with the prevalence of underweight and stunting in children under 5 years of age. 11% of women in the South and Central regions had a BMI below 18.5 compared to 16% in the Northeast and Northwest regions. The difference in CED prevalence was even more pronounced between women in urban (9%) and rural environments (17%). More educated women had a higher BMI. The risk of CED was highest in the women below 20 years (18.9%) compared to those between 20 and 34 years (12.4%). Women's height is used as a crude marker for the risk of difficult delivery and low birth weight infants. The mean height of women measured in this survey was 160.1 cm. Less than 2% of the women were shorter than 145 cm, where 5% were below 150cm.

An anthropometric assessment was conducted at 238 Kung San hunter-gatherers aged between 18 and 65 years, 156 Kavango horticultural pastoralists aged between 18 and 61 years and for 87 urbanized Kavango people aged between 18 and 61 years living as wage earning employees in northern Namibia (Kirchengast S, 1998). An interethnic comparison showed that both Kung San women and men were lighter than Kavango women and men. The mean BMI of Kung San women was 19.1 and of Kung San men 19.4 kg/m2. Kavango people exhibited higher average BMI values, 19.4 for women, 20.3 kg/m2 for men.

With the exception of the male urban Kavango people a high percentage (more than 30%) of the subjects were thin and underweight, as shown by a BMI of < 18.5 kg/m2. This was especially true of the Kung San of both sexes and the rural Kavango men. Nearly 25% of Kung San women met the criterion of weight depletion (BMI < 17.0). The cultural transition from nomadic hunter gatherer subsistence to a more sedentary life style over the last 20 years can be interpreted as an environmental stress, which affected male as well as female nutritional status. The hard economic situation of the rural Kavango people may also be a stress factor which negatively influenced their nutritional status, especially of the men. The significantly better nutritional status of the urban Kavango men may be the result of the opportunities for work as wage earners or as soldiers.

Table 3b: Anthropometric data on adults

Source/ Year of survey	Location	Sample Size Number	Sex	Age Years	Anthropometric status and Percentage of malnutrition							
					Body Mass Index (kg/m^2)			Chronic Energy Deficiency % BMI			Overweight % BMI	Obesity % BMI
					mean	SD	median			<18.5	25.0 - 29.9	>30.0
Katjiuanjo P. et al.	**National**	2249	F	15-49	22.5	4.3	...	...	...	14.0	...	...
1992	rural	1329	F	15-49	21.6	...	...	...	...	17.0	...	...
1992	urban	790	F	15-49	24.1	...	...	...	...	8.7	...	...
	Northwest	850	"	"	21.5	...	...	...	...	16.1	...	...
	Northeast	368	"	"	21.2	...	...	...	...	16.1	...	...
	Central	281	"	"	23.8	...	...	...	...	11.1	...	...
	South	621	"	"	24.0	...	...	...	...	10.8	...	...
		175	"	<20	20.8	...	...	...	...	18.9	...	...
		1410	"	20-34	22.6	...	...	...	...	12.4	...	...
		535	"	>35	22.9	...	...	...	...	16.3	...	...

Notes: ... data not available,

5. Micronutrient deficiencies

Iodine Deficiency Disorders (IDD)

Iodine deficiency disorders (IDD) include the clinical and subclinical manifestations of iodine deficiency. Iodine deficiency in pregnant women may cause irreversible brain damage in the developing foetus, whereas in infants and young children it may cause brain damage, psychomotor retardation and intellectual impairment.

Around one third of the Namibian population between 6 and 21 years old suffered from iodine deficiency in 1990 (**Table 4**) (SARIND, 1992), while 22% of 1,831 school-aged children were found to be iodine deficient in 1992 (SARIND, 1992) (**Table 4**). The prevalence ranged from 1.8% in Gobabis in the South Central region to 61.4% in Choi, which is situated in Caprivi. The prevalence of goitre in 8-12 year olds ranged from 2% in the south to 55% in Caprivi (**Table 4**) (MOHSS, 1992) (UNICEF, ICCIDD, MHSS, 1992). Children below 5 years of age were most at risk (MOHSS, 1993). In the north- western and north-eastern areas, the prevalence of goitre in children below 5 years reached 65% and 27%, respectively (**Map 5**) (**Table 4**). In 1994, salt iodisation legislation was introduced and an iodine supplementation program was initiated. UNICEF reports, that 59% of the households consumed iodised salt in the period of 1992-98 (UNICEF, 2000).

A cross-sectional study on a 20% random sample of 380 children, aged 6-18 years, from 8 primary schools in the Cuando River area of eastern Caprivi, Namibia, revealed that 34.5% of the children had goitre (Jooste PL et al., 1992). Reduced plasma free thyroxine concentrations in the more severely goitrous children, compared with matched non-goitrous children implicated dietary iodine deficiency as the causative factor. Their diet was inadequate in energy and most nutrients (folic acid (only girls), ascorbic acid, vitamin A, nicotinic acid, iron, riboflavin and calcium) according to World Health Organisation criteria. Retarded growth, indicated by their low body weight and height in relation to age, were observed in a large proportion (45.6-73%) of the children.

Vitamin A Deficiency

Vitamin A is an essential micronutrient required for normal health and survival. It is involved in several critical functions in the body including vision, immune system, reproduction, growth and development. Children under five years are most susceptible to vitamin A deficiency (VAD). The consequences of VAD are dramatic and include night blindness, irreversible blindness, growth retardation and increased susceptibility to infections. Pregnant women are also prone to VAD and their children are likely to become deficient.

According to a survey on vitamin A deficiency carried out in 17 villages in 1992, 20.4 % of 290 children between 2 and 6 years had vitamin A levels below 0.70 µmol/l (MOHSS, 1992). In 3.1% of the children vitamin A levels were below 0.35 µmol/l. However, there were quite dramatic differences in serum vitamin A levels between villages, with only 2 villages having any cases of severe subclinical VAD (serum retinol 0.35 µmol/l). It is further noteworthy that the sample size for the survey was very small.

The report of the Health Information System, 1993, report the prevalence of xerophthalmia to be highest in the northwest regions of Namibia, both in children under five and in adults (MOHSS, 1993) (**Map 6**) (**Table 4**). Of the total diagnosed eye diseases, 38% occurred among children under five years. Data on conjunctival xerosis and Bitot´s spots are not available. Data from the Health Information System are collected from the outpatient departments in all health facilities. UNICEF reports, that the Vitamin A supplementation coverage rate of 6 to 59 month olds in 1998 was 83% (UNICEF, 2000).

Anaemia/Iron Deficiency (IDA)

The consequences of Iron Deficiency Anaemia (IDA) include reduced physical work capacity and productivity, impaired cognitive functions and brain metabolism and reduced immunocompetence. The causes of IDA include low dietary intake in relation to the Recommended Dietary Allowances (RDA), poor bio-availability of iron in the diet, malaria and a high prevalence of parasitic infestations.

The reported prevalence of anaemia in 1993 was 1,437 cases among children under 5 and 2,419 cases among children five years and older (MOHSS, 1993). Most cases of anaemia were reported in the north-west regions, where 55% of children under five years and 59% among five years and older are believed to suffer from anaemia (**Map 7**) (**Table 4**). No information is available on the prevalence of anaemia in adult women. A high percentage (43.9 % of boys and 33.7 % of girls) of the 380 children, aged 6-18 years, from 8 primary schools in the Cuando River area of eastern Caprivi, Namibia, were biochemically anaemic, whilst less than 1 % of the children showed clinical signs of anaemia (Jooste PL, 1994).

According to a cross-sectional study, 41.5% of 171 pregnant women attending the clinic in Eastern Caprivi in September 1995 were found to be anaemic (haemoglobin < 11 g/dl) and there was a significant risk of iron deficiency (Thomson J., 1997). Three maternal characteristics were found to have a significant effect on a woman's risk of anaemia: urban residence, geophagy and the intake of prophylactic chloroquine. Mild anaemia affects a large proportion of the pregnant women in East Caprivi; severe anaemia (< 7 g/dl) is not common. The anaemia seems to be of multifactorial aetiology, though predominantly caused by iron deficiency with a possible complication by concomitant folate deficiency.

Niacin- deficiency (Pellagra)

Niacin deficiency is associated with a refined maize diet and alcoholism. Pellagra is common in Namibia in all age groups including adults. Pellagra cases reported in 1993

include 123 children under five and 1,123 adults (MoHSS, 1993). The highest prevalence for adults occurred in the south of Namibia (40%) and for children under five years in the north-east regions (45%) (**Table 4**).

Table 4: Surveys on Iodine deficiencies

Source/ Year of survey	Deficiency	Location	Sample Size Number	Sex	Age Years	Percentage
	Iodine					
SARIND, 1992		**National**	380	M/F	6.0-21	34.45
1990						
SARIND, 1992		**National (small samples)**	1831	M/F	school	22.04
1992		Caprivi/Choi	89	"	age	61.40
		Caprivi/Katima	101	"		58.40
		Caprivi/Kongola	99	"		48.50
		Caprivi/Masokotwani	100	"		52.00
		Notheast/Kehemu	98	"		23.50
		Northeast/Makandima	102	"		15.70
		Northeast/Mpungu	75	"		9.30
		Northeast/Rundu	100	"		46.00
		Northwest/Amilema	100	"		10.00
		Northwest/Engela	101	"		17.80
		Northwest/Eunda	100	"		2.00
		Northwest/Okongo	84	"		22.60
		Northwest/Ondangwa	100	"		15.00
		Northwest/Oshakati	97	"		22.70
		South Central/Gobabis	112	"		1.80
		South Central/Luderitz	100	"		2.00
		South Central/Mariental	83	"		7.20
		South Central/Usakos	83	"		2.40
MoHSS, 1992	**Goitre**	Caprivi	389	M/F	8.0-12.0	55
1992		North East	375	"	"	25
		North West	582	"	"	15
		South and Central	484	"	"	2
MoHSS, 1993	**Goitre**	North West	171	M/F	<5	64.5
1993			423	"	>5	46.3
		North East	71	"	<5	27
			179	"	>5	20
		Central	4	"	<5	1
			14	"	>5	1
		South	19	"	<5	7
			297	"	>5	32

Table 4: Surveys on micronutrient deficiencies (continued)

Source/ Year of survey	Deficiency	Location	Sample Size Number	Sex	Age Years	Percentage
	Vitamin A					
MoHSS, 1993	Xerophthalmia	North West	929	M/F	<5	73.3
1993			710	"	>5	64.7
		North East	203	"	<5	16
			237	"	>5	21
		Central	39	"	<5	3
			35	"	>5	3
		South	97	"	<5	8
			116	"	>5	11
	Iron					
MoHSS, 1993	Anaemia	North West	801	M/F	<5	55.7
1993			1436	"	>5	59.4
		North East	545	"	<5	37.9
			502	"	>5	21
		Central	14	"	<5	1
			57	"	>5	2
		South	77	"	<5	5
			424	"	>5	1
	Niacin					
MoHSS, 1993	Pellagra	North West	47	M/F	<5	38.2
1993			196	"	>5	17
		North East	56	"	<5	45
			290	"	>5	26
		Central	5	"	<5	4
			185	"	>5	16
		South	15	"	<5	12
			452	"	>5	40

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

Source:	*Indicator:*
FAOSTAT. 1999	*A.1-2, B, C.10-11, E.1-3, F, G*
UN. 1998 rev.	*C.1-9, D.5*
World Bank. 1999.	*D.1*
UNDP. 1997.	*D.2*
Tabatabai H. 1996.	*D.3-4*
UNICEF. 2000.	*D.6*
FAO/WFS. 1996.	*H*

NCP of NAMIBIA
MAPS

- **General map of Namibia.**

- **Map 1:**
Population density by Province.

- **Map 2:**
Prevalence of underweight in children under five years of age by macro-region.

- **Map 3:**
Prevalence of stunting in children under five years of age by macro-region.

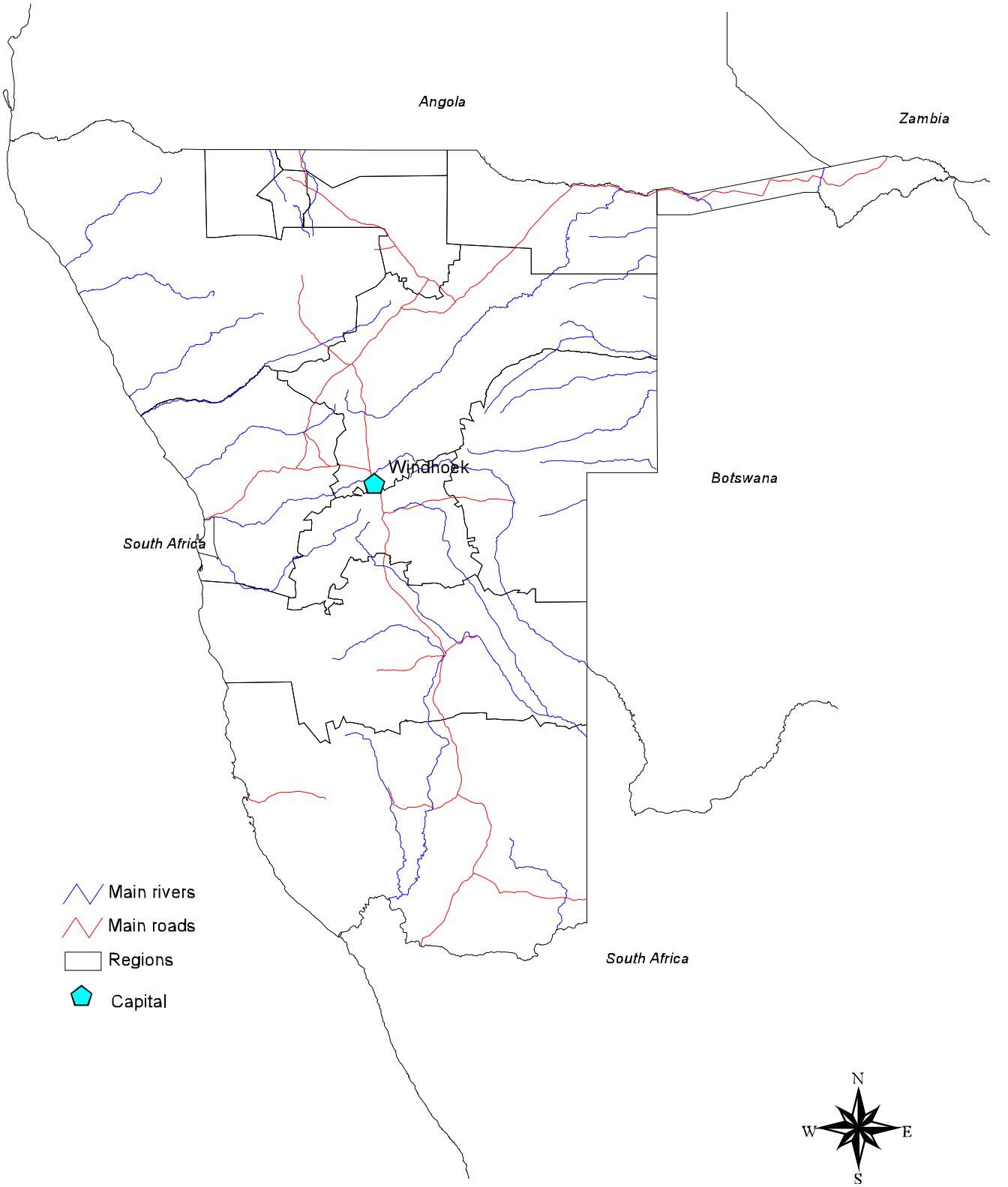
- **Map 4:**
Prevalence of wasting in children under five years of age by macro-region.

- **Map 5:**
Prevalence of iodine deficiency in children under five years of age by macro-region.

- **Map 6:**
Prevalence of vitamin A deficiency in children under five years of age by macro-region.

- **Map 7:**
Prevalence of iron deficiency in children under five years of age by macro-region.

General map of Namibia



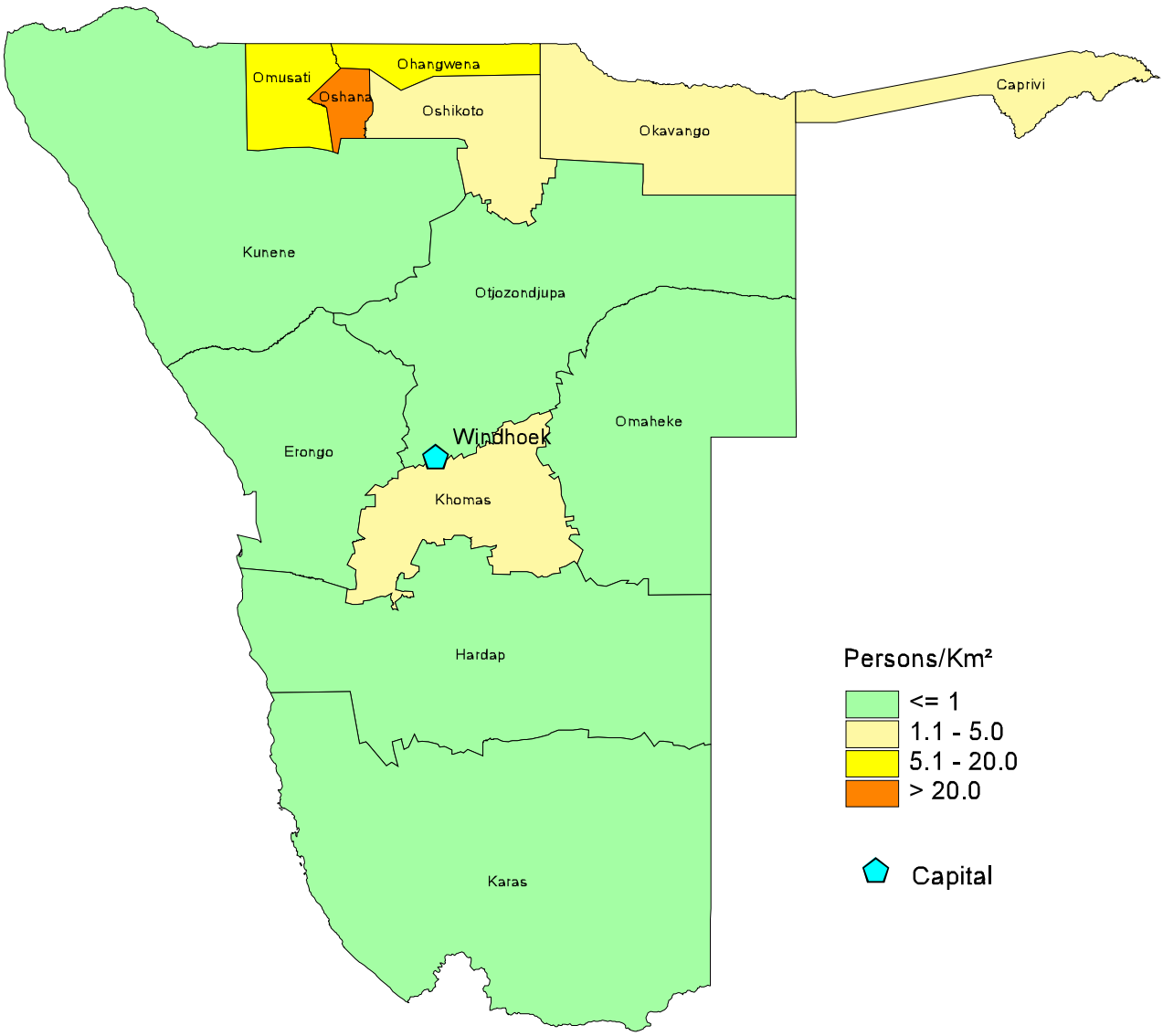
Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

FAO - GIS/ESNA, December 2000

Namibia

Map 1: Population density by region

Source: Central Statistical Office, 1995



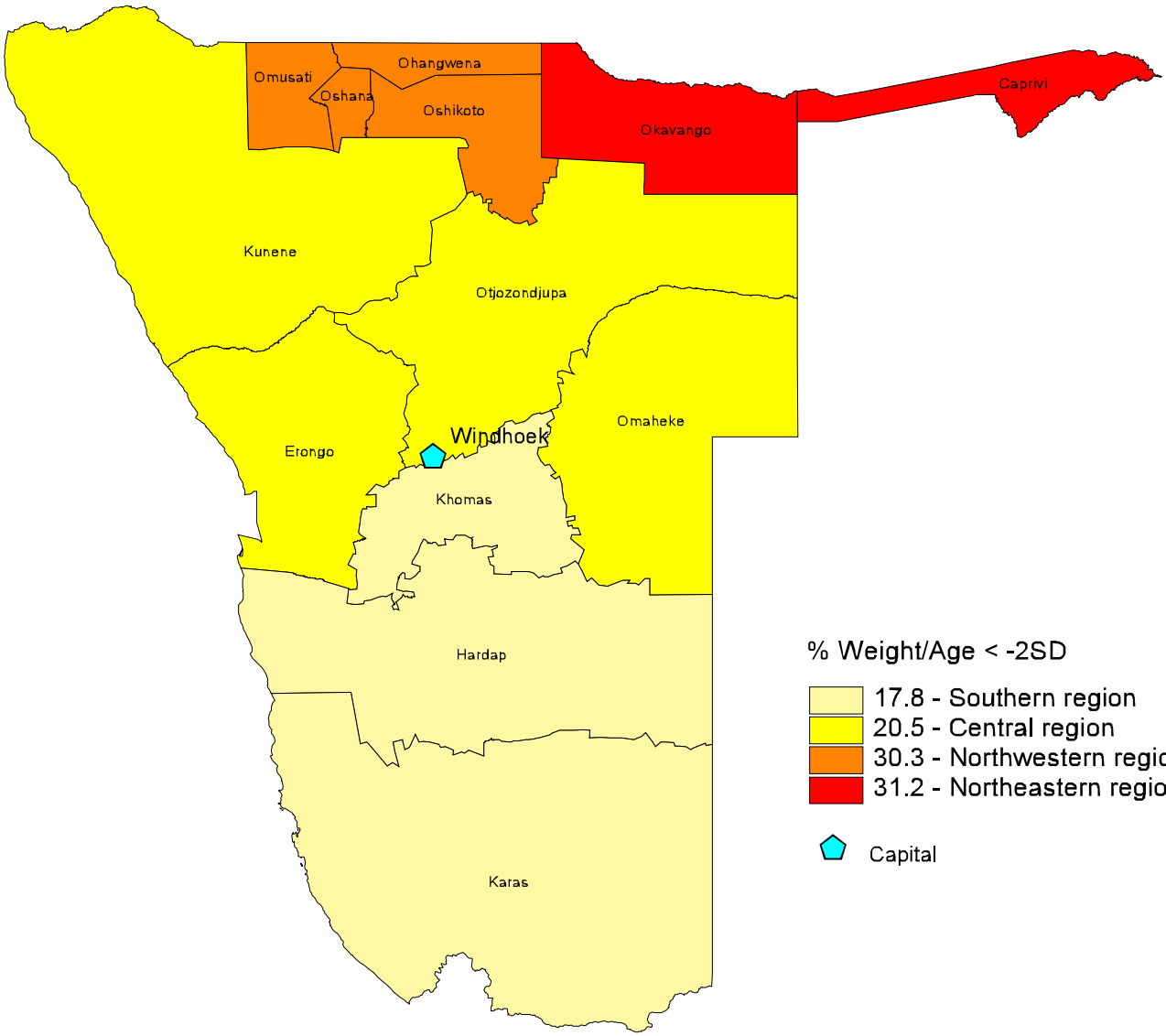
Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

FAO - GIS/ESNA, December 2000

Namibia

Map 2: Prevalence of underweight in children under 5 years of age by macroregion

Source: Namibia Demographic and Health Survey (DHS), 1992
(division into macroregions according to DHS)



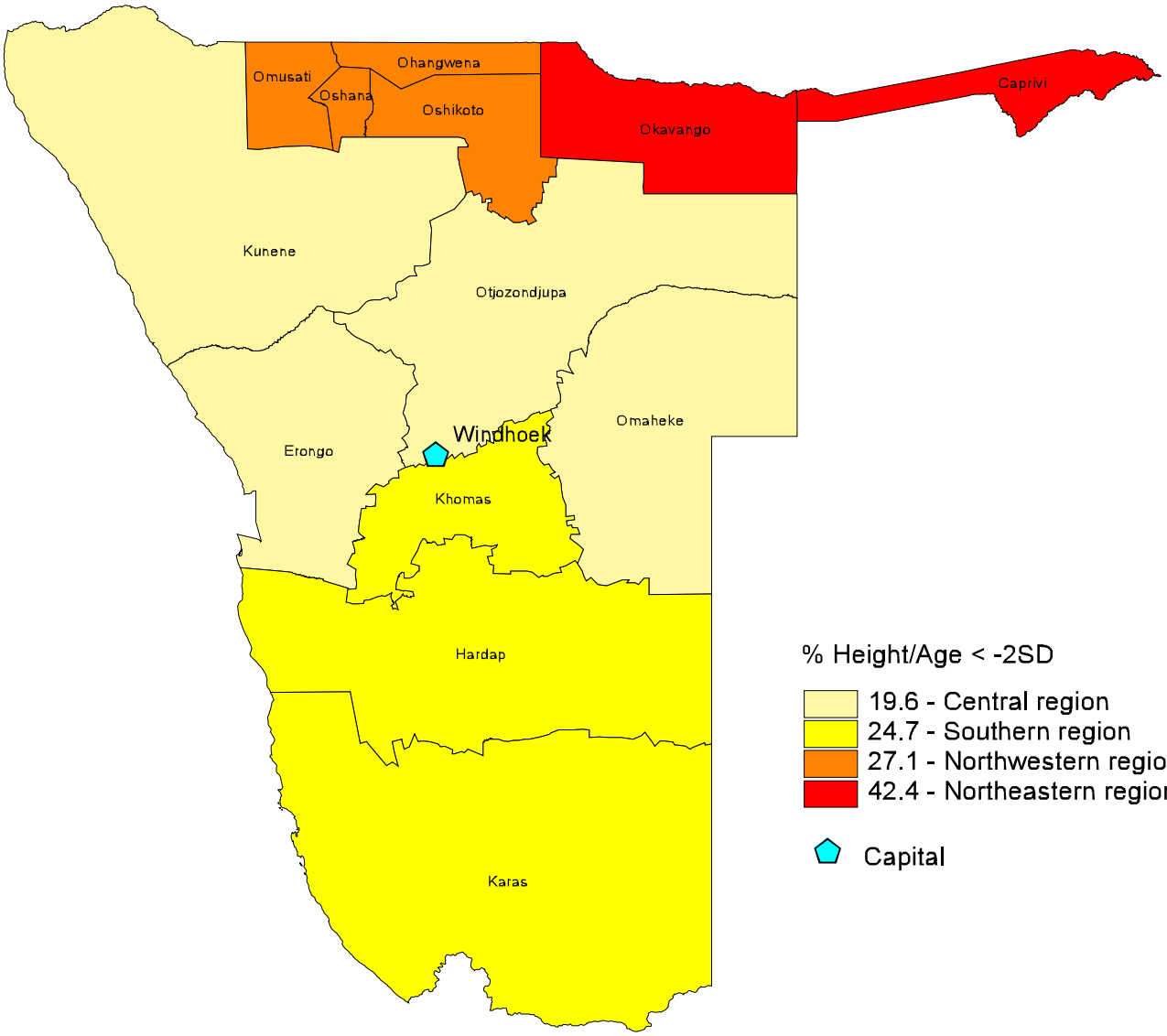
Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

FAO - GIS/ESNA, December 2000

Namibia

Map 3: Prevalence of stunting in children under 5 years of age by macroregion

Source: Namibia Demographic and Health Survey (DHS), 1992
(division into macroregions according to DHS)



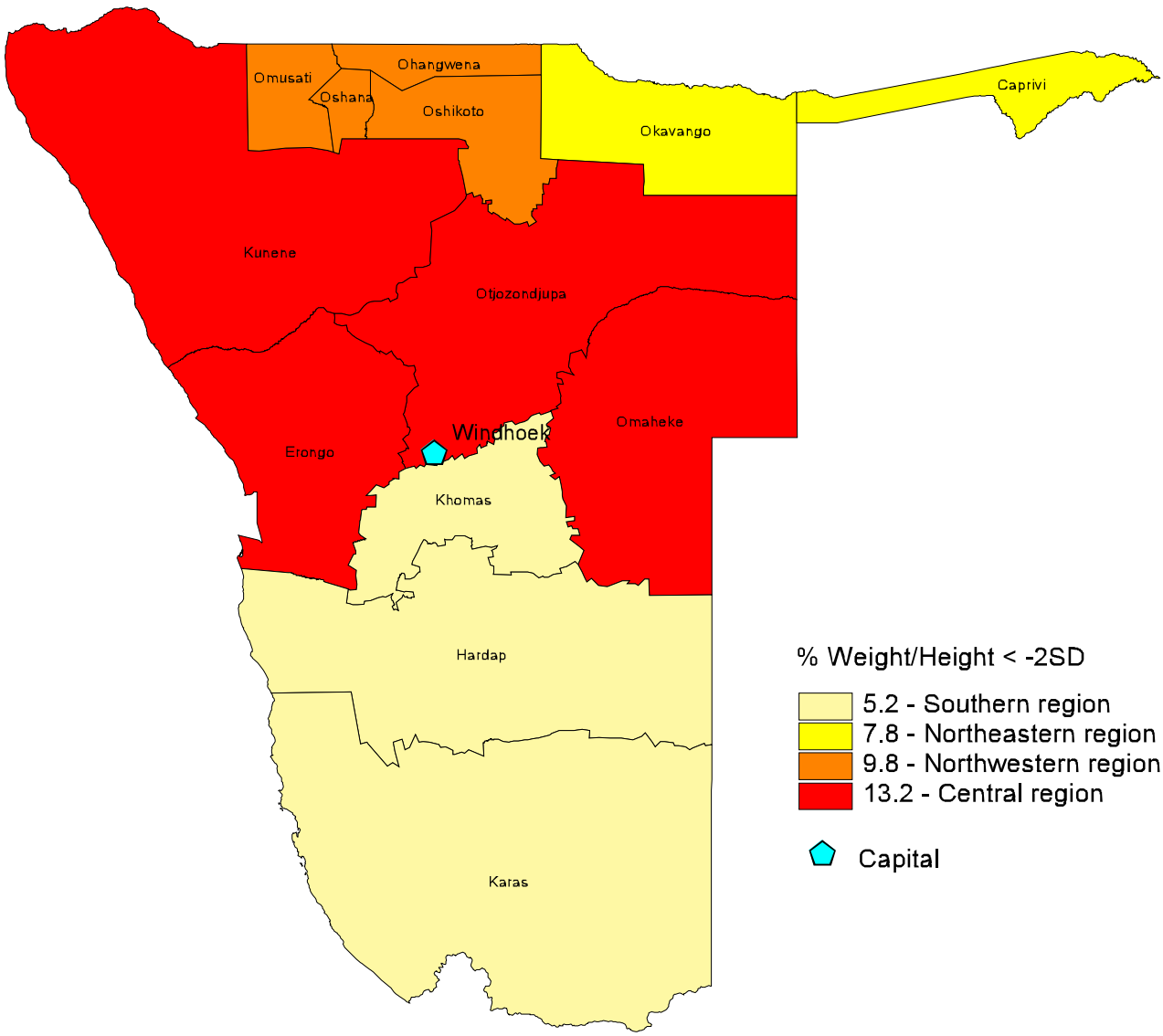
Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

FAO - GIS/ESNA, December 2000

Namibia

Map 4: Prevalence of wasting in children under 5 years of age by macroregion

Source: Namibia Demographic and Health Survey (DHS), 1992
(division into macroregions according to DHS)



Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

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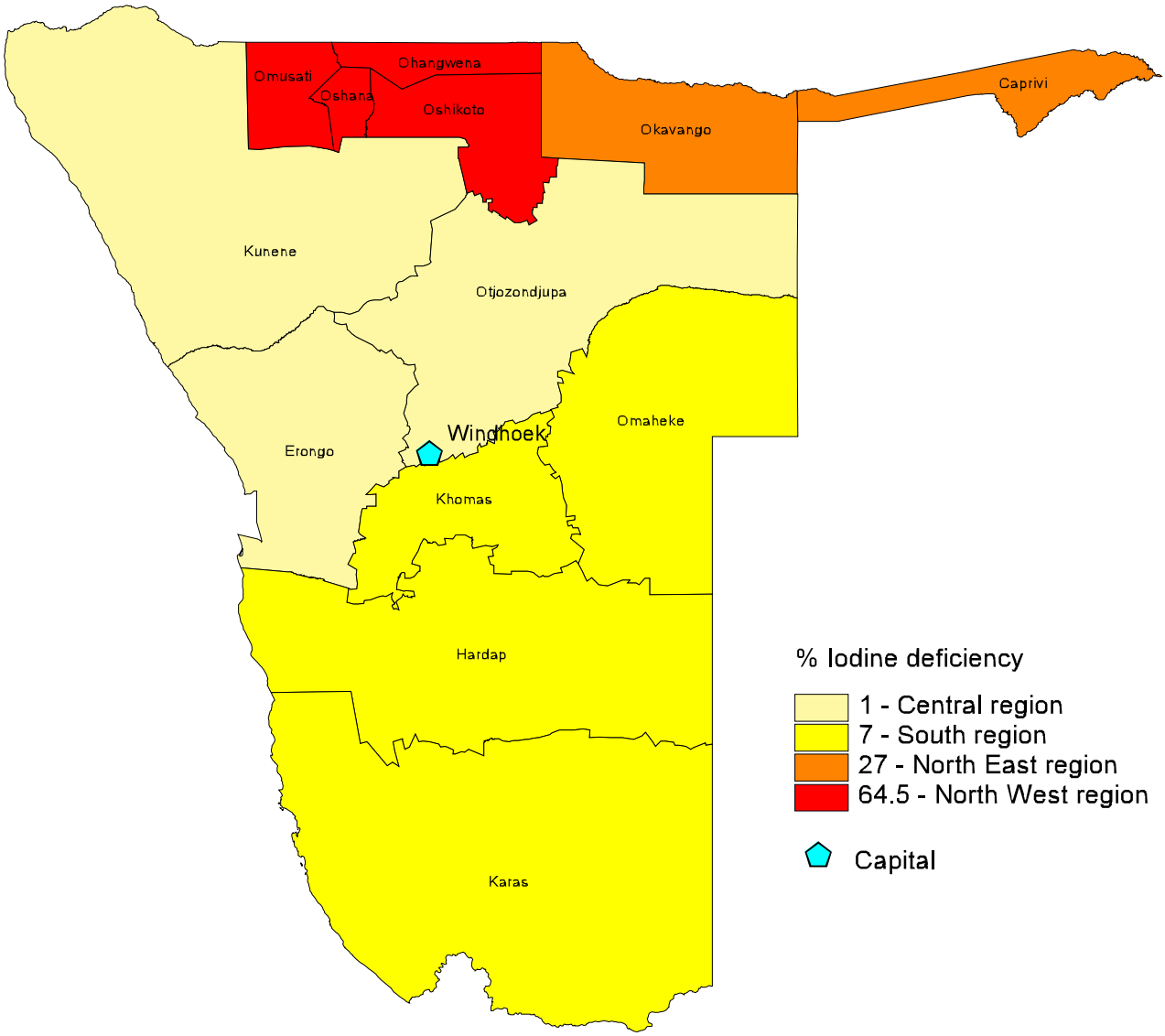
Namibia

Map 5: Prevalence of Iodine deficiency in children under 5 years of age by macroregion

Source: Ministry of Health and Social Services (MoHSS), 1992
(division into macroregions according to MoHSS)



Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

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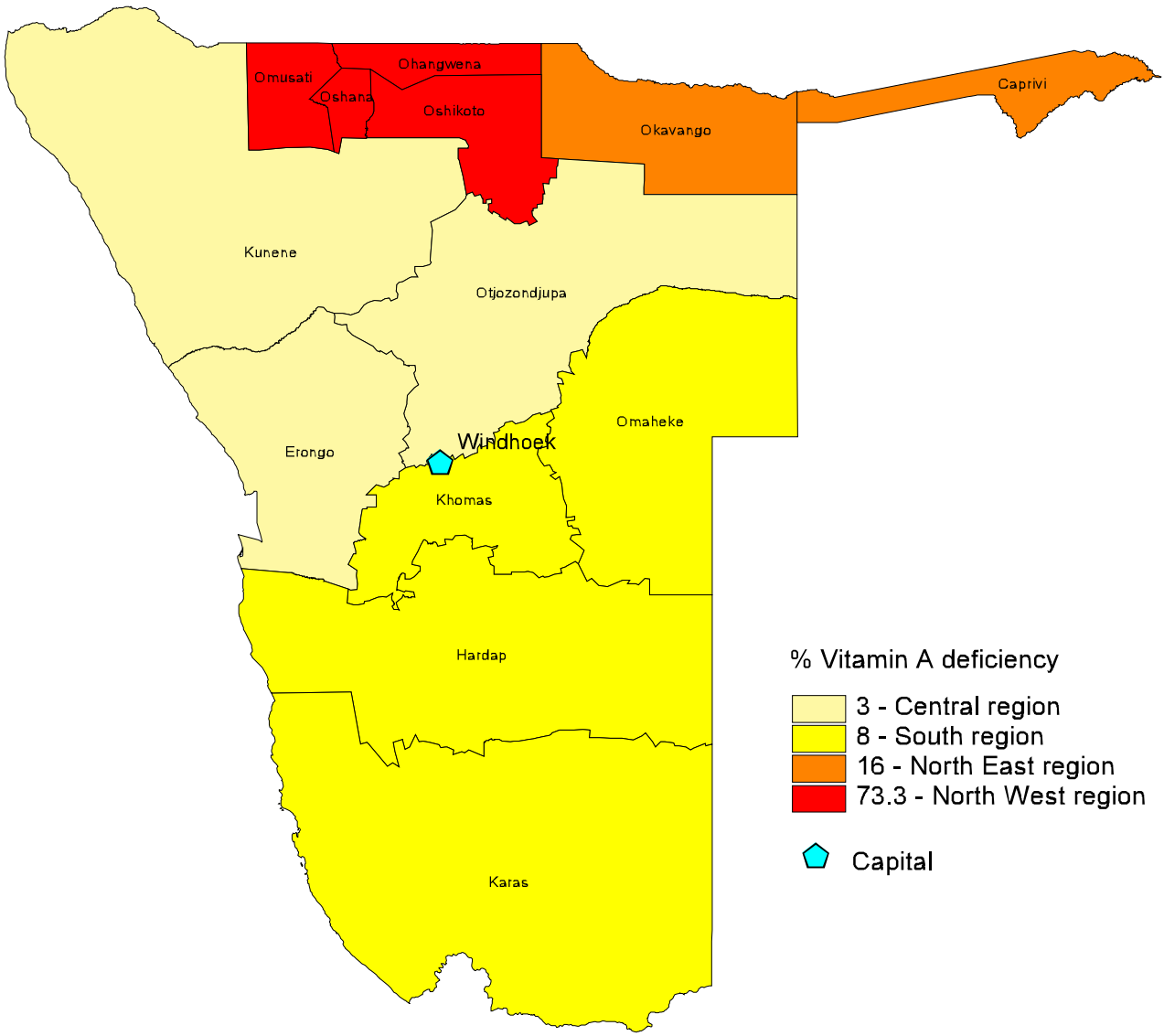
Namibia

Map 6: Prevalence of Vitamin A deficiency in children under 5 years of age by macroregion

Source: Ministry of Health and Social Services (MoHSS), 1992
(division into macroregions according to MoHSS)



Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

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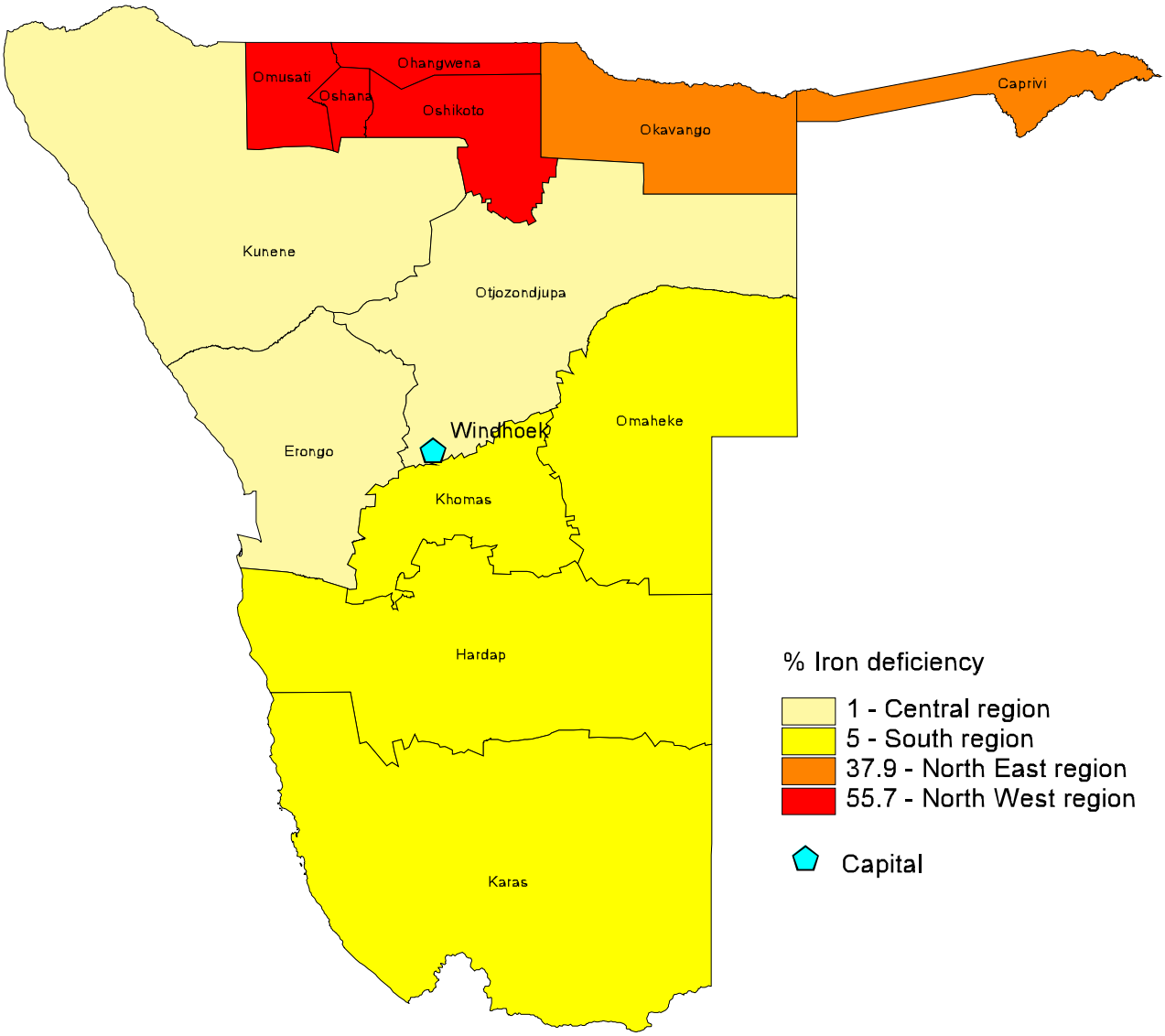
Map 7: Prevalence of Iron deficiency in children under 5 years of age by macroregion

Source: Ministry of Health and Social Services (MoHSS), 1992
(division into macroregions according to MoHSS)



Scale 1: 9 000 000 (approx.)
Geographic Projection (Lat/Long)

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