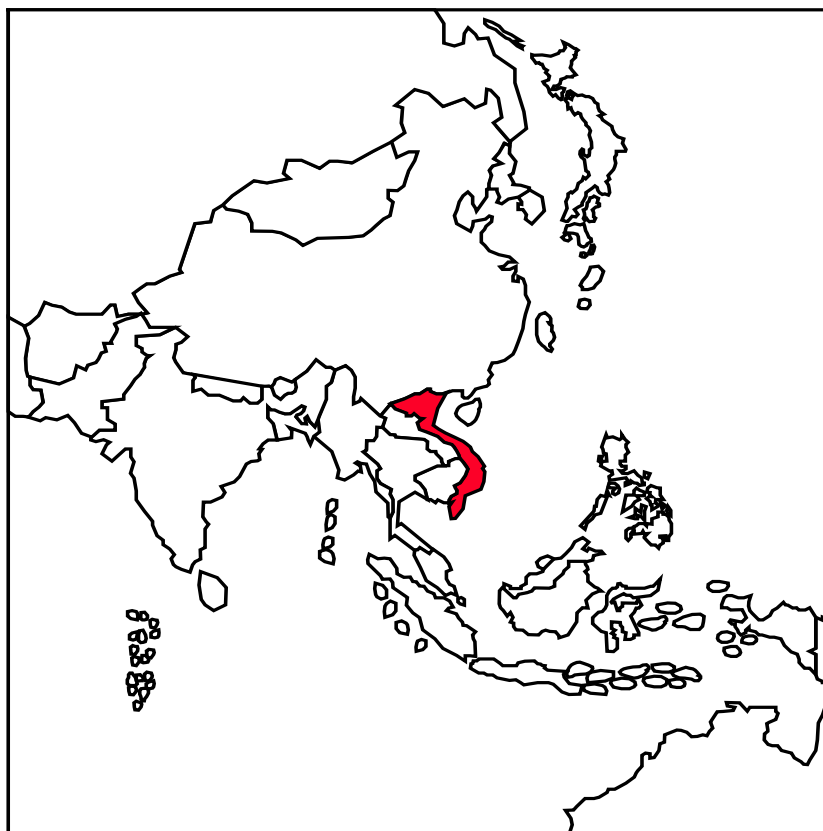


FAO - NUTRITION COUNTRY PROFILES

VIET NAM

1999



**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 the Food and Nutrition Division, Assessment and Evaluation Service upon request. An information note describing the objectives of the NCP is also available.

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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 1999



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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

*In Vietnam the nutritional status of children is poor and this country has the highest malnutrition rate among the countries in the region. The prevalence of underweight among children under 5 years of age is 40%, that of stunting is 36% and that of wasting is 10% according to WHO criteria these rates indicate public health problems (**Maps 2, 3 and 4**). The backward customs in feeding practices and child rearing contribute to child malnutrition.*

In Vietnam adults are also affected by malnutrition as indicated by the prevalence of individuals with a BMI under 18.5 kg/m² which is of 40% for both men and women. The average BMI value was similar (19.1 kg/m²) for both sexes and only a negligible proportion of the population was overweight or obese (less than 3%).

Food consumption data show no improvement in terms of energy intake and a slight increase in the intake of protein and lipid, between 1990 and 1995. However, there are important differences in food patterns between Highlands, Midlands and Mountain areas and the problem of food insecurity seems to be more important in the rural areas of the Midlands.

*During the last decade, there has been an improvement in the control of micronutrient deficiencies. Ten years ago, keratomalacia was 7 times higher than WHO cut-off point but now Vitamin A deficiency is no longer a public health problem. A great success was also achieved in controlling of Iodine Deficiency Disorders through Universal Iodization Salt. Nevertheless, Iron Deficiency Anaemia is still a burden that effects a large segment of population: 45% of children under 5 years of age, 40% of non-pregnant women and 53% pregnant women are anaemic (**Maps 5 and 6**).*

According to FAO the proportion of the population whose energy requirements were not satisfied was 25% in 1969-71 and in 1990-92 but this value was higher during wartime.

Control programs for infectious diseases, a better distribution of the food available, a better access to the Public Health Services as well as a reduction in the under five mortality rate are required to improve the overall nutritional situation.

TABLE 1: GENERAL STATISTICS OF VIETNAM

Indicator (\$)	Year	Unit of measure	Indicator (\$)	Year	Unit of measure																								
A. Land in use for agriculture			G. Average Food Supply																										
1. Agricultural land	1995	ha per person	1. Dietary Energy Supply (DES)	1994-96	Kcal/caput/day																								
2. Arable and permanent crop land	1995	ha per person			2450																								
B. Livestock			<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>73%</td></tr> <tr><td>Starchy roots</td><td>5%</td></tr> <tr><td>Sweeteners</td><td>3%</td></tr> <tr><td>Pulses, nuts, oilcrops</td><td>2%</td></tr> <tr><td>Fruits & Vegetables</td><td>2%</td></tr> <tr><td>Vegetable oils</td><td>4%</td></tr> <tr><td>Animal Fats</td><td>1%</td></tr> <tr><td>Meat & offals</td><td>7%</td></tr> <tr><td>Fish & seafood</td><td>1%</td></tr> <tr><td>Milk & Eggs</td><td>1%</td></tr> <tr><td>Other</td><td>1%</td></tr> </tbody> </table> <p>Note: Value not indicated if below 1%</p>			Food Group	Percentage	Cereals (excl. beer)	73%	Starchy roots	5%	Sweeteners	3%	Pulses, nuts, oilcrops	2%	Fruits & Vegetables	2%	Vegetable oils	4%	Animal Fats	1%	Meat & offals	7%	Fish & seafood	1%	Milk & Eggs	1%	Other	1%
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Cereals (excl. beer)	73%																												
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Milk & Eggs	1%																												
Other	1%																												
1. Cattle	1994-96	thousands	2. Proteins	1994-96	g/caput/day																								
2. Sheep & goats	1994-96	thousands	% from:		57																								
3. Pigs	1994-96	thousands	3. Vegetable products	1994-96	% of total proteins																								
4. Chickens	1994-96	millions	4. Animal products	1994-96	% of total proteins																								
C. Population			% Energy from:																										
1. Total population	1998	thousands	5. Protein	1994-96	% of total energy																								
2. 0-5 years	1998	% of total pop.	6. Fat	1994-96	% of total energy																								
3. 6-17 years	1998	% of total pop.			12.0																								
4. 18-59 years	1998	% of total pop.	H. Food Inadequacy																										
5. >= 60 years	1998	% of total pop.	1. Total population "undernourished"	1990-92	millions																								
6. Rural population	1998	% of total pop.	2. % population "undernourished"	1990-92	% of total pop.																								
7. Population growth rate, Total	1995-2000	% of total pop.			17.2																								
8. Population growth rate, Rural	1995-2000	% of rural pop.			25.0																								
9. Projected total population in 2025	2025	thousands	... no data available § see References for data sources used See Technical Notes for definitions used.																										
10. Agricultural population	1995	% of total pop.																											
11. Population density	1995	pop. per sq Km																											
D. Level of Development																													
1. GNP per capita, Atlas method	1996	current US\$																											
2. Human Development Index rating	1995	min[0] - max[1]																											
3. Incidence of poverty, Total	...	% of population																											
4. Incidence of poverty, Rural	1988	% of population																											
5. Life expectancy at birth (for both sexes)	1995	years																											
6. Under-five mortality rate	1996	per 1,000 live births																											
E. Food Trade																													
1. Food Imports (US \$)	1994-96	% of total imports																											
2. Food Exports (US \$)	1994-96	% of total exports																											
3. Cereal Food Aid (100 MT)	1994-96	% of cereals imports																											
F. Indices of Food Production																													
1. Food Production Index	1994-96	1989-91=100																											
2. Food Production Index Per Capita	1994-96	1989-91=100																											

VIETNAM

I. OVERVIEW

1. Geography

Located in the centre of South East Asia, Vietnam forms an S-shaped strip on the eastern seaboard of the Indochinese Peninsula, linking to the large Asian continent and looking out on the Pacific Ocean. Vietnam stretches 1650 km from North to South. The widest area from East to West is 600km and the narrowest only 50km (Tran Hoang Kim, 1992). With a borderline of 3730 km, Vietnam is bordered by China in the North, Laos and Cambodia in the West and by the East Sea in the East with a coastline of 3260km. Its land area is about 331.668 km² of which 7.3 million ha is used for agriculture and 11.800 million ha used for forestry.

Vietnam is essentially a tropical country with a humid monsoon climate. Its weather can be divided into 2 seasons: dry season and rainy season. Vietnam has 7 different ecological regions: North Mountain and Midlands, Red River delta, North of Central Coast, South of Central Coast, Central Highlands, Northeast of Southlands and the Mekong River delta. While giving some advantages, the weather in Vietnam also gives some disadvantages for agriculture such as floods or typhoons, in Red-River delta and Mekong delta area, drought in Central and High land areas.

2. Population

The population of Vietnam was estimated to be 77,896 million inhabitants in 1998 (**Table 1**). The Vietnamese population is growing at an annual rate of 1.8% and is projected to reach more than 110 million by the year 2025 (**Table 1**). The rapid population growth continues despite the under five mortality rate of 44‰ and the relatively low life expectancy at birth (66.4 for both sexes) (**Table 1**). However, Vietnam has made impressive improvements in human development over the last 15 years. A number of factors jointly contributed to the health gains achieved: establishment of a vast network of primary health facilities throughout the country; implementation of a number of very effective categorical health programmes to deal with preventable health problems, such as malaria and diarrhoea. There are no evidence to show the difference of IMR between males (45‰) and females (44‰) (GSO, 1991). The IMR in the Central highland (56‰) and Central Coast (47‰) areas was found to be higher than others regions which is mainly due to the harsher climatic conditions, poorer infrastructures and lower living standards than lowland and cities (33-34‰) (GSO, 1991).

Several studies show that the Northern High Land, the High Plateau and the North-Centre have a high population growth rate and a high risk of food insecurity. The population in Vietnam is still basically rural (more than 80% of total population) and is concentrated in the two main rice growing deltas: the Red River (in the north), and the Mekong (in the south) (**Map 1** and **Table 1**) (GSO, 1994). In the Red River Delta the population density is nearly 1,000 persons/km² and is among the highest in the world for a rural area (EIU, 1996). The country's delta populations are almost entirely ethnic Vietnamese (Kinh) (87% of total

population). The minority groups living in the uplands (about 5 million people) include Thai, H'mong, Muong and Dao people whose cultures and languages are quite distinct from those of the Kinh Vietnamese (EIU, 1996). The minority groups living in the lowlands include Khmer, Cham and Tay which are less than 3 million people.

3. Level of development: poverty, education and health

In recent years Vietnam's social indicators, such as education and health, have been impressive for a country whose income per head is so low. In 1996, it was estimated that the Gross National Product of Vietnam was 290\$/caput/year and the percentage of poverty in rural areas was estimated to be over 60% in 1988 (**Table 1**). According to a General Nutrition Survey in the period 1987-1989 over a half of Vietnam's population fell under the poverty line which is based on a basket of goods in which food items provide 2100 kcal/capita/day (NIN/WB, 1991). Rural poverty is much higher at 57% than urban poverty, 26%.

Within Vietnam the regional disparities are high with the incidence of urban poverty falling to 15% and 17% in the Red River Delta and South-eastern regions, while rural poverty rises to 63% and 74% in the northern highlands and north central coast region. From 1990 the Government has introduced laws and policies that ensure freedom in the choice of employment and encourages the development of medium- and small-scale enterprises and household enterprises in order to create more jobs. Parallel to the Government's efforts, several organizations such as Women's Union, Peasant Association, etc... have actively participated in the promotion of employment for their respective members. The rate of unemployment therefore has been reduced from 9% in 1990 to about 7% in 1996 (MOLISA, 1997). However, unemployment remains a keen problem. In big cities such as Hanoi and Ho Chi Minh City the employment situation has put pressure on both economy and society. In rural areas 30-35% of workforce are still unemployed due to limited agricultural land, and underdevelopment of non-agricultural economic activities. Moreover, thirty years of wars has left over 4 million invalids and disabled people, more than 1 million elderly, whose children died in the war, are now without any support, over 300,000 orphans, and many other victims are affected with mental illnesses and physical deformities.

Vietnam has a Human Development Index (HDI) of 0.560 on a 0-1 scale indicating that some efforts are made for achievements in development (**Table 1**). However, the gap between rich and poor is increasing in recent years and a part of the population is still living in marginal conditions.

Although access to higher levels of education is limited, the introduction of near universal primary education has produced impressively high literacy rates. The 1989 census found that 88% of the population over 15 years was literate. The rural education system was nearly as well developed as the urban one particularly in the north.

Budget cuts have affected health care and degraded the water supply and waste disposal systems. Their inadequacies are probably the main cause of the most prevalent infectious diseases such as malaria, dengue fever, typhoid and cholera. National statistics indicate that there has been a recent fall in the number of certain categories of health staff and in 1995 the doctors were 30,600 while the nurses and midwives were 59,300.

4. Agricultural production, land use and food security

The Gross Domestic Product (GDP) is only USD 290 which means that Vietnam ranks among the poorest countries in the world (EIU, 1996). Vietnam has traditionally been an agricultural economy in which rice growing has been the dominant form of cultivation. The agricultural sector accounts for 70% of the labour forces and about one-third of exports, although its share in the GDP fell below 30% in 1993 and will continue to decline as industrialisation proceeds (EIU, 1996). The average land per capita has decreased from 2,548 to 732m²/person between 1930 and 1995, and in some areas the acid-salted soils reduce agricultural production.

Vietnam has 7.3 million ha used for agriculture, out of which 4.3 million ha are used for rice cultivation, 1.3 million ha for long-term plants and 304.200 ha for grass fields (for animal raising). Vietnam is one of the countries with the most abundant water resources in the world. Surface water is evenly distributed in the country, thus being able to meet requirements for the development of industry, agriculture, transportation and daily needs. An area of 273.100 ha of surface water is used for agriculture irrigation (Tran Hoang Kim, 1992).

In Vietnam there was an increase in total cereal production from 20 to almost 30 million tons between 1990 and 1998 (FAOSTAT). This increase is due to rice production, which reached about 28 million tons in 1998, therefore representing more than 93% of total cereal production. After 10 years of reform, agriculture has grown impressively and from a rice importer country Vietnam has become the second rice exporter country in the world. Rice is mainly produced in Mekong and in the Red River delta. The production of maize and sorghum has remained constant since 1990 and has never exceeded 2 million tons (FAOSTAT).

Rubber is produced in the South Eastern part of Vietnam and there has been an important increase in this production from 58 to 181 thousand tons between 1990 and 1998. In the same period the same trend was observed in tea production which increased from 32 to 53 thousand tons. Tea is mainly grown in High Plateau.

The production of milk and meat that remain an important source of protein have reached respectively, 1.6 million ton and 79 thousand tons in 1998 (FAOSTAT).

5. Economy

While agriculture still retains its position as the backbone of the economy, the rapid growth in recent years has been driven by the expansion of the industrial and service sectors whose share of total output has risen to the extent that agriculture has declined (EIU, 1996). By 1994, the agricultural sector's share of current price GDP had fallen to 29% and had been surpassed by both services (42%) and industry (30%) (EIU, 1996). During the period 1991-95 the GDP growth is estimated to have averaged 8.2% per year and to have reached a peak of 9.5% in 1995.

The main exports of Vietnam are: petroleum, textiles and garments, marine products, rice, coffee, rubber, coal and cashew nuts. While the major imports are: machinery and spare parts, petroleum products, fertiliser, steel, wheat, cotton textiles, monosodium glutamate and sugar (EIU, 1996; GSO, 1994).

The country is endowed with great mineral wealth but mining is mainly concentrated in the north. Vietnam has reserves in gold, iron-ore, bauxite, copper, manganese, apatite, copper, mica, lead, zinc, nickel, graphite, marble, titanium ore and uranium (Tran Hoang Kim, 1992).

II. THE FOOD AND NUTRITION SITUATION

1. Trends in energy requirements and energy supplies

Total population has almost doubled from 1965 to 1995 and is projected to reach more than 110 million inhabitants, by 2025 (**Table 2**). The increase in energy requirements of the population reflects the growing needs. The rural population is experiencing rapid growth. Over the period 1965-2025, the urban population, although smaller, is projected to account for a continually increasing proportion of the total energy requirements.

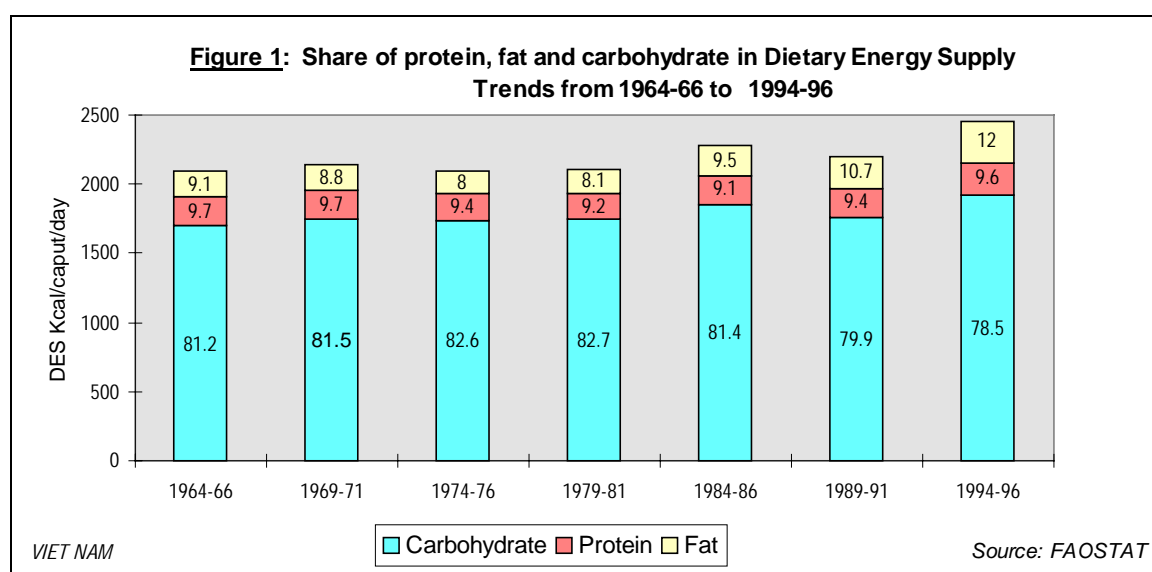
Table 2: Total population, urbanisation, energy requirements and dietary energy supplies (DES) per person and per day in 1965, 1995 and 2025

Year	1965	1995	2025
Total population (<i>thousands</i>)	38341	73793	110107
Percentage urban (%)	16.4	19.4	30.4
Per caput energy requirements (<i>kcal/day</i>)	2115	2164	2248
Per caput DES (<i>kcal/day</i>) *	2097	2451	—

* Three-year average calculated for 1964-66 and 1994-96 (*Source: FAOSTAT*)

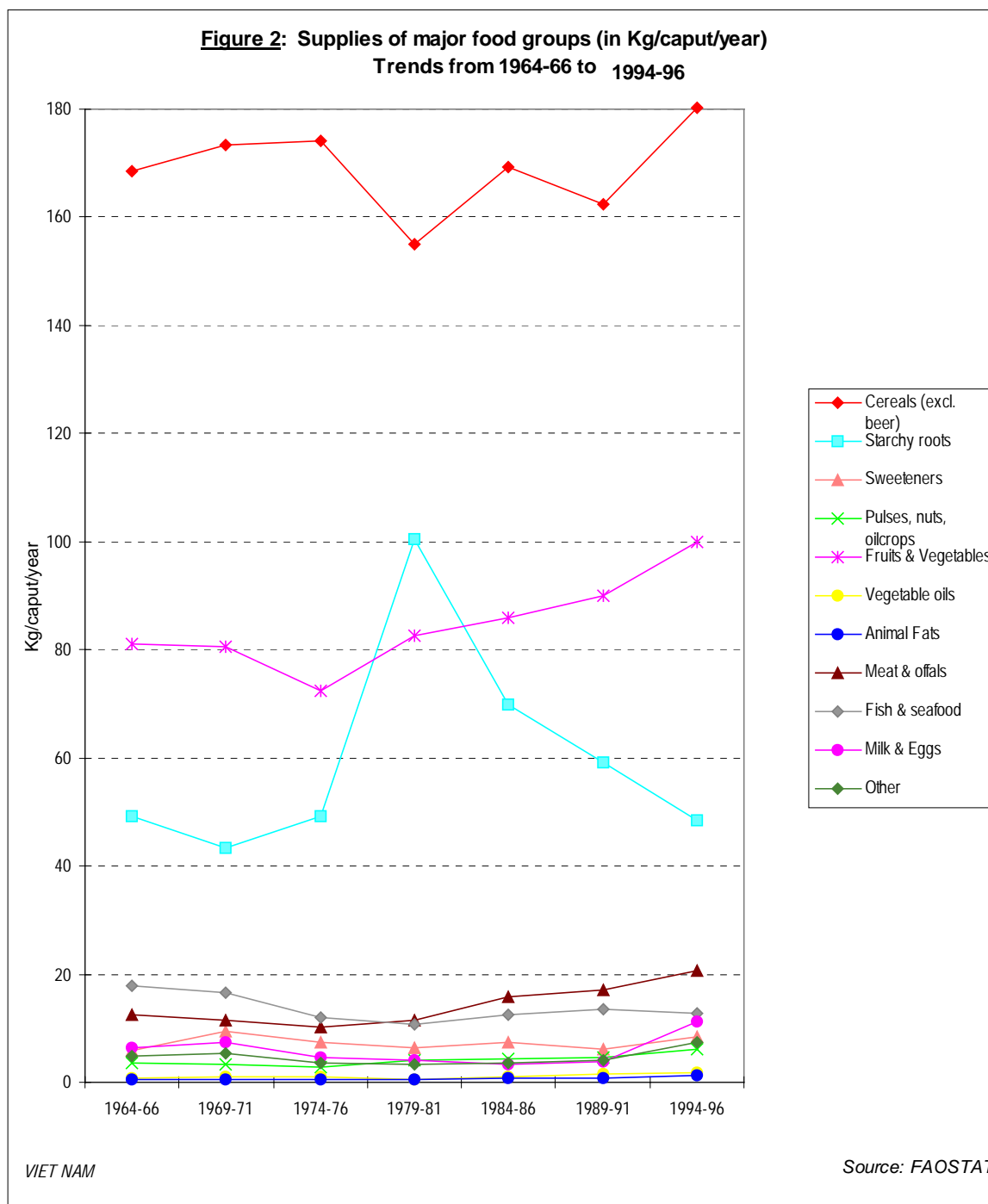
Between 1965 and 1995, average daily per caput Dietary Energy Supplies (DES) increased from 2097 to 2451 kcal, while the estimated average daily per caput energy requirement increased from 2115 to 2164 kcal (**Table 2**). FAO estimated that the DES did not cover the requirements of 25% of the population in 1969-71 and in 1990-92, but it is important to underline that during wartime this proportion was higher (FAO, 1996).

Between 1965 and 1995, the increase in DES can mainly be attributed to a higher percentage contribution of fat from 9% to 12% (animal fat and vegetable oils as shown in **Figure 3**). In the same period, while the proportion of energy provided by carbohydrates has decreased from 81% to 78%, no change in the share of protein in total DES were observed.



2. Trends in food supplies

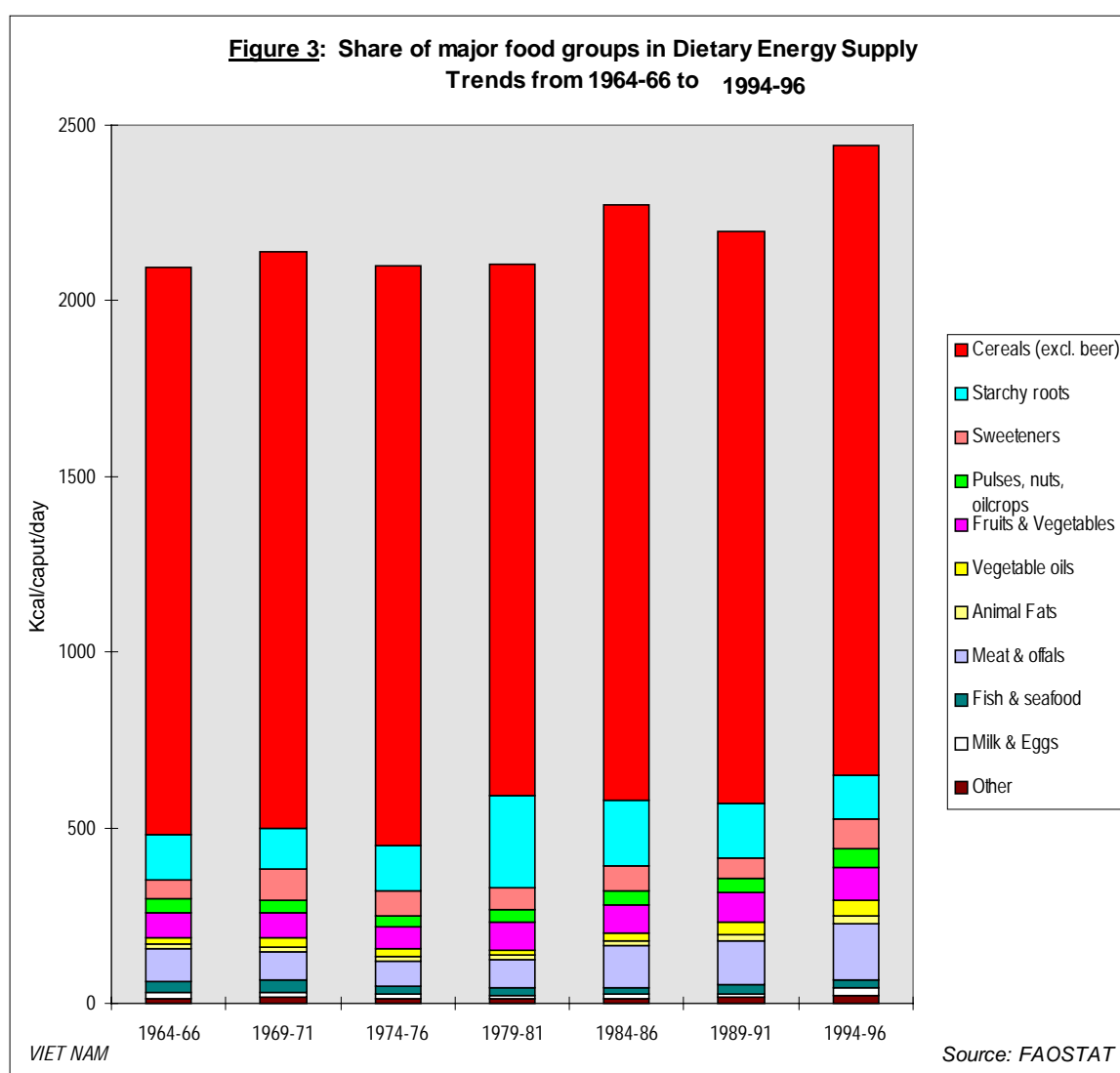
Quantity: The per capita availability of food is a function of population and food production, with adjustments made for exports, imports, food aid, wastage and livestock feed. Since 1964-66, there has been a continuous increase in the annual per capita availability of all major food groups except for the group starchy roots and fish & seafood (**Figure 2**). This steady increase is particularly significant after 1979-81 and in 1994-96 cereal availability per capita per year has reached 180 kg. In 1979-81 there has been a significant decrease in per capita cereal supplies (mainly rice) which have reached the lowest point (155 kg).



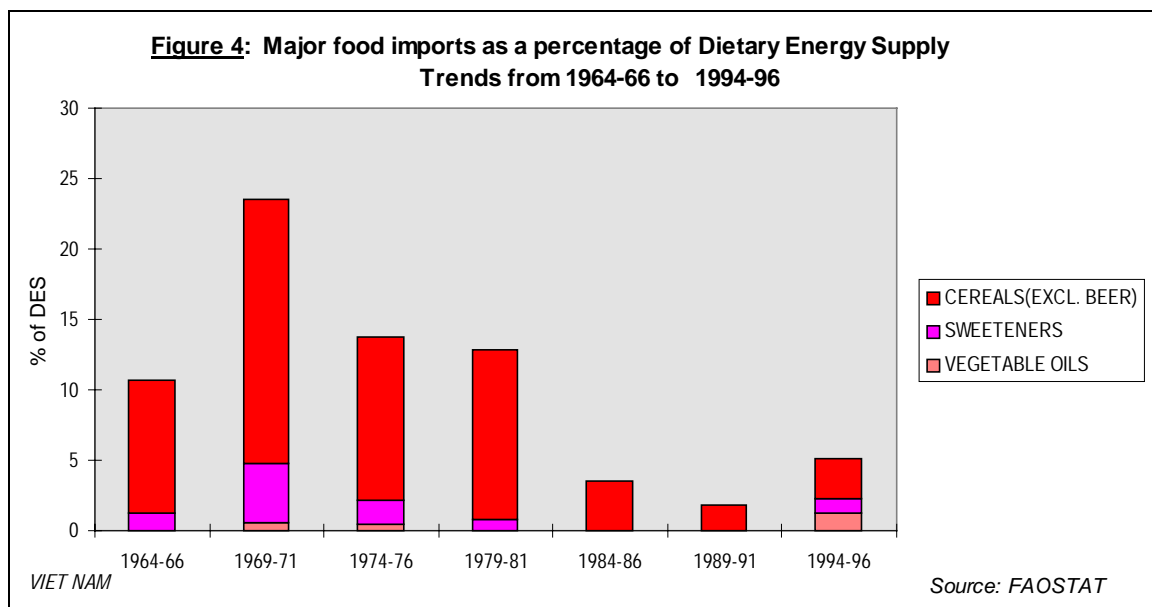
This decrease in cereal availability is associated to an increase in starchy roots supplies which reach their highest point 101 kg/per capita/year in the same period (**Figure 2**).

The availability of fruits & vegetables increased from 81 to 100 kg/per capita/year between 1964-66 and 1994-96 and this improvement was probably due to the gardening development that has been extended to VAC ecosystem development. This system consists of a home garden, a fish pond and small animal husbandry.

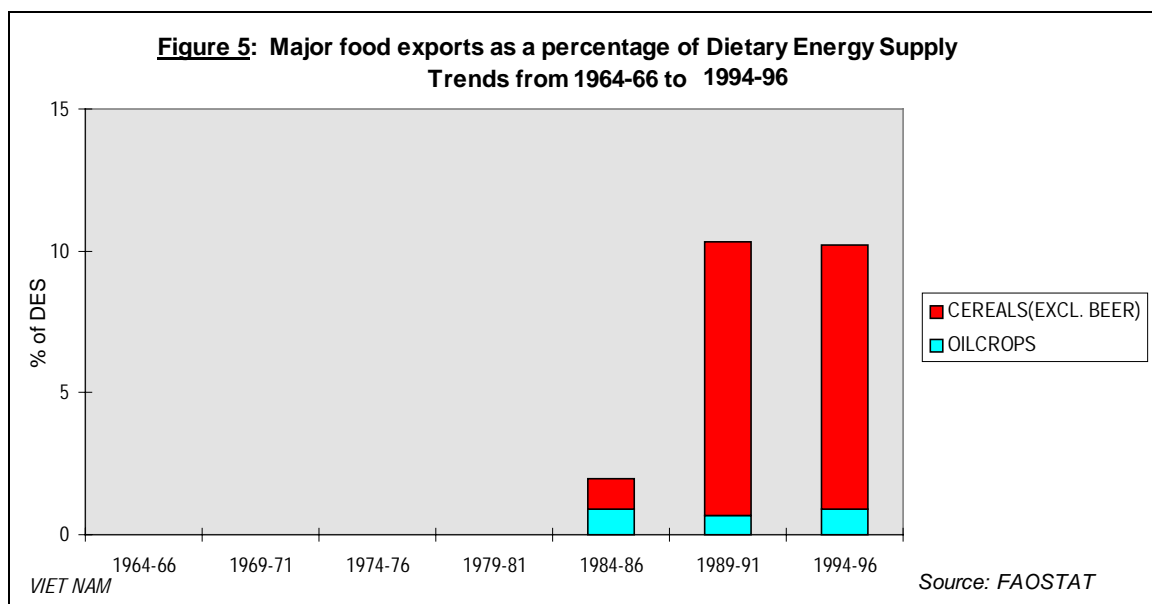
Energy: Between 1964-66 and 1994-96, although there was a reduction in the share of cereals in the DES, they still represent the main source of energy in the Vietnamese diet, providing 1,792 kcal per capita per day, equivalent to 73% of the total energy (**Figure 3**). Over the same period, the share of pulses, meat & offal's, sweeteners, fruits & vegetables, vegetable oils and animal fats in the DES have been increasing continuously and reach respectively 2%, 7%, 3%, 4%, 2% and 1%. The diet in Vietnam is mainly based on vegetable products which provide respectively, 91%, 78% and 45% of total energy, protein and fat supplies (**Figure 3**). In the last thirty years, the availability of milk & eggs has remained constant (0.8% of total DES). Milk is an imported product since soymilk is usually produced in Vietnam.



Major food imports and exports: During wartime (1965-1975) Vietnam was unable to produce cereals and therefore the imports of rice were important between 1964-66 and 1979-81 and reached the highest point in 1969-71. This trend continued in the following years after the war (**Figure 4**). In the same period Vietnam was also importing small amounts of vegetable oils and sweeteners (less than 2% of DES).



After 1981, with the renovation and the renewed managing mechanism, rice imports were replaced by exports (**Figures 4 and 5**). Besides rice, Vietnam also started exporting oilcrops (sesame, peanuts).



3. Food consumption

In Vietnam food consumption is influenced by regional, ethnic, cultural, income and agricultural production differences. The data on food consumption were obtained from two national surveys conducted on 12,424 and 4,805 households respectively in 1989 and 1995 (Tu Giay et al., 1990; NIN, 1995). These surveys show that the average daily energy intake per person has remained constant 1,925 kcal (**Table 3**). Although there have been considerable changes in the economic development of Vietnam the current energy intake is lower than the recommended energy requirement of 2,300 kcal for the Vietnamese population calculated by the National Institute of Nutrition. This can be explained by the fact that more than 80% of the total population live in remote rural areas where food transport is difficult, and where the food availability and purchasing power is lower than in urban areas (**Table 1**). The Northern mountainous, Northern coastal central, Southern central and Central highland provinces are the most affected by food inadequacy.

The 1995 survey showed that the average daily per caput energy consumption was more than 525 kcal lower than the daily energy supply estimated from the FAO food balance sheets which was 2,451 kcal in the same year (FAOSTAT). However, assuming that sampling procedures were carried out correctly, the results of the 1995 survey better reflect actual food consumption.

Cereals are the main source of energy in the Vietnamese diet providing 78% of total energy (**Table 3**). The most important cereal is rice which is the staple food in Vietnam, occurring in daily meals in every region and ethnic group. However, in mountainous, midland and highland areas where rice is not cultivated widely, the staple food is supplemented by tubers (cassava, sweet potato) and by corn in particular in the Northern mountainous areas. In delta areas, during pre-harvest periods or after natural calamities, rice intake decreases and is supplemented by tubers, fruits and beans.

The 1995 survey conducted on 4805 households showed that the percentage of energy provided by protein was 13% although proteins were predominantly of vegetable origin, due to the cost of food rich in protein of animal origin that play a minor role in the Vietnamese diet (only 19% of the protein derive from animal products) (**Table 3**) (NIN, 1995).

The percentage of energy provided by fat is low (10%) and the consumption of fats and oils seems to increase with the increasing income of the household (**Table 3**). Fats and oils are generally used in the Vietnamese diet for seasoning purposes along with condiments and spices.

Besides rice, vegetables, tubers, fruits, oily nuts, beans, soya beans and soya products (tofu, soysauce, soymilk) play an important role in the Vietnamese diet. Fish is not very frequently consumed and provides less than 3% of total energy intake. Meat, which provides 6% of total energy intake, is usually given to children and sick people, especially in urban areas.

Vietnamese people usually eat 3 meals a day but during food shortage periods the number is reduced to 2 meals. In harvest, since the farmers have to work hard all day, they consume 5-6 meals that mainly consist of rice.

Breastfeeding

In Vietnam the breastfeeding rate is high in both urban and rural areas and correct introduction of child foods, in terms of timing, quantity and quality of food is crucial for the health and growth of children. Children are given weaning foods early, from the age of 2-3 months with the belief that carbohydrates are needed for growth.

The main weaning foods are rice and flour. In rural areas children cover 60% of their recommended requirements, whereas in cities children have a better nutritional status because of higher education and living standard. The duration of breastfeeding among urban children is shortened to 1 year because they are given milk in powder, whereas in rural children breastfeeding lasts up to 18-24 months.

Table 3: Food consumption surveys

Source/ Year of survey	Location	Sample Number households	Average food intake									
			Major Food Groups (kg/caput/year)									
			Cereals	Roots/ Tubers	Pulses	Fruits/ Vegetables	Oils/Fats	Meat	Fish	Milk products	Sweeteners	Other
Tu Giay et al.,1990 1989	National	12424	169.1	33.7	3.2	53.2	1.2	7.4	11.3	...	0.2	15.5
NIN, 1995 NSS, 1995	National	4805	156.5	24.0	1.8	52.1	1.8	16.5	18.5	...	0.7	16.2
			Nutrient Intake (person/day)									
			Energy (kcal)	% Protein	% Fat		Protein (g)	% from Animal products		Fat (g)	% from Animal products	
Tu Giay et al.,1990 1989	National	12424	1925	11.9	8.0		55.6	22.0		16.5	54.3	
NIN, 1995 NSS, 1995	National	4805	1925	12.7	10.3		59.4	19.4		22.4	48.5	
			Share of major food groups in total energy intake (%)									
			Cereals	Roots/ Tubers	Pulses	Fruits/ Vegetables	Oils/Fats	Meat	Fish	Milk products	Sweeteners	Other
Tu Giay et al.,1990 1989	National	12424	84.3	4.8	0.5	2.3	1.6	2.8	1.6	...	0.1	2.2
NIN, 1995 NSS, 1995	National	4805	78.0	3.4	0.3	2.2	2.3	6.1	2.6	...	0.4	4.7

Notes: ... data not available

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. Weight and height 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.

Different routine data collection systems and surveys conducted by the National Institute of Nutrition provide both national estimates of the prevalence of malnutrition, as well as trends in the nutritional status over time. These surveys show that during the past decade, there has been a reduction in the prevalence of malnutrition in children under five years of age in Vietnam (NIN, 1985, 1990, 1995, 1997 and NIN/UNICEF, 1998). In these surveys, no significant differences were observed in the prevalence of underweight, stunting and wasting between boys and girls. For this reason the results are presented for both sexes in **Table 4a**.

The national prevalence of underweight and stunting which were respectively, 52% and 60% in 1985 have decreased to 40% and 36% in 1998 (**Table 4a**). According to the WHO criteria for the classification of malnutrition a prevalence of underweight above 30% in children under five years of age is considered to be very high (WHO, 1995). The **Maps 2, 3** and **4** show the prevalence of underweight, stunting and wasting among children under five years of age by region, the North Central region being highly affected by malnutrition (**Table 4a**). The prevalence of wasting which doubled from 7% to 14% between 1985 and 1997 decreased to 10% in 1998, but since this indicator is very sensitive these results have to be interpreted with caution.

Clinical data suggest that malnutrition increases in severity during the months of May and October (Bloem et al., 1995). These are the periods during which there is a reduction in food availability and an increase in the frequency of infectious diseases (diarrhoea and respiratory diseases). In the South, the natural disasters that occur every year worsen the nutrition situation. The floods and the lack of safe water increase the incidence of intestinal infections.

The surveys conducted by the National Institute of Nutrition in 1995, 1996 and 1998 in Hanoi on children from 5 to 10 years old show no significant improvement in the prevalence of stunting while that of underweight and wasting have decreased (**Table 4b**).

One of the main causes of high child malnutrition prevalence is the poor nutritional status of pregnant women. The nutritional status of the pregnant woman is a major determinant of the outcome of the pregnancy. The undernourished mother has an increased risk of delivering a low birth weight baby. Therefore, low birth weight can also be regarded as an indicator of the health and nutritional status of the mother (WHO, 1995). In Vietnam, the weight gain during pregnancy is only 6.6 kg in rural areas and 8.4 kg in urban areas. Moreover, the pregnant women's intake in the last 3 months is restricted in some localities because of the belief: that: "a big baby will make the delivery harder".

Low birth weight (LBW) was defined by WHO as a weight below 2,500 grams and was considered to be a reasonable cut-off for instituting surveillance, detection and treatment of early complications of Intra Uterine Growth Retardation (WHO, 1995). This internationally accepted cut-off value allows the assessment of nutritional status of new-borns as well as the comparison between different populations. LBW is the single most important determinant of

neonatal and postnatal mortality, child morbidity and impaired development (de Onis and Habicht, 1996; WHO, 1995). Low birth weight, just as the infant mortality rate, can be considered as an indicator of the general socio-economic development of the population.

In Vietnam it was estimated that the prevalence of LBW is 14% (NIN/UNICEF/CDC/PAMM, 1995). Throughout the country more than 50% of all births occur outside a health facility and this percentage is even greater in the rural areas. As shown in **Tables 4c** and **5b** the prevalence of Chronic Energy Deficiency (CED) among women and anaemia among pregnant women are high; it is likely that the prevalence of LBW may be higher.

Table 4a: Anthropometric data of children under five years of age

Source/ Year of survey	Location	Sample Size Number	Sex	Age Years	Percentage of malnutrition						
					Underweight % Weight/Age		Stunting % Height/Age		Wasting % Weight/Height		Overweight % Weight/Height
					< -3SD	< -2SD	< -3SD	< -2SD	< -3SD	< -2SD	> +2SD
NIN,1985	National	11809	M/F	0-5	12.5	51.5	28.9	59.7	...	7.0	...
NSS, 1985											
NIN, 1990	National	7044	M/F	0-5	15.2	44.9	32.1	56.5	...	9.4	...
NSS, 1989											
NIN/UNICEF/CDC/PAMM, 1995	National	37,710	M/F	0-5	11.0	44.9	17.4	46.9	2.1	11.6	...
NANRFS, 1994	Northern Uplands	6,084	"	"	...	52.2	...	55.3	...	15.6	...
	Red River Delta	7,589	"	"	...	46.0	...	46.7	...	11.1	...
	North Central	4,523	"	"	...	48.7	...	56.0	...	7.9	...
	Central Coast	4,533	"	"	...	46.9	...	48.3	...	10.5	...
	Central Highlands	1,488	"	"	...	47.4	...	53.1	...	10.4	...
	North East South	4,491	"	"	...	35.9	...	33.2	...	10.5	...
	Mekong River Delta	9,058	"	"	...	40.0	...	42.0	...	12.4	...
NIN,1996	Northern Uplands	3737	M/F	0-5	...	50.1	...	51.4	...	15.6	...
NSS, 1996	Red River Delta	3400	"	0-5	...	43.3	...	49.4	...	14.6	...
	North Central	2211	"	0-5	...	49.6	...	46.4	...	19.7	...
	Central Coast	2723	"	0-5	...	45.1	...	40.6	...	15.7	...
	Central Highlands	1287	"	0-5	...	50.0	...	56.3	...	12.3	...
	North East South	2229	"	0-5	...	35.4	...	34.0	...	13.3	...
	Mekong River Delta	4794	"	0-5	...	38.7	...	37.5	...	12.9	...
	Total	20381	"	0-5	...	43.9	...	44.2	...	14.8	...
NIN,1997	National	18690	M/F	0-5	...	40.6	...	44.1	...	14.3	...
NSS, 1997											
	Northern Uplands	3871	M/F	0-5	8.9	33.0	20.6	26.5	...	13.9	...
	Red River Delta	3257	"	"	7.5	29.4	21.6	27.4	...	12.6	...
	North Central	2368	"	"	15.9	36.9	24.8	27.7	...	17.6	...
	Central Coast	1700	"	"	10.1	31.2	21.2	27.6	...	11.5	...
	Central Highlands	1330	"	"	12.4	32.7	31.1	24.1	...	10.4	...
	North East South	1367	"	"	10.7	26.3	16.5	21.2	...	13.4	...
	Mekong River Delta	3927	"	"	10.1	28.1	13.1	21.9	...	16.7	...
	Hanoi&Ho Chi Minh city	856	"	"	5.1	22.2	5.1	10.1	...	14.8	...
NIN/UNICEF, 1998	National	20381	M/F	0-5	7.3	39.8	11.5	35.9	...	10.3	...
PEM/VAD, 1998											
	Northern Uplands	2127	M/F	0-5	7.8	40.7	13.3	38.1	...	10.4	...
	Red River Delta	1537	"	"	6.3	40.2	8.7	33.8	...	10.8	...
	North Central	1913	"	"	9.5	47.2	15.0	46.7	...	10.0	...
	Central Coast	1842	"	"	8.5	40.0	12.4	37.5	...	10.5	...
	Central Highlands	1865	"	"	8.2	42.4	13.9	41.5	...	8.3	...
	North East South	1859	"	"	4.2	32.0	7.2	24.6	...	9.2	...
	Mekong River Delta	1886	"	"	6.1	35.3	9.1	28.4	...	13.2	...

Notes: ... data not available

Table 4b: Anthropometric data of children 5-10 years

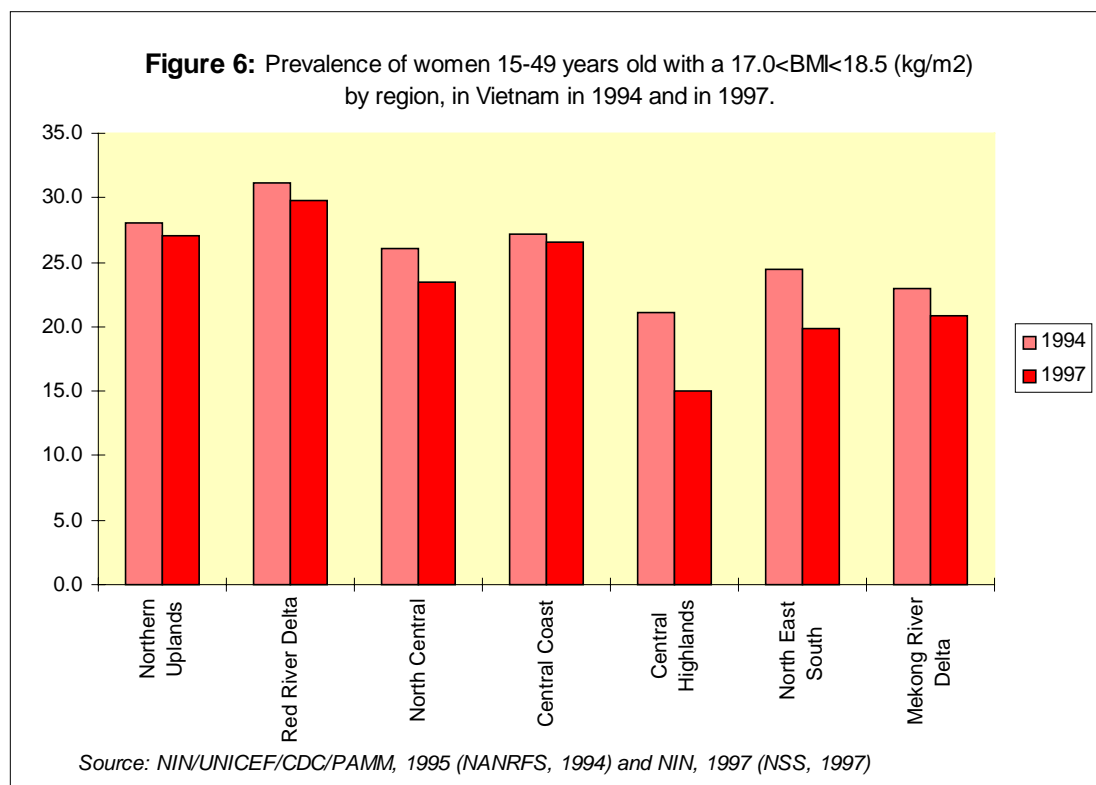
Source/ Year of survey	Location	Sample			Percentage of malnutrition							
		Size Number	Sex	Age Years	Underweight		Stunting		Wasting		Overweight	
					% Weight/Age	% Height/Age	% Weight/Height	% Weight/Height	% Weight/Height			
< -3SD	< -2SD	< -3SD	< -2SD	< -3SD	< -2SD	> +2SD						
NIN, 1995 NSS, 1995	Hanoi	202	M	5-6	1.0	14.4	1.5	10.5	...	3.0	1.7	
		205	"	6-7	0.0	9.3	0.0	8.8	...	3.9	2.0	
		327	"	7-8	0.3	12.8	0.6	6.1	...	12.6	2.2	
		310	"	8-9	1.0	24.5	0.0	5.2	...	30.4	2.2	
		248	"	9-10	0.0	13.7	0.0	6.9	...	17.7	1.5	
		227	F	5-6	0.0	15.4	0.0	8.8	...	6.2	0.0	
		250	"	6-7	1.2	19.2	2.0	11.6	...	6.4	1.0	
		311	"	7-8	1.0	15.8	1.3	10.3	...	11.6	1.5	
		314	"	8-9	3.5	26.1	0.6	9.2	...	24.2	1.6	
		266	"	9-10	1.5	18.8	0.4	8.3	...	17.7	0.8	
		428	M/F	5-6	0.5	15.0	0.7	8.6	...	4.7	0.9	
		455	"	6-7	0.7	14.8	1.1	10.3	...	5.3	1.6	
		637	"	7-8	0.6	14.2	0.9	8.1	...	12.1	1.8	
		623	"	8-9	2.2	25.3	0.3	7.2	...	27.3	1.9	
		508	"	9-10	0.8	16.4	0.2	7.6	...	17.7	1.2	
		NIN, 1996 NSS, 1996	Hanoi	101	M	6-7	1.0	19.8	2.0	12.9	...	5.9	2.0
310	"			7-8	2.6	16.5	1.9	11.6	...	8.4	2.3	
334	"			8-9	0.9	20.4	0.6	12.0	...	7.8	3.9	
308	"			9-10	0.6	13.6	0.3	8.4	...	11.0	4.2	
88	F			6-7	0.0	5.7	...	6.8	...	4.5	2.3	
268	"			7-8	0.4	13.1	0.7	9.0	...	8.2	1.9	
316	"			8-9	0.3	14.9	...	5.4	...	12.0	0.9	
302	"	9-10	0.0	15.1	0.3	7.3	...	13.4	1.0			
NIN, 1998 NSS, 1998	Hanoi	100	M/F	5-6	2.0	15.0	...	11.0	...	5.0	3.0	
		98	"	6-7	1.0	9.2	...	10.2	...	5.1	2.0	
		111	"	7-8	0.9	11.7	...	12.6	...	4.5	0.9	
		104	"	8-9	0.9	11.5	...	11.5	...	4.8	1.0	
		97	"	9-10	0.0	9.3	...	8.2	...	5.1	0.9	

Notes: ... data not available

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 $18.5 \text{ kg}/m^2$ are considered to suffer from chronic energy deficiency. A BMI of over $25.0 \text{ kg}/m^2$ indicates overweight.

The results obtained from different surveys conducted by the National Institute of Nutrition showed an improvement in the nutritional status as indicated by the decrease in the prevalence of women with a $\text{BMI} < 18.5 \text{ kg}/m^2$ from 38% in 1990 to 34% in 1997 (**Table 4c** and **Figure 6**). In the same period a slight increase in the prevalence of overweight was also observed from 1.7% to 2.0%.

The 1997 survey showed that the Red River Delta was the most affected region with 46% of the women aged 15 to 49 years with a BMI<18.5 kg/m². However, in the Mekong River Delta region, the prevalence of severe CED (BMI<16.0 kg/m²) was the highest (**Table 4c**).



The survey conducted in Ha tay in 1995 showed that more than 40% of men and women suffered from CED therefore indicating that this province was highly affected by malnutrition (**Table 4c**). However, the prevalence of severe CED (BMI<16.0 kg/m²) was only about 5% for both sexes. Although the prevalence of overweight and obesity was not very high (below 3% for both men and women), all age classes were found to be affected.

Table 4c: Anthropometric data of adults

Source/ Year of survey	Location	Sample			Percentage of malnutrition								
		Size Number	Sex	Age Years	Body		Index median	Chronic <16.0	Energy Deficiency % BMI		Overweight % BMI 25.0-29.9	Obesity % BMI >30.0	
					mean	SD			16.0-16.9	17.0-18.5			
NIN, 1985 General Nutrition Survey, 1981-85	National	2,453	F	18-25	19.8	1.9	...	2.7	5.3	20.5	0.0	0.0	
		1,930	"	26-40	19.7	1.8	...	0.4	0.8	16.6	0.5	0.0	
		2,937	"	41-60	18.6	2.0	...	5.0	7.7	29.7	0.7	0.0	
NIN, 1990 NSS, 1989	National	14707	F	15-50	19.2	2.1	...	4.8	10.4	22.4	1.7	0.0	
		1,485	"	15-17	18.3	2.3	...	11.4	11.5	30.0	0.9	0.1	
		4,270	"	18-24	19.6	2.0	...	3.1	9.1	17.1	1.9	0.0	
		2,801	"	25-29	19.6	1.9	...	1.9	10.5	18.6	1.7	0.0	
		3,857	"	30-39	19.4	2.0	...	3.3	10.6	21.5	1.8	0.0	
		2,294	"	40-49	19.2	2.1	...	4.2	10.4	24.6	2.0	0.0	
NIN/UNICEF/CDC/PAMM, 1995 NANRFS, 1994	National	27602	F	15-49	...	...	...	...	14.9	25.9	1.6	...
		4233	"	"	...	...	...	...	15.8	28.0	0.3	0.1
		5696	"	"	...	...	...	...	18.7	31.1	0.5	0.0
		2963	"	"	...	...	...	...	12.0	26.1	0.4	0.0
		2825	"	"	...	...	...	...	15.9	27.2	1.4	0.0
		830	"	"	...	...	...	...	7.0	21.1	1.4	0.0
		3167	"	"	...	...	...	...	19.9	24.4	2.6	0.0
		6437	"	"	...	...	...	...	12.2	23.0	3.2	0.0
NIN, 1995 NSS, 1995	Ha Tay Province	1804	M	15-19	18.2	1.8	...	9.4	15.0	33.6	0.1	0.2	
		1337	"	20-24	19.5	1.6	...	1.2	3.5	26.8	0.1	0.4	
		1444	"	25-29	19.4	2.3	...	1.9	4.4	23.3	0.1	0.3	
		1514	"	30-34	19.5	2.2	...	1.7	4.8	21.9	0.3	0.3	
		1240	"	35-39	19.5	2.3	...	1.4	4.8	25.4	0.6	0.2	
		873	"	40-44	19.4	1.8	...	2.1	5.5	23.6	0.6	0.0	
		585	"	45-49	19.2	1.6	...	2.7	8.4	26.0	0.7	0.2	
		471	"	50-54	19.2	1.9	...	4.5	9.3	31.2	1.3	0.4	
		616	"	55-59	18.6	2.1	...	5.7	10.9	32.4	0.5	0.0	
		519	"	60-64	18.7	2.2	...	8.1	12.9	30.4	0.2	0.4	
		347	"	65-69	18.2	2.0	...	14.1	14.7	30.5	0.9	0.0	
		265	"	70-74	18.4	3.9	...	15.1	18.5	30.0	0.4	1.9	
		201	"	>=75	17.5	2.1	...	17.4	23.9	30.3	0.0	1.0	
		11216	M	"	19.1	2.3	...	4.6	8.3	27.2	0.4	0.3	
		1883	F	15-19	18.8	2.1	...	7.0	8.6	29.6	0.4	0.2	
		1809	"	20-24	19.5	1.8	...	2.0	4.9	23.1	1.3	0.1	
		1511	"	25-29	19.5	2.4	...	1.7	6.0	23.2	1.6	0.4	
		1,714	"	30-34	19.4	2.1	...	2.0	6.8	24.8	1.5	0.4	
		1,460	"	35-39	19.4	2.6	...	2.3	6.0	25.6	2.1	0.4	
		967	"	40-44	19.4	1.8	...	3.3	5.9	25.2	2.6	0.3	
681	"	45-49	19.2	2.2	...	3.4	7.9	26.7	2.1	0.3			
556	"	50-54	18.9	1.9	...	6.5	12.0	25.0	1.6	0.2			
731	"	55-59	18.8	1.5	...	6.8	12.0	30.0	0.7	0.4			
645	"	60-64	18.5	2.3	...	11.8	16.0	28.8	1.1	1.2			
541	"	65-69	18.4	2.2	...	13.7	14.0	31.4	0.6	0.7			
485	"	70-74	17.9	2.4	...	16.9	17.9	35.9	0.6	0.2			
519	"	>=75	17.3	2.3	...	24.9	31.2	16.0	0.2	1.1			
Total		13,502	F	all	19.1	2.2	...	5.8	8.6	26.6	1.3	0.4	
NIN, 1997 NSS, 1997	National	4,212	F	15-49	19.6	2.4	...	4.6	7.1	22.6	2.0	0.0	
		498	"	"	19.2	1.8	...	2.7	5.9	27.1	0.5	0.0	
		485	"	"	18.8	1.9	...	5.5	10.6	29.8	0.1	0.0	
		577	"	"	19.3	2.1	...	4.6	6.9	23.4	0.8	0.0	
		524	"	"	19.4	2.4	...	6.6	8.0	26.6	2.4	0.0	
		673	"	"	20.3	2.1	...	1.2	2.7	15.0	2.5	0.0	
		560	"	"	19.8	2.6	...	5.6	7.5	19.8	3.3	0.0	
		491	"	"	19.9	2.9	...	7.2	6.2	20.9	6.1	0.0	
504	"	"	20.1	2.8	...	3.8	8.8	18.2	5.0	0.0			

Notes: ... data not available

5. Micronutrient deficiencies

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, and in infants and young children it may cause brain damage, psychomotor retardation and intellectual impairment.

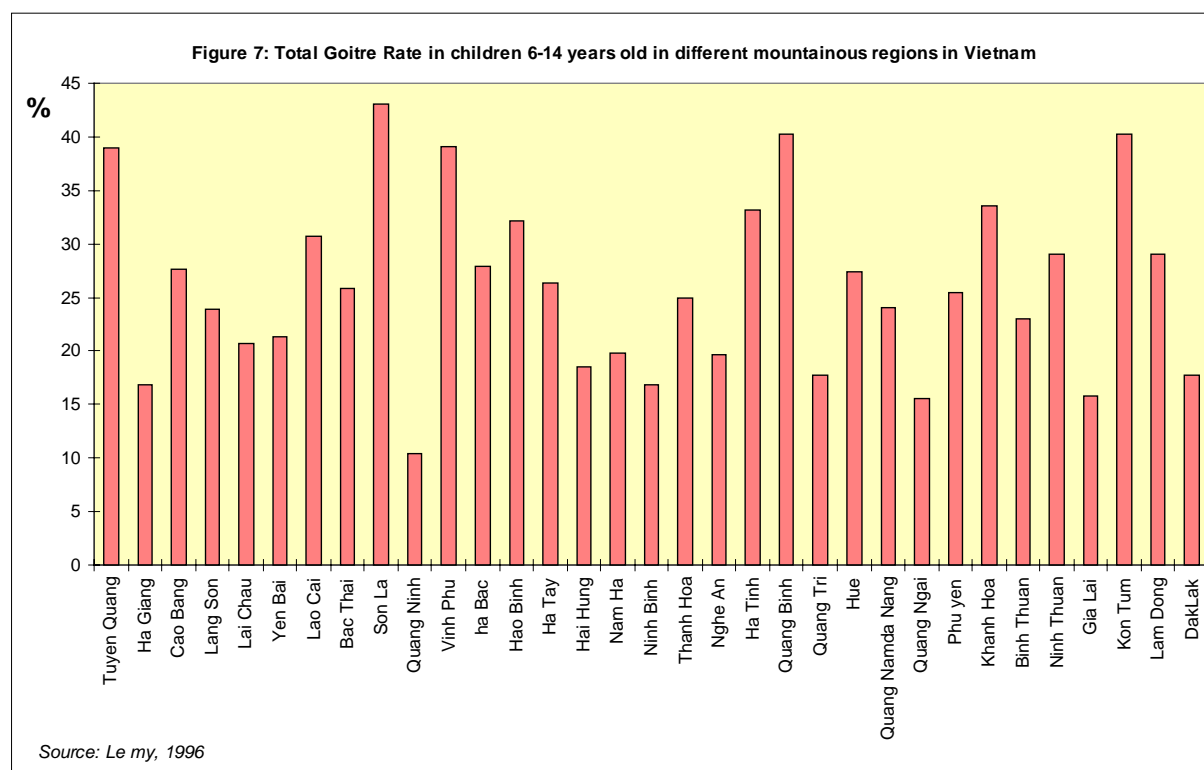
Iodine deficiency disorders is an important public health problem in Vietnam. The areas with the highest prevalence of goitre and cretinism are located mainly in hilly, mountainous and highland regions where the population generally consists of ethnic minorities. About 10 million Vietnamese who live in these regions are threatened by iodine deficiency disorders and the prevalence of cretinism varies in the different regions from 1% to 7% (Dang Tran and LeMy, 1986). The prevalence of IDD is higher between 7 and 19 years old and females of all age classes seem to be more affected than males, as indicated in **Table 5a**.

Table 5a: Surveys on iodine deficiency (Total Goitre Rate)

Source/ Year of survey	Deficiency	Sample			Region		
		Size Number	Sex	Age Years	North	Centre	High plateau
Dang Tran Due & LeMy, 1986	TGR	...	M/F	0-6	20.0	18.7	21.7
		...	"	7-15	48.0	51.0	54.2
		...	"	16-19	52.0	50.0	55.0
		...	"	20-39	34.6	37.0	45.6
		...	"	40-49	36.0	35.0	29.5
		...	"	50-59	29.0	31.8	27.6
		...	"	60<	8.0	6.0	11.4
		...	F	all	48.0	34.4	37.2
		...	M	"	23.0	30.0	27.0

Notes: ... data not available

Figure 7 shows total goitre rate in children 6-14 years old in the different mountainous and delta areas. The regions of Son La (43%) seems to be the most affected region (LeMy, 1996). From 1994, Vietnam started with the Universal Iodization Salt campaign as the main strategy to control IDD. The programme is now running well and promising to achieve its goals by the year 2000.



Vitamin A, also known as retinol, is an essential micronutrient required for normal health and survival. This fat-soluble vitamin has four major roles in the body: vision, epithelial cell growth and maintenance, immune function and growth and development. Children under 3 years of age and pregnant and lactating women are the most at-risk of Vitamin A deficiency. Between 1985-88 a large epidemiological survey on Vitamin A deficiency was conducted by the National Institute of Nutrition and the Institute of Ophthalmology on 34,214 children under five years of age (Tu Giay et al., 1989). In this survey it was observed that all ecological regions were affected by Vitamin A deficiency and that the prevalence ranged from 0,34% in Hanoi City to 1,24% in the South Central Coast region (**Table 5b**).

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 bioavailability of iron in the diet and high prevalence of parasitic infestations.

The National Institute of Nutrition has conducted several surveys on nutritional anaemia in children and pregnant women (NIN/UNICEF/CDC/PAMM, 1995). The prevalence of anaemia was found to be 45% in children under five years of age, 41% in non-pregnant women and 53% in pregnant women (**Table 5c** and **Maps 5** and **6**).

Table 5b: Surveys on vitamin A deficiency

Source/ Year of survey	Deficiency	Location	Sample			Percentage				
			Size Number	Sex	Age Years	Night blindness	Bitot's spot	Corneal xerosis	Corneal scars	
Tu Giay et al.,1989	Vitamin A	National	34,214	M/F	60<					0.72
1985-88	Night blindness	"	126	"	"					0.37
	Bitot's spot	"	56	"	"					0.16
	Corneal xerosis	"	22	"	"					0.07
	Corneal scars	"	42	"	"					0.12
Source/ Year of survey	Deficiency	Location	Sample Size Number	Sex	Age Years	Percentage of Xerophthalmia				Total
						Night blindness	Bitot's spot	Corneal xerosis	Corneal scars	
Tu Giay et al.,1989	Vitamin A	Ecological region:								
1985-88		Red river delta	11716	M/F	<5	0.43	0.13	0.09	0.12	0.77
		Midlands	1723	"	"	0.58	0.22	0.06	0.30	1.16
		Mountains	5149	"	"	0.27	0.14	0.04	0.09	0.54
		Hanoi City	1180	"	"	0.17	0.00	0.00	0.17	0.34
		North Central Coast	4236	"	"	0.43	0.00	0.07	0.02	0.52
		South Central Coast	5734	"	"	0.78	0.31	0.07	0.08	1.24
		Central highlands	2455	"	"	0.48	0.28	0.00	0.24	1.00
		Mekong river delta	2021	"	"	0.34	0.25	0.05	0.15	0.79
		Ho Chi Minh City	2514	"	"	0.36	0.13	0.13	0.27	0.89
Bloem et al., 1995	Vitamin A	National	37920	M/F	mths <72	0.05	0.05	0.01	0.05	...
NIN/UNICEF/HKI,1994										

Table 5c: Surveys on iron deficiency

Source/ Year of survey	Deficiency	Location	Sample			Percentage	
			Size Number	Sex	Age Mths		
NIN/UNICEF/CDC/PAMM, 1995	Hb<11 g/dl	National	6947	M/F	<60		45.3
NANRFS, 1994	"	"	665	"	0-5		61.0
	"	"	3227	"	6-23		59.5
	"	"	3055	"	24-60		28.2
	"	Urban	...	"	<60		38.1
	"	Rural	...	"	"		46.9
					years		
	Hb<12 g/dl	National	6724	F	18-45		40.2
	"	Urban	...	"	"		29.3
	"	Rural	...	"	"		42.7
	Hb<11 g/dl	National	2755	F*	18-45		52.7
	"	Urban	...	"	"		46.8
	"	Rural	...	"	"		54.1

Notes: ... data not available

F: non-pregnant F*: Pregnant women

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References for data presented in Table 1 on Global Statistics:

<i>Source</i>	<i>Indicator</i>
FAO/WAICENT	<i>A.1-2, B, C.10-11, E.1-3, F, G</i>
UN. 1996a/1996b	<i>C.1-9, D.5</i>
WB. 1997.	<i>D.1</i>
UNDP. 1997.	<i>D.2</i>
Tabatabai H. 1996.	<i>D.3-4</i>
UNICEF. 1998.	<i>D.6</i>
FAO. 1996.	<i>H</i>

NCP of VIETNAM MAPS

- General map of Vietnam

- Map 1:

Population density by region in Vietnam

- Map 2:

Prevalence of underweight among children under five years of age in Vietnam

- Map 3:

Prevalence of stunting among children under five years of age by region in Vietnam

- Map 4:

Prevalence of wasting among children under five years of age by region in Vietnam

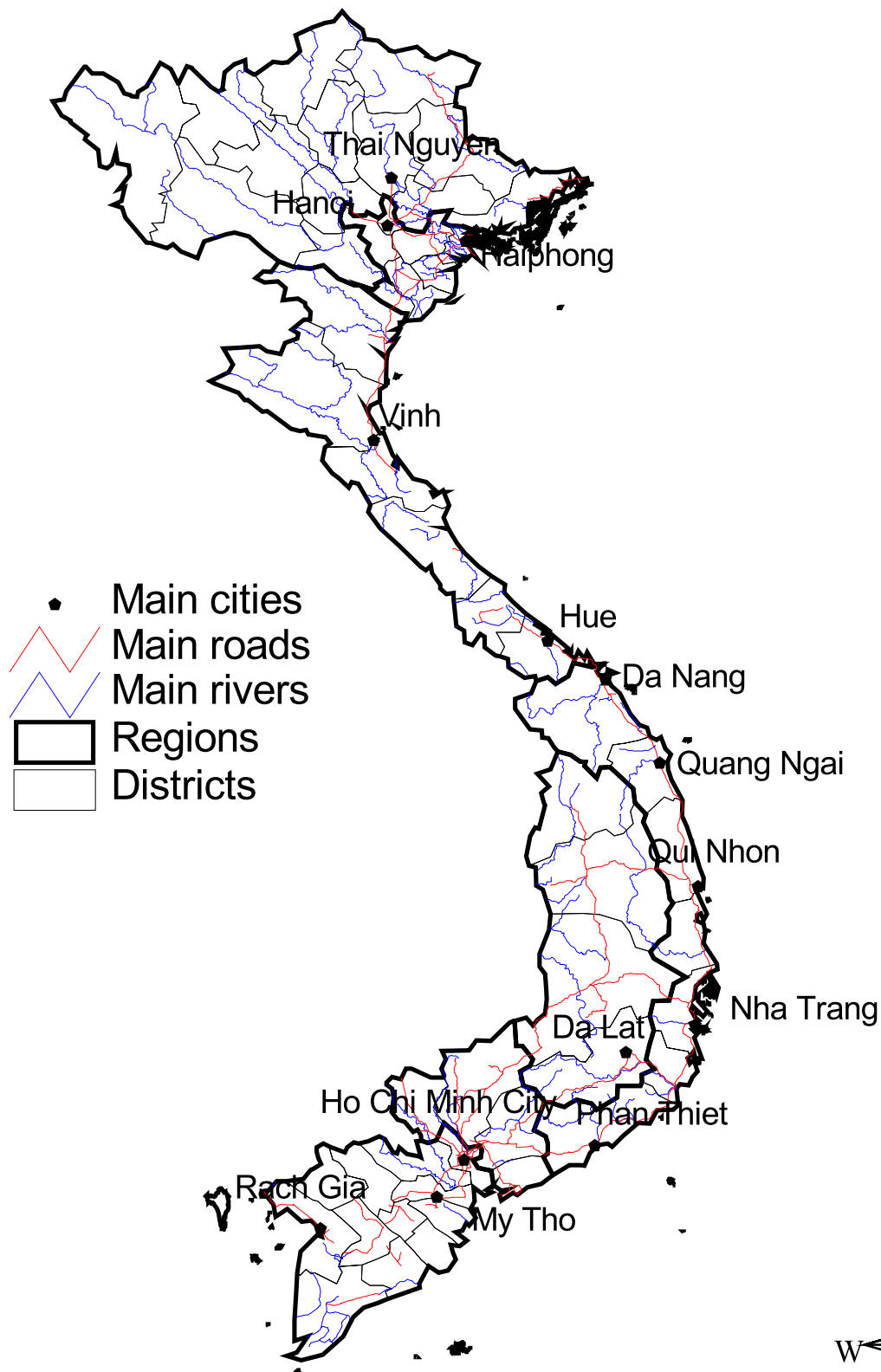
- Map 5:

Prevalence of anaemia in pregnant women by region in Vietnam

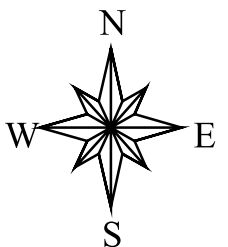
- Map 6:

Prevalence of anaemia in children under five years of age by region in Vietnam.

General map of Vietnam



Scale 1 : 8 000 000 (approx.)
Geographic Projection

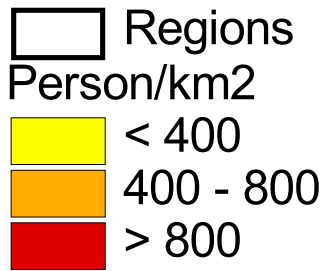
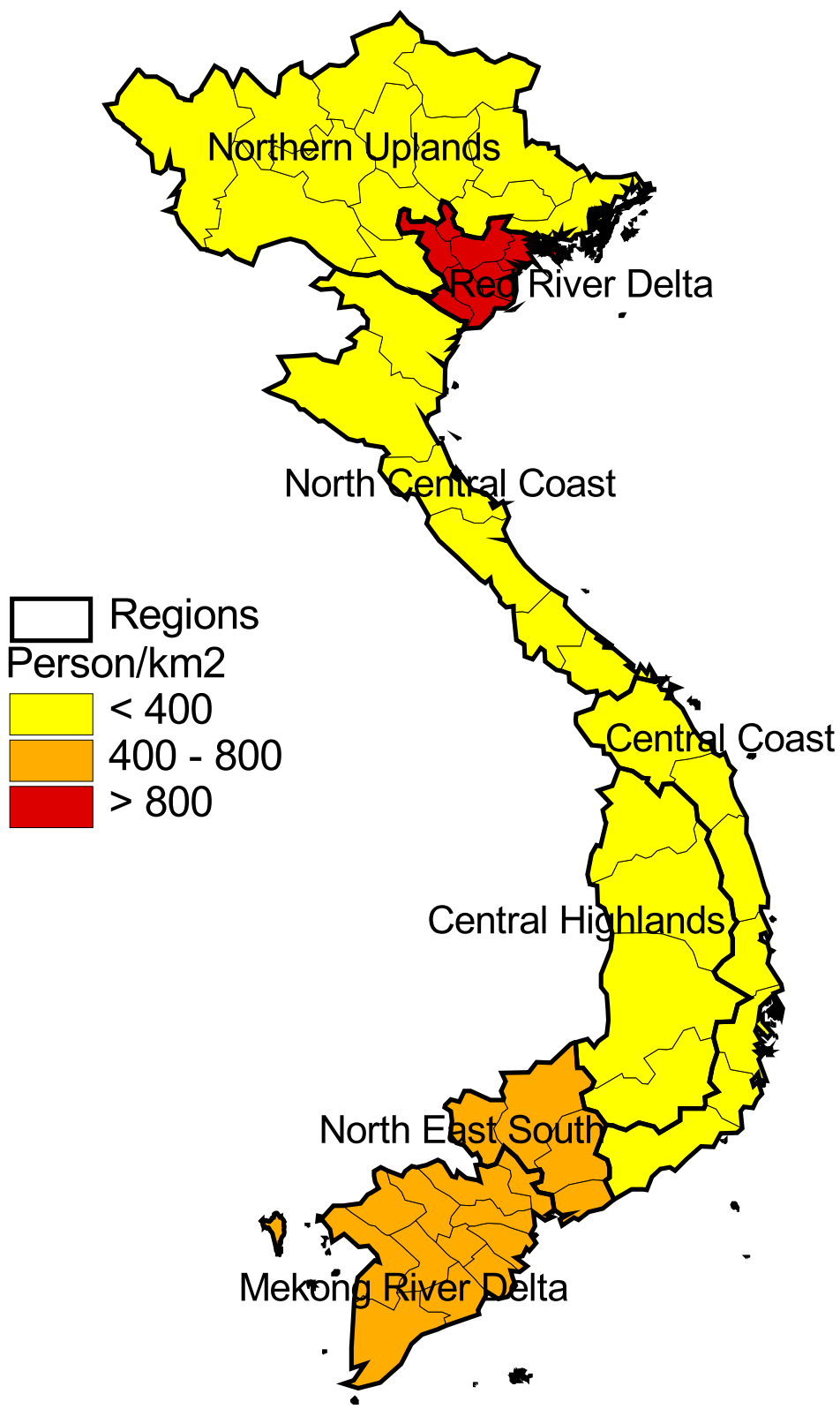


FAO - ESNA, February 1999

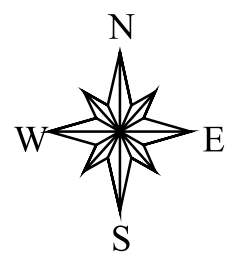
Vietnam

Map1: Population density by region, in Vietnam

Source: General Statistic Office, 1994



Scale 1 : 8 000 000 (approx.)
Geographic Projection

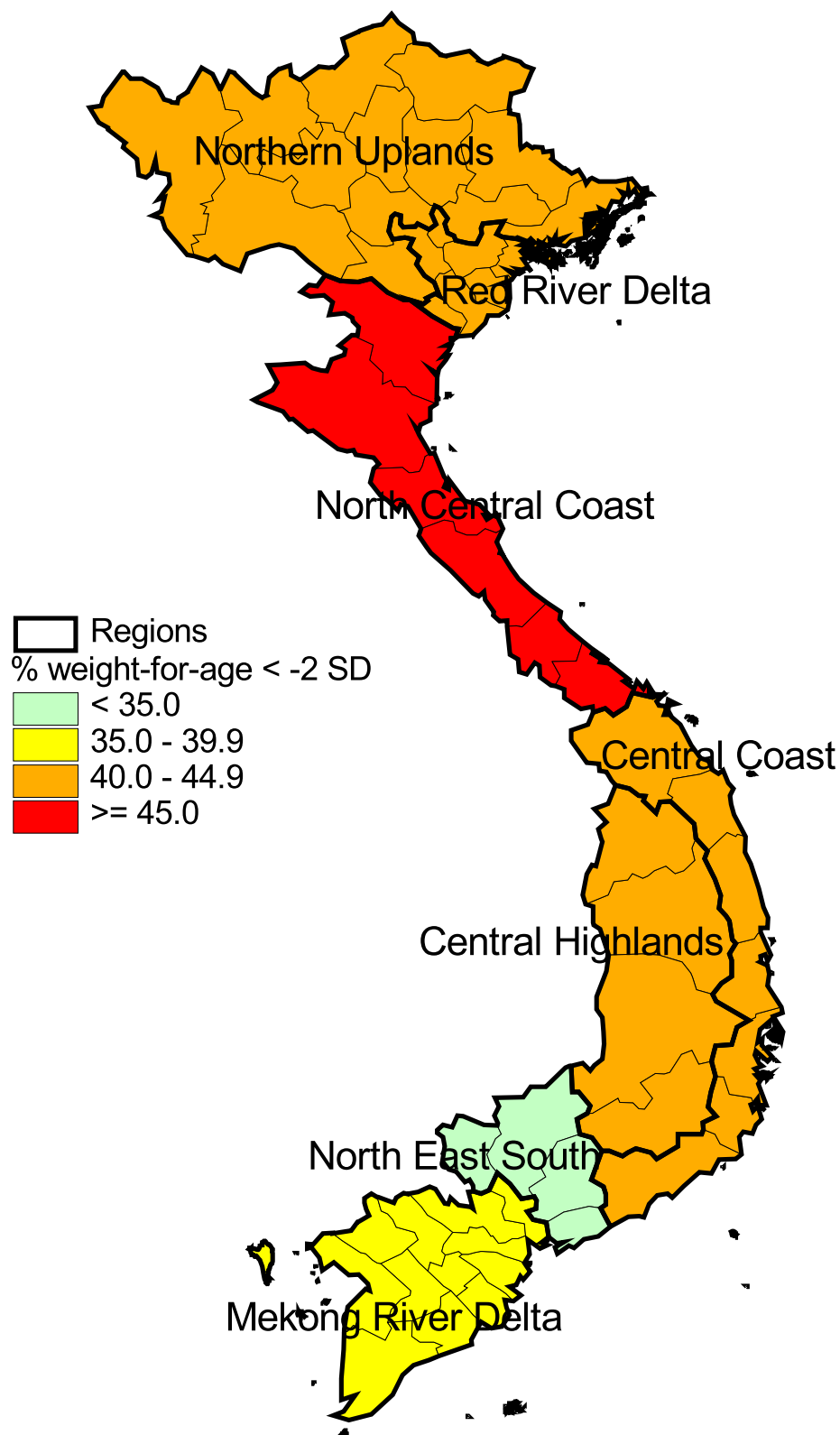


FAO - ESNA, February 1999

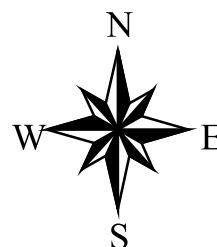
Vietnam

Map2: Prevalence of underweight among children under five years old by region in Vietnam

Source: National Institute of Nutrition/UNICEF, 1998 (PEM/VAD Survey)



Scale 1 : 8 000 000 (approx.)
Geographic Projection

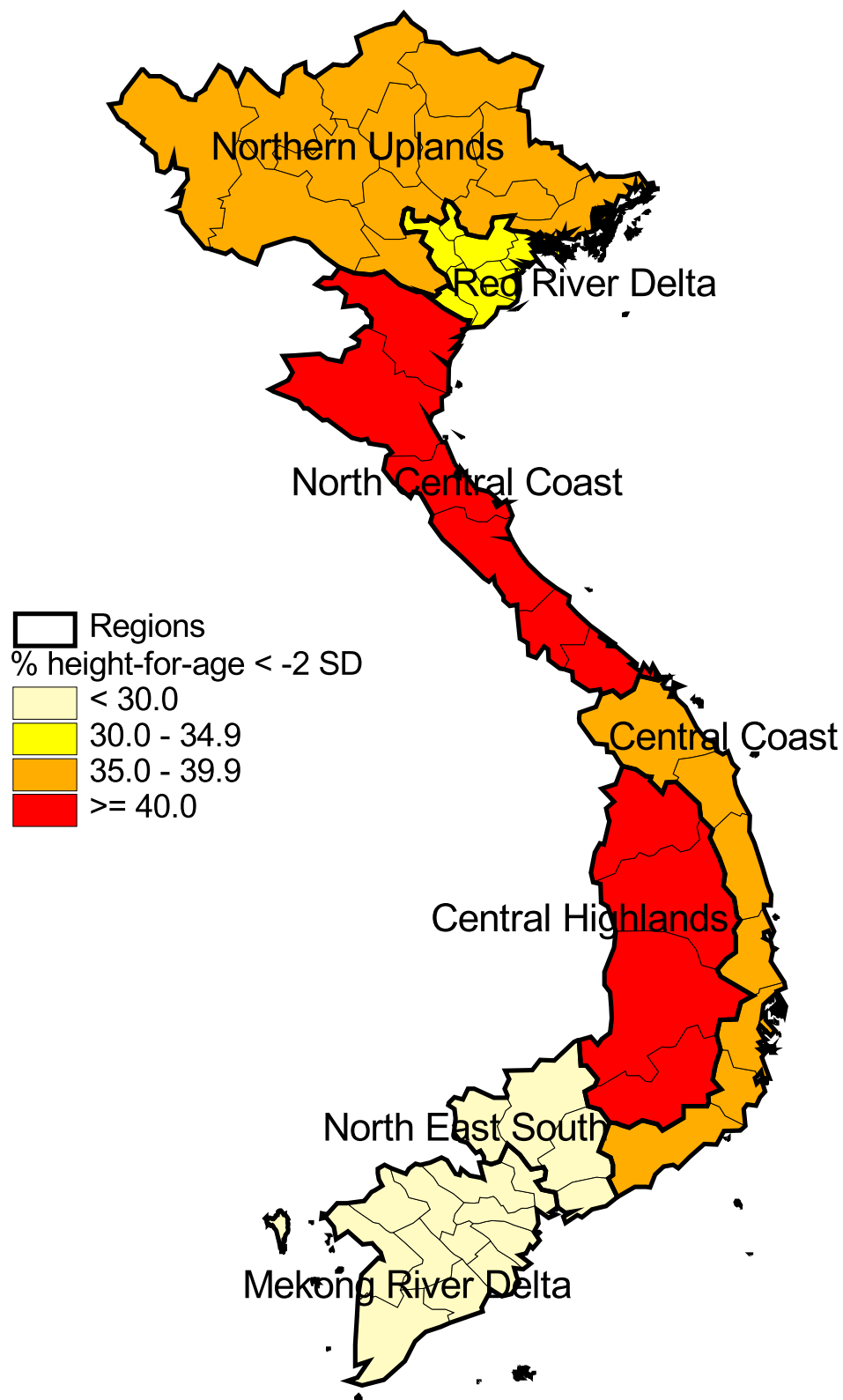


FAO - ESNA, February 1999

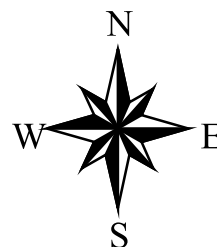
Vietnam

Map3: Prevalence of stunting among children under five years old by region in Vietnam

Source: National Institute of Nutrition/UNICEF, 1998 (PEM/VAD Survey)



Scale 1 : 8 000 000 (approx.)
Geographic Projection

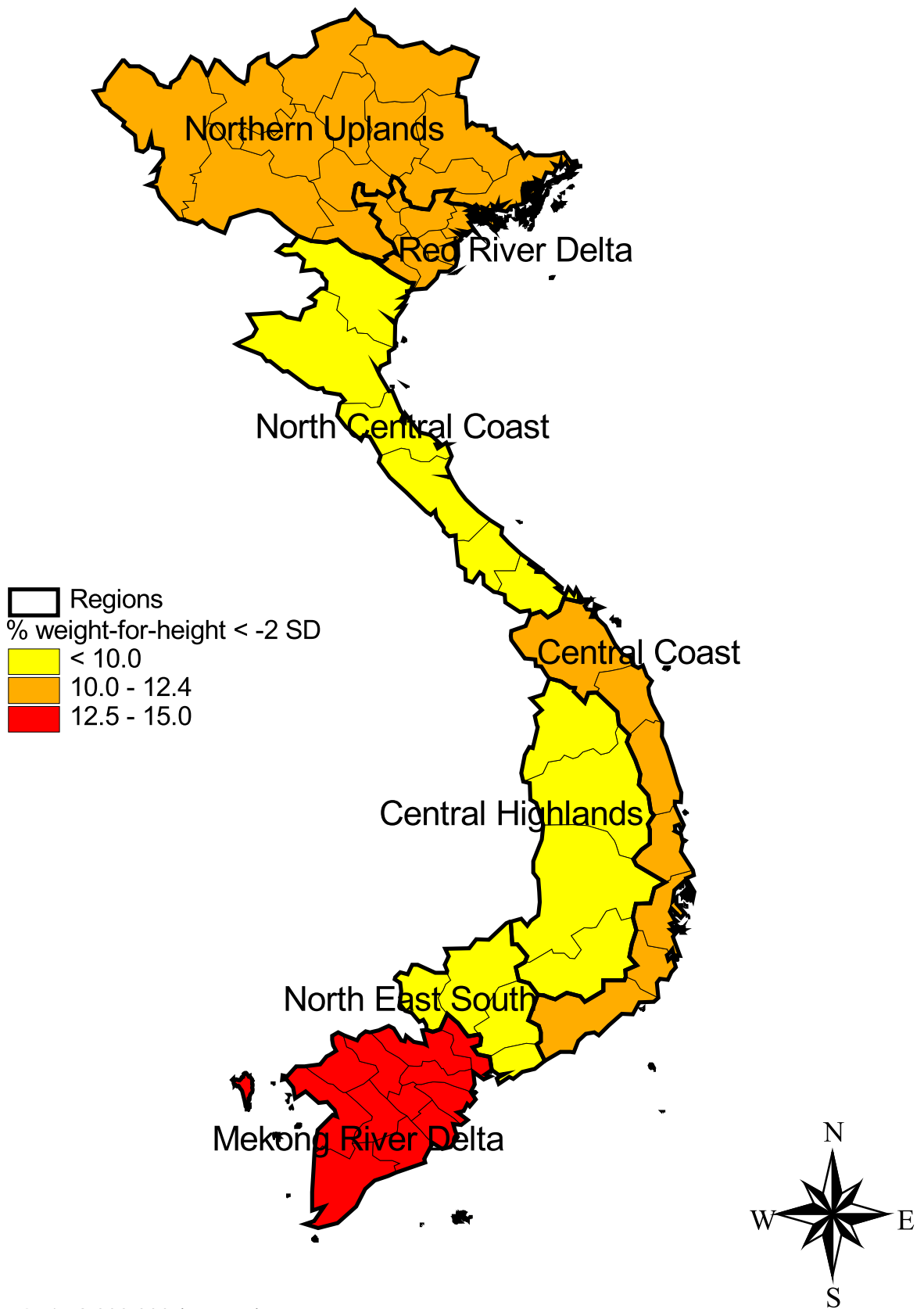


FAO - ESNA, February 1999

Vietnam

Map4: Prevalence of wasting among children under five years old by region in Vietnam

Source: National Institute of Nutrition/UNICEF, 1998 (PEM/VAD Survey)



Scale 1 : 8 000 000 (approx.)
Geographic Projection

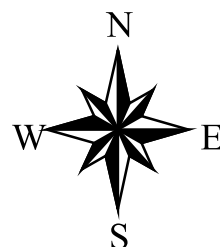
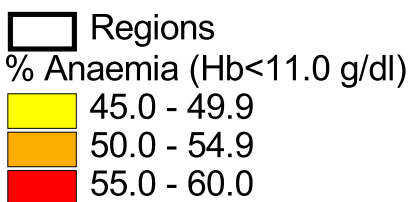
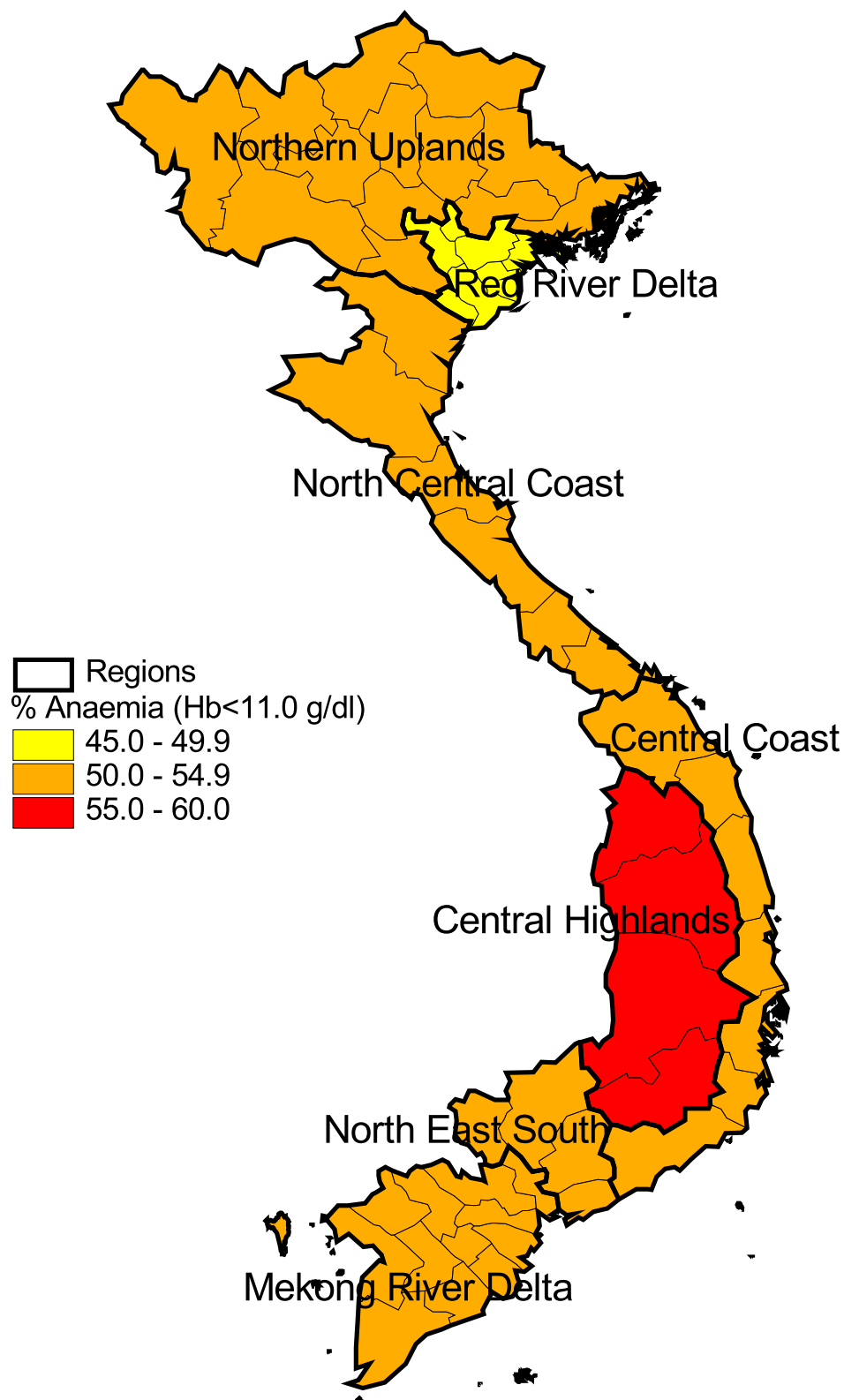
FAO - ESNA, February 1999

Vietnam

Map5: Prevalence of anaemia in pregnant women by region in Vietnam

Source: NIN/UNICEF/CDC/PAMM, 1995 -

(National Anaemia and Nutrition Risk Factors Survey, 1995)



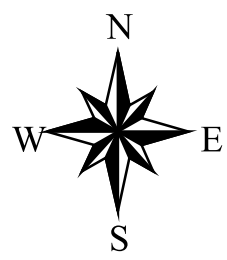
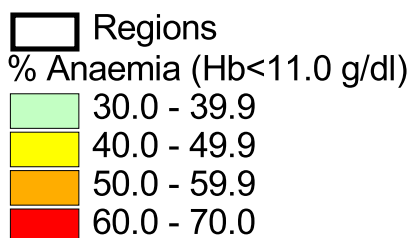
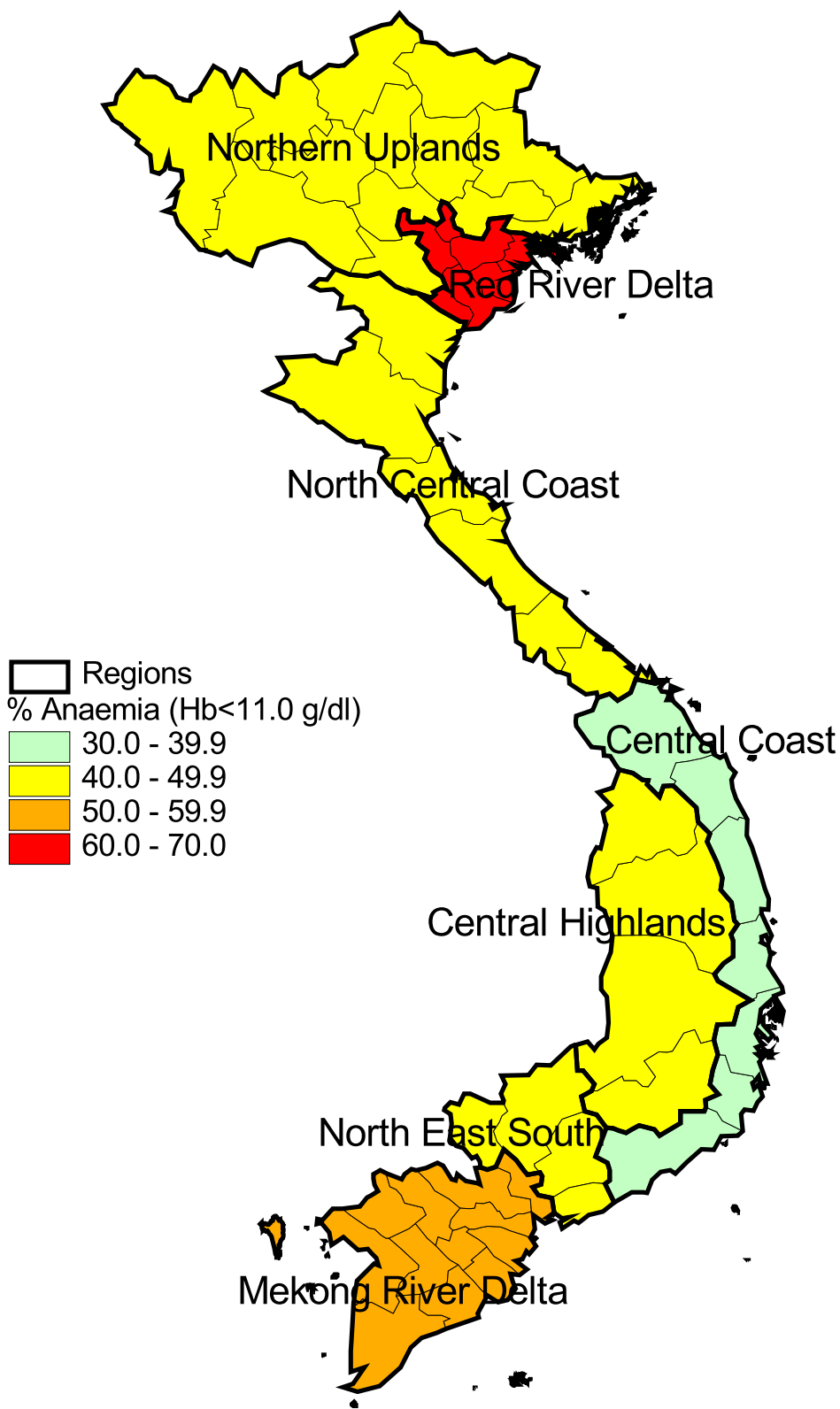
Scale 1 : 8 000 000 (approx.)
Geographic Projection

FAO - ESNA, February 1999

Vietnam

Map6: Prevalence of anaemia in children under five years of age by region in Vietnam

Source: NIN/UNICEF/CDC/PAMM, 1995 -
(National Anaemia and Nutrition Risk Factors Survey, 1995)



Scale 1 : 8 000 000 (approx.)
Geographic Projection

FAO - ESNA, February 1999

Vietnam

