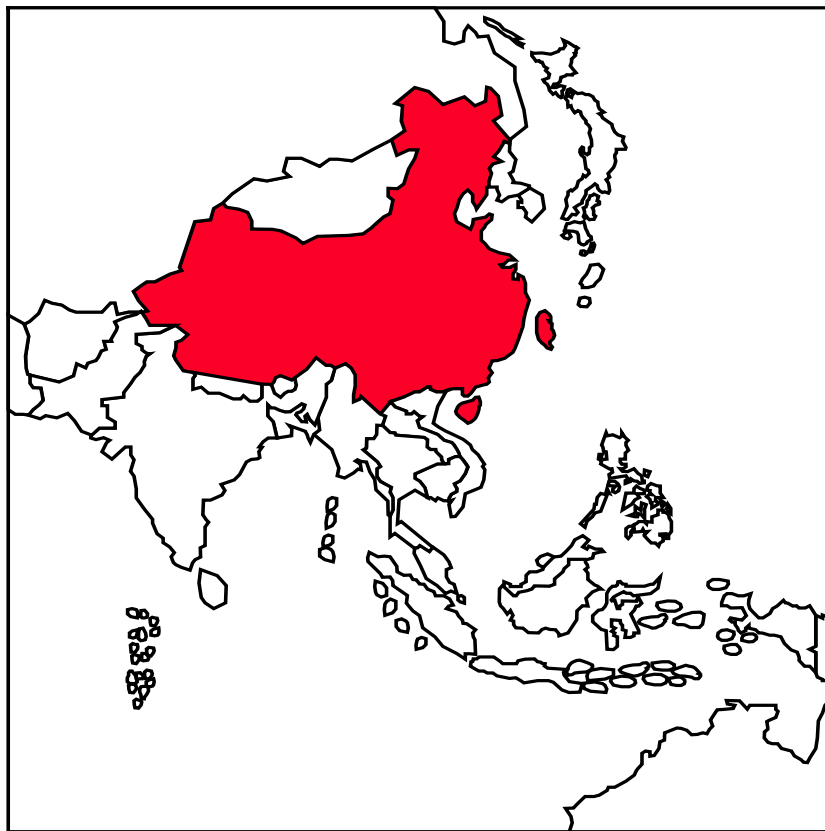


FAO - NUTRITION COUNTRY PROFILES

CHINA



**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.

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:

E-mail: nutrition@fao.org

Nutrition Country Profile of China

prepared by Mrs Cristina Petracchi (consultant in the Food and Nutrition Division, FAO) in collaboration with Dr. Keyou Ge, Institute of Nutrition and Hygiene

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.

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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 China, each province has its specific socio-economic level, food habits, health infrastructures and communication facilities (**General map** and **Map 1**). Thus, the nutritional status of the population shows significant inter province variations since it results from a varying combination of factors.

For children under five years of age, the prevalence of underweight ranged from 3% in Beijing to 39% in the province of Hainan while that of stunting ranged from 7% in Beijing to 56% in of Guizhou (**Maps 3** and **4**). The highest prevalence of stunting was observed in the same provinces as those of underweight. According to the WHO classification, the children in the provinces of Fujian, Jianxi, Hunan, Guangxi, Hainan, Sichuan, Guizhou, Yunnan, Qinghai and Xinjiang were found to be highly affected by stunting (>40%) and those in Guanxi and Hainan also showed a prevalence of underweight >30%.

The marked improvement in nutritional status is shown by a reduction of the prevalence of underweight from 22%, in 1987 to 12% in the 1992. In China, the under-five mortality rate (U5MR), an important indicator of the socio-economic development and health and nutritional status of a society was found to be 47‰ in 1996. However, a large number of infectious diseases, such as respiratory, intestinal infections and hepatitis remain the main cause of death in children under five, with malnutrition being an aggravating factor.

The provinces of Guangxi and Hainan were found to be affected by adult chronic energy deficiency with more than one fourth of them with a BMI under 18.5 kg/m² (**Maps 5** and **6**). Patterns of child and adult malnutrition in part overlap in that both show extremely poor nutritional status in the provinces of Guangxi and Hainan.

In adults, average BMI values were similar for both males and females (22.0 kg/m²). About 10% of the adult population had a BMI below 18.5 kg/m² while a significant proportion was overweight or obese (15%). In Shanghai, Tianjin and especially in Beijing overweight and correlated diseases are becoming a public health problem. In fact, in Beijing almost half of the adult population is overweight. In the last decade, a clear shift to the right is seen in the distribution of BMI values, suggesting an improvement in adults' nutritional status over this period.

In the past decade, there has been an improvement in the nutritional status of the Chinese population. This improvement results from socio-economic factors, increased availability of potable water, better distribution of food throughout the country, lower morbidity and improvement of health facilities.

The national average intake of energy slightly decreased from 2485 to 2328 kcal/caput/day between 1982 and 1992 and this is probably due to the more sedentary lifestyle of the population. The findings from the 28 provinces surveyed in 1992 showed that the average daily per capita energy intake varied from 1913 kcal in Hainan to 2720 kcal in Anhui (**Map 2**). Between 1982 and 1992, there was a reduction in the intake of all major food groups except for meat, fish, milk and milk products, eggs and oils and fats (**Table 3a**). As a consequence, there has been an increase in the share of protein and fat in total energy intake from 10.8% to 11.8% for protein and from 18.4% to 22.0% for fat.

There are important inter provincial variations in the share of protein and fat in total energy intake. The share of protein ranged from 9.8% in Sichuan to 13.1% in Shanghai and that of fat from 14.0% in Gansu to 31.5% in Beijing (**Map 2**).

In all the provinces surveyed, cereals mainly rice and wheat flour represented the main source of energy providing from 54% to 78% of total energy intake respectively in Beijing and Gansu (**Figure 6**). The diet in China is mainly based on vegetable products which provide 81% and 63% of total protein and fat intake respectively.

The Chinese diet is particularly deficient in iodine but China has started with the Universal Iodization Salt campaign to control IDD and this programme is promising to achieve its goals by the year 2000. It is also deficient in iron and women above 18 years of age are the most affected group with 23% suffering from anaemia. There are important inter provincial variations in the prevalence of anaemia in adult women which ranged from 2% to 52% respectively in Nei Mongol Zizhiqu and Shanghai as shown in **Map 7**.

TABLE1: GENERAL STATISTICS OF CHINA

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	0.437		
2. Arable and permanent crop land	1995	ha per person	0.110		
B. Livestock			1. Dietary Energy Supply (DES)		
1. Cattle	1994-96	thousands	97000	1994-96	Kcal/caput/day
2. Sheep & goats	1994-96	thousands	245421	2767	
3. Pigs	1994-96	thousands	426736		
4. Chickens	1994-96	millions	2798		
C. Population			Percentage of DES by major food groups		
1. Total population	1998	thousands	1255091		
2. 0-5 years	1998	% of total pop.	9.6		
3. 6-17 years	1998	% of total pop.	20.7		
4. 18-59 years	1998	% of total pop.	59.9		
5. >= 60 years	1998	% of total pop.	9.7		
6. Rural population	1998	% of total pop.	67.3		
7. Population growth rate, Total	1995-2000	% of total pop.	0.9		
8. Population growth rate, Rural	1995-2000	% of rural pop.	-0.3		
9. Projected total population in 2025	2025	thousands	1480430		
10. Agricultural population	1995	% of total pop.	69.5		
11. Population density	1995	pop. per sq Km	127.1		
D. Level of Development			2. Proteins		
1. GNP per capita, Atlas method	1996	current US\$	750	1994-96	g/caput/day
2. Human Development Index rating	1995	min[0] - max[1]	0.650	73	
3. Incidence of poverty, Total	1990	% of population	8.6		
4. Incidence of poverty, Rural	1990	% of population	11.5		
5. Life expectancy at birth (for both sexes)	1995	years	69.2		
6. Under-five mortality rate	1996	per 1,000 live births	47		
E. Food Trade			% from:		
1. Food Imports (US \$)	1994-96	% of total imports	4.2	3. Vegetable products	1994-96 % of total proteins
2. Food Exports (US \$)	1994-96	% of total exports	3.9	68.3	
3. Cereal Food Aid (100 MT)	1994-96	% of cereals imports	0.6	4. Animal products	1994-96 % of total proteins
F. Indices of Food Production			% Energy from:		
1. Food Production Index	1994-96	1989-91=100	139.1	5. Protein	1994-96 % of total energy
2. Food Production Index Per Capita	1994-96	1989-91=100	131.7	10.8	
			6. Fat		1994-96 % of total energy
					20.0
			H. Food Inadequacy		
			1. Total population "undernourished"	1990-92	millions
					188.9
			2. % population "undernourished"	1990-92	% of total pop.
					16.0
			... no data available		
			§ see References for data sources used		
			See Technical Notes for definitions used.		

CHINA

I. OVERVIEW

1. Geography

China is the largest country in Asia with a land area of 9.6 million square kilometres, a coastline of 14,000 km and land frontiers of 2,000 km (EIU, 1996). Korea borders it in the east; Russia and Mongolia in the north; Kazakhstan, Tajikistan, Kyrgyzstan and Pakistan in the west; India, Nepal, Bhutan, Myanmar, Laos and Vietnam in the south. The earth's surface is high in the west and low in the east. Mountains, highland and hilly areas make up to two-thirds of the territory. The Himalayas, the world's greatest mountain range, is located at the Southwest border.

Yangzi River running from west to east in the middle separates the territory into northern and southern parts. The bulk of the population and cultivated land are concentrated in the eastern part of the country among the fertile plains and valleys of three river systems: the Huang He (Yellow River), the Chang Jiang (Yangtze River) and the Zhu Jiang (Pearl river). The temperature is high all over the country in summer, but rather low in the north and mild in the south in winter. The precipitation range from 1600-2000 mm in southern coastal areas down to 100-200 mm in the Northwest inland. There are 30 provinces, municipalities and autonomous regions in the mainland, and Hong Kong Special Administrative Region that was established on July 1st 1997, plus the province of Taiwan.

Natural disasters affect various parts of China, 16% of the cultivated land was affected by floods and 27% by droughts between 1990-95. The Hubei, Hunan, Anhui core areas are the most vulnerable to floods. The north central area including Gansu, Shaanxi, Shanxi and Henan presents a higher risk of drought.

2. Population

China has the largest population in the world. In 1998, its population was estimated to be about 1,255 million inhabitants, of which the rural population accounts for 67.3%. Children under 5 represent 9.6% of the total population, and adults aged 60 and over account for 9.7% (**Table 1**). The infant mortality rate averaged 20.6‰ in the country, and varied from 8.2 to 49.5‰ in the different provinces, with Qinghai, Ningxia, Yunnan, Xinjiang and Guizhou being the most affected. In 1996, the under five mortality rate was on average 47‰ and the most affected provinces were Tibet, Jiangxi, Xinjiang and Yunnan (**Table 1**; CSY, 1997). The male mortality rate at an early age is strikingly lower than the female rate therefore the sex ratio is strongly male biased: for all ages the ratio is 100 females for 103 males.

In China there are 55 ethnic minorities including: the Zhuang (15.6 million); Hui, Miao, Uygur, Yi and Tujia which are between 5 and 10 millions and the Lhoba and Gaoshan which represents the smallest group (less than 3000 people). These minorities are mainly located in 20 of the 30 provinces, municipalities and autonomous regions of the country. Out of the 2,141 counties in China, 643 are minority national autonomous counties. Most of these minority counties are in Inner Mongolia, Xinjiang, Guangxi, Yunnan and Tibet. Most of the minorities use their own languages, however, mandarin is the official language for the whole country (CSY, 1997).

The population density has had a 47% increase in the last 25 years and was estimated to be of 125 person/km² in 1995 (**Table 1**). The population density varies significantly in the

various regions. The east coast and central core regions are highly populated (400-600 person/km²), while the west side of the country bears less than 100 person/km², and in Xinjiang, Qinghai and Tibet the population density is less than 10 person/km² (**Map 1**; CSY, 1997).

3. Level of development: poverty, education and health

In China, the Gross National Product (GNP) per capita was estimated to be US\$ 750 in 1996 (**Table 1**). The annual growth rate varied from 4.2% to 14.1% and averaged 11.2% between 1990 and 1996 (CSY, 1997). In China more than 80 million people live under the poverty line, and in 1994, 592 counties were officially defined as poverty-stricken counties (Yang, 1995). The number of the needy people was reduced to 50 million in 1997 (Li, 1998).

Although to judge by the 1990 census, China has made considerable strikes in reducing the number of illiterate people from 284 million to 205 million between 1980 and 1990, the provision of basic education remains a problem (EIU, 1996). Many rural schools are inadequately funded, relying on charges to the local families who send their children there, and there is widespread truancy and absenteeism despite a national nine years of compulsory education. An even bigger problem is the very small percentage of people in higher education. In 1994 only 2% of the people in the relevant group were enrolled in tertiary education (EIU, 1996). A survey conducted on 1,140,592 individuals showed that 17.8% of the individual aged 15 years and older were illiterate and semi-literate (males 10.1% and females 25.5%) (CSY, 1997).

The increase in life expectancy in the recent years has been marked, partly as a result of the greatly improved health-care system (EIU, 1996). There is a big gap between the facilities available in the big cities and those on offer in poorer rural areas. In theory, basic health care is available free to everybody. In practice, however, medical care is being increasingly commercialised. In the 1994 budget, health and education combined took just 18% of total budgeted government expenditure. In 1994 there were 1,6 doctors per 1,000 people compared to 0,8 in 1970. There were 2,4 hospital beds per 1,000 people compared to 1,3 in 1970 (EIU, 1996).

For adults, the main causes of death are cerebrovascular and cardiovascular diseases, malignant tumour, respiratory diseases and infectious diseases (such as viral hepatitis, tuberculosis and dysentery) (CSY, 1997). On the other hand for children under five the main causes of death are pneumonia (20.2%), suffocation at birth (17%), premature delivery and low birth weight (13.5%), congenital heart disease and other congenital malformations (9.9%) and diarrhoea (4.3%) (CSY, 1997). There has been an increase in the incidence of low birth weight that was 9% in 1994-1995, as reported by the government.

4. Agricultural production, land use and food security

Agriculture (including farming, forestry, animal husbandry and fishery) which is one of the most important sectors of China's economy accounts for 35% of the GNP (CSY, 1997). Farming alone covers almost 58% of agricultural output.

Over the past decade, China has made remarkable progress in boosting national economic development and agricultural production. The advances in food production were particularly notable after 1978 when open policy was adopted and economic reform was initiated (Ge et al., 1991). The three main aspects of the economic reforms are: permitting private contracts for use of land in exchange for producing a quota of farm products for purchase for government; development of collective and individual ownership and gradual

transfer to a multifaceted ownership system; and increased production and management decision-making by enterprises, allowing them to guide the development of commodities (Ge et al., 1991).

China faces a great challenge of providing food for more than 1,2 million inhabitants with a relatively small amount of cultivated land (152.4 million hectares, 74% of which is destined to grain crops).

China is a major producer of rice, maize, sugarcane, cotton and tea (FAOSTAT). The land area for tea plantations and vegetables was 1 and 11 million hectares, respectively (CSY, 1997). The bulk of China's production of food grains consists of cereals, mainly rice, wheat, maize, sorghum, barley and millet. Regionally there are significant variations in agricultural production. Wheat and maize, which are also major grain crops, are mainly grown in the northern areas while rice is grown in the south in high rainfall areas. Total cereals production has increased from 404 to 448 million tons between 1990 and 1998, and rice production reached 200 million tons in 1998 (FAOSTAT). In the same year the production of roots and tubers, sugarcane and pulses reached respectively, 165, 86 and 5 million tons (FAOSTAT). The production of tea in the same year reached 648 thousand tons (FAOSTAT). Livestock and their products play an important role in the rural economy, besides providing a valuable source of dietary animal proteins. In the past decade the production of meat, fish (taking together inland and marine fisheries) and milk has increased continuously reaching respectively 59, 33 and 11 million tons in 1998 (FAOSTAT).

5. Economy

China is in the throes of an industrial revolution. As the economy grows rapidly, Chinese society is moving away from its agrarian roots. Economic growth has been led for many years on the supply side by increases in industrial output (EIU, 1996).

The economic system is in transition from the traditional centrally planned economy to the socialist market economy. Public ownership continues to be in the leading position while multi-sectoral development is taking place. In 1996, the second industry produced 49% of the gross domestic product (GDP) and has experienced an annual growth rate of 16.5% in the recent 6 years. Agriculture accounts for 35% of GNP while the share of the third industry increased from 21% to 31% between 1980-1996.

The total amount of import/export trade doubled to US\$325 billion between 1993-1997. The main imports are agricultural and industrial raw materials and capital goods that accounted for 72% and 16% respectively of the total imports. The main suppliers are Japan, USA, Germany and Republic of Korea. The main exports are industrial products which account for 96% of total exports; and the major destinations are USA, Japan and Singapore (CSY, 1997).

II. THE FOOD AND NUTRITION SITUATION

Trends in energy requirements and energy supplies

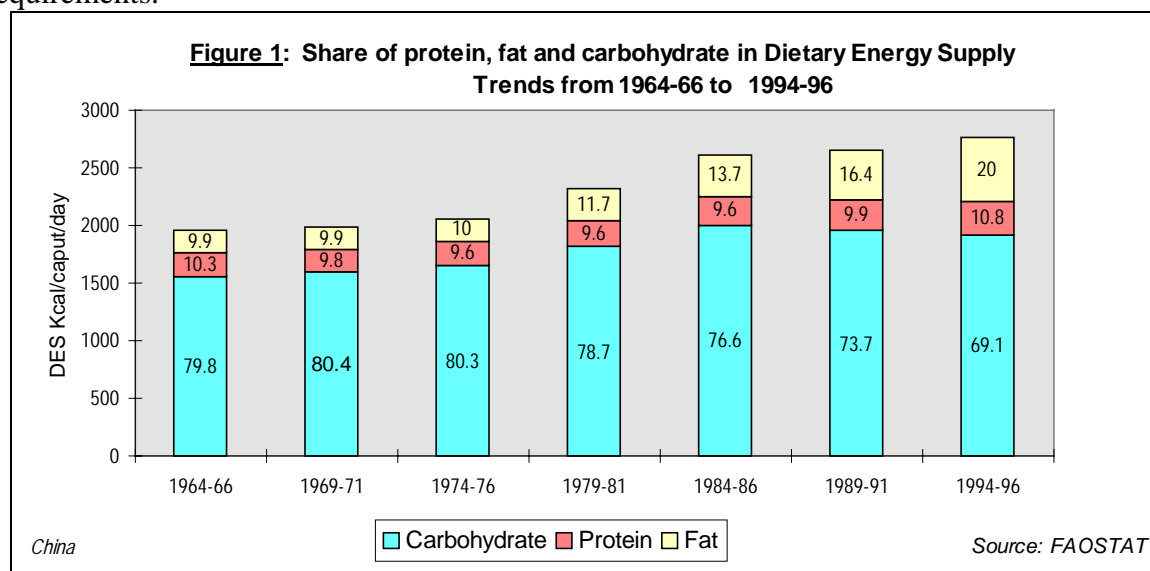
Between 1965 and 1995, the population has almost doubled and is projected to increase by 21% by 2025 (**Table 2**). The increase in total energy requirements reflects the growing needs of the population. The energy requirements of the urban population increased by three-fold over 1965-1995 and are projected to double by 2025. The requirements of the rural population increased at a lower rate: 50% increase between 1965-1995 and are projected to experience a 17% reduction, by 2025

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>)	729191	1220224	1480430
Percentage urban (%)	17.6	30.2	52.2
Per caput energy requirements (<i>kcal/day</i>)	2170	2271	2238
Per caput DES (<i>kcal/day</i>) *	1946	2761	—

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

From 1965 to 1995, average daily per capita dietary energy supply (DES) increased from 1946 to 2761 kcal (**Table 2**). In the same period, average daily energy requirements increased from 2170 to 2271 kcal, implying an improvement in the satisfaction of the population's energy requirements.

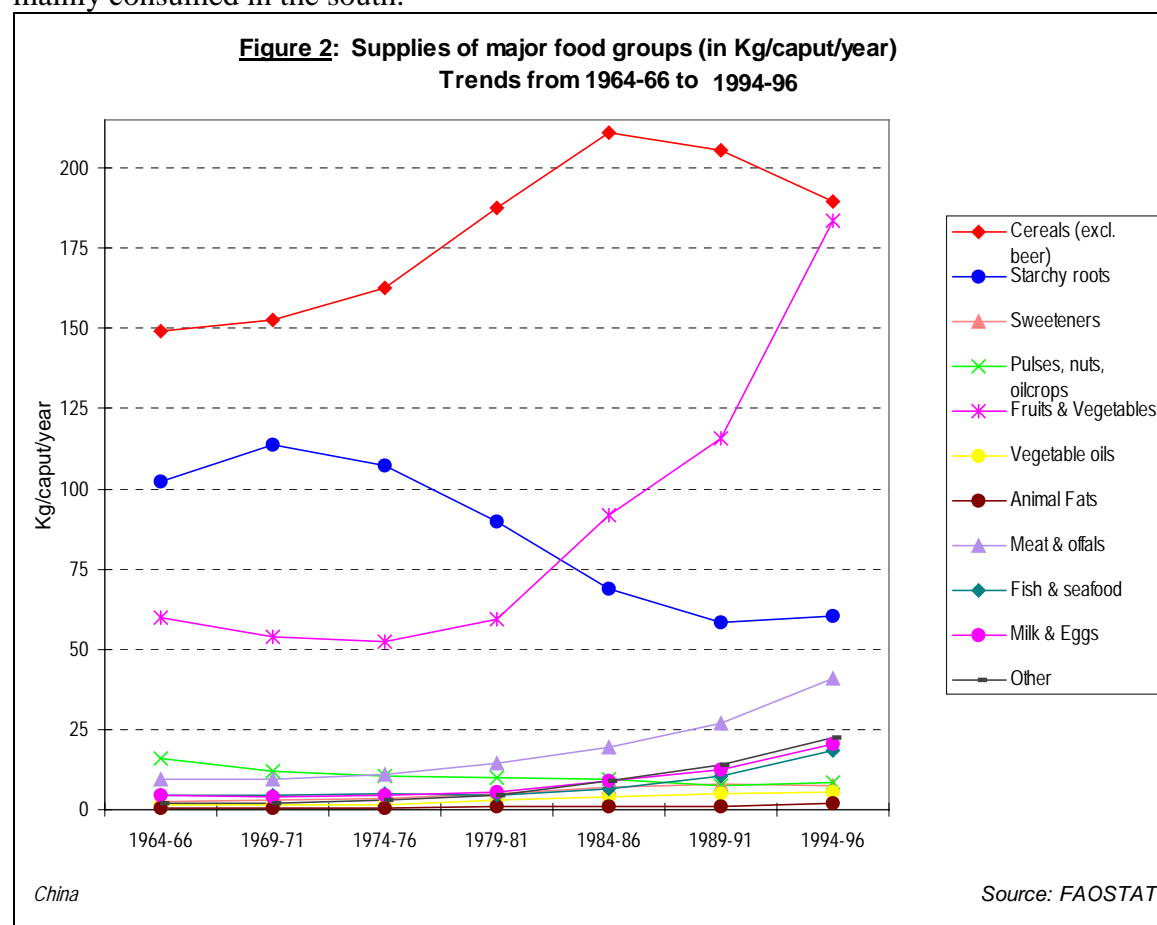


From 1965 to 1995, average daily per capita DES and energy requirements increased by 42% and 5% respectively. FAO estimated that the DES did not cover the requirements of 16% of the population in 1990-92, compared to 45% in 1969-71, meaning that the proportion of the population which is undernourished in terms of food inadequacy has decreased significantly (FAO, 1996).

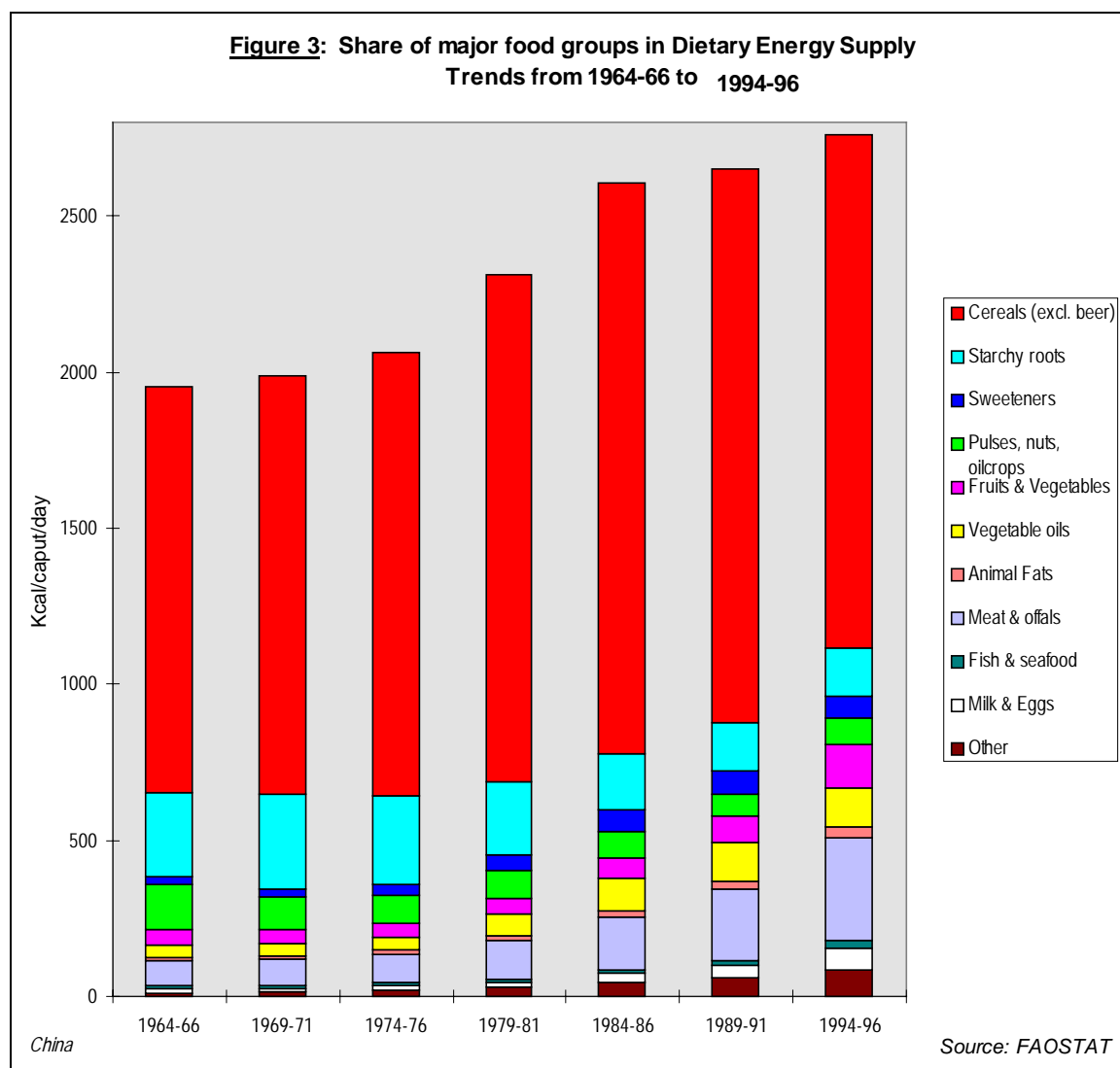
The increase in DES between 1964-66 and 1994-96 can mainly be attributed to a higher daily fat energy supply from 9.9% to 20.0% (**Figure 1**). Over the same period, the share of carbohydrates in DES decreased from 79.8% to 69.1% while that of protein has increased slightly from 9.6 to 10.8% since 1979-81 (**Figure 1**).

2. Trends in food supplies

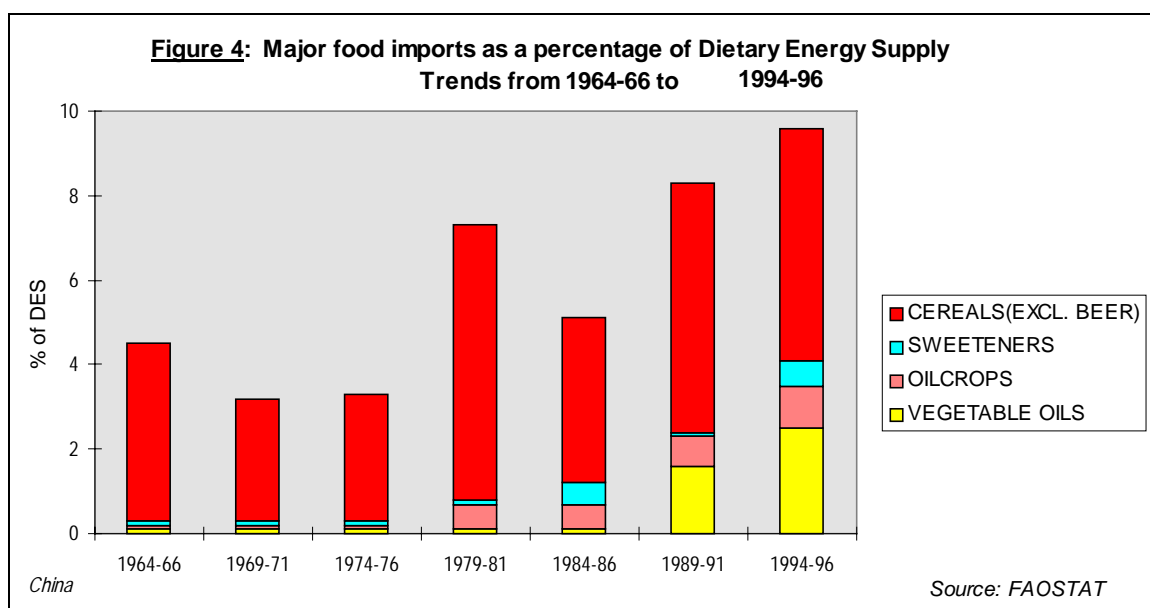
Quantity: The per capita availability of food is a function of population and food production, with adjustments made for exports, imports, food aid, wastage and livestock feed. Since 1964-66, there has been a continuous increase in the annual per capita availability of all major groups except for the groups of starchy roots and pulses, nuts and oilcrops (**Figure 2**). The reduction in the availability of these two groups is mainly due to the reduction in demand. Rice, corn and wheat are the main cereals in China, accounting for 39.7%, 37.3% and 23.7% respectively of total cereal production. In the last 30 years, the supply of fruit and vegetables has increased threefold. Apples, citrus and pears are in the leading position, accounting for 36.6%, 18.2% and 12.5% respectively of total fruit production. Bananas and grapes are also important in the Chinese diet but their share is only about 5% of total fruit production (CSY, 1997). Between 1964-66 and 1994-96 the supply of some food groups increased more markedly: meat and offals, fish and seafood and milk and eggs have increased by almost 4 fold each (**Figure 2**). The supply of vegetable oils and animal fats has increased threefold and is responsible of the increase in the share of fat in DES shown in **Figure 1**. Soybean oil and peanut oil are more frequently consumed in northern part of China whereas rapeseed oil is mainly consumed in the south.



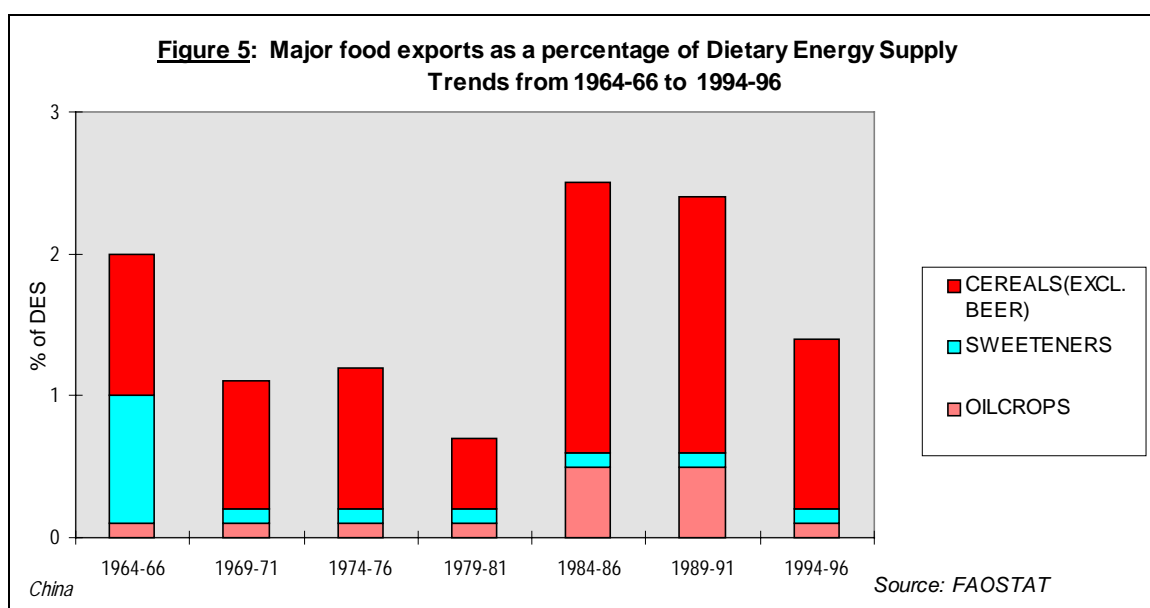
Energy: Between 1964-66 and 1994-96, although there has been a reduction in the share of cereals in the DES, they still represent the main source of energy in the Chinese diet, providing 1,650 kcal/caput/day, equivalent to 60% of the total energy (**Figure 3**). The share of pulses in the DES has been decreasing continuously from 7% to 3%, whereas the share of meat and offals have increased significantly from 4% to 12%, over the same period. The DES in China is mainly based on vegetable products which provide respectively, 83%, 68% and 39% of total energy, protein and fat supplies (**Figure 3**).



Major food imports and exports: From 1964-66 to 1994-96 food imports were almost exclusively represented by cereals, mainly wheat, barley and corn, which always represented less than 6% of DES (FAOSTAT) (**Figure 4**). In 1994-96, the imported vegetable oils (soybean, other seeds and oleaginous fruits) reached 2.5% of total DES. In the same period the imported sweeteners represented less than 1% of the DES (FAOSTAT).



In the last 30 years, as for imports, food exports were almost exclusively represented by cereals, mainly rice (1.2% of the DES) (**Figure 5**). In the same period oilcrops (mainly soybean) were exported but this amount never exceeded 1% of total DES.



3. Food consumption

Food consumption in China is influenced by regional, ethnic, cultural, income and agricultural production differences. The vast territory of China covers a range of different soil types, climatic variations and agro-ecological zones that influence the agricultural production and indirectly dietary patterns. Therefore, the variations in dietary patterns is related to local food availability and preference (Ge et al., 1997).

The Yangzi River separates southern China, where the staple food is rice, from the north and west where wheat is mainly consumed (**General map**). Other cereals such as maize, millet, sorghum and potatoes are cultivated and consumed mainly in the north and north-east. Herdsmen from the north-west plateau and pastoral areas of the north-east consume more milk and meat, but less vegetables, while fish and seafoods are consumed in greater quantities in the south of China than elsewhere. Generally, people eat three meals a day except in the agricultural and pastoral areas of Kangding county in Sichuan province, where herdsmen who perform heavy physical activity may eat five times daily (Qingxia, 1986).

In this document the results of two nationally representative food consumption surveys conducted in China in 1982 and 1992 are presented in (**Table 3a**) (INFH, 1985; Ge et al., 1996). Both surveys were conducted in the post-harvest period, involved large numbers of individuals and used the same methodology which facilitates the comparison of the results. Moreover, intakes of the major food groups were expressed in kilograms per caput per year and were obtained using the weighing method for five consecutive days. Food grouping and calculation of nutrient intake were based on the Chinese food composition table.

The 1992 survey covered about 25,000 households (100,201 individuals) from all over the mainland except Liaoning province.

The national average intake of energy has slightly decreased from 2485 to 2328 kcal/caput/day between 1982 and 1992 and this is probably due to the more sedentary lifestyle of the population. The findings from the 28 provinces surveyed in 1992 showed that the average daily per capita energy intake varied from 1913 kcal in Hainan to 2720 kcal in Anhui (**Table 3b** and **Map2**). Between 1982 and 1992, there was a reduction in the intake of all major food groups except for meat, fish, milk and milk products, eggs and oils and fats (Table 3a). As a consequence, there has been an increase in the share of protein and fat in total energy intake from 10.8% to 11.8% for protein and from 18.4% to 22.0% for fat.

There are important inter provincial variations in the share of protein and fat in total energy intake. The share of protein ranged from 9.8% in Sichuan to 13.1% in Shanghai and that of fat from 14.0% in Gansu to 31.5% in Beijing (Table 3b and **Map2**).

Between 1982 and 1992, although there has been a reduction in the intake (from 187 to 161 kg/person/year) and in the share of cereals in total energy intake (from 71 to 67%) they still represent the main source of energy in the Chinese diet providing 67% of total energy intake (Table 3a). The 1992 survey showed that there were wide inter provincial variations in the average daily per capita intake of cereals which ranged from 134 kg to 213 kg per capita per year respectively in Guangdong and Xinjiang (**Table 3c**). The consumption of cereals seemed to decrease with the increasing income of the household (Ge et al., 1996). In all the provinces surveyed, cereals represented the main source of energy providing from 54% to 78% of total energy intake respectively in Beijing and Gansu. (**Table 3d** and **Figure 6**). Therefore, cereals, mainly rice and wheat flour, are the staple food of the population. The diet in China is mainly based on vegetal products that provide 81% and 63% of total protein and fat intake respectively, and quality foods of animal origin only play a minor role (Table 3a).

Pulses play an important role in improving the nutritive value of a cereal-based diet. Unfortunately, their share in total energy intake, which was 2.9%, decreased to 1.8% between

1982 and 1992 (**Table 3a**). Between provinces, the share of pulses in total energy intake ranged from 0.3% to 4.4 % respectively in Xinjiang and Guizhou (**Table 3d** and **Figure 6**). In rural areas the population has a lower intake of animal products, fruits and vegetables, pulses, oils and fats and sweeteners, but a higher intake of cereals and roots and tubers (**Table 3a**; INFH, 1985; Ge et al., 1996). Important inter provincial variations were observed in the share of animal products in total energy which ranged from 3.8% to 20.3% respectively in Gansu and Guangdong (**Table 3d** and **Figure 6**).

About 9.8 million children under one-year old were not completely breastfed within the first three months in rural areas of China, and their vulnerability to malnutrition was 27-32% higher than those being fully breastfed (Ge et al., 1991).

In fact, China has a good tradition of breastfeeding practice, especially in the rural areas. However, along with the rapid development of urbanization in recent years, breastfeeding rate has dramatically decreased due to the increase in the employment opportunities for women and inappropriate information on the substitutes for breast milk.

Table 3a: Food consumption surveys

Source/ Year of survey	Location	Sample Size individuals	Average food intake										
			Major Food Groups (kg/caput/year)										
			Cereals	Roots/ Tubers	Pulses	Fruits/ Vegetables	Oils/Fats	Meat	Fish	Milk products	Eggs	Sweeteners	Other
INFH, 1985	National	71129	186.8	58.3	6.3	137.8	6.1	14.1	3.9	3.1	3.2	2.6	13.7
2 nd NNS, 1982	Urban	21113	166.4	22.8	7.3	158.4	9.6	22.8	7.6	3.5	5.5	3.8	20.0
	Rural	50016	202.4	83.9	5.7	129.1	5.3	8.4	2.4	2.4	1.4	1.1	10.7
Ge et al., 1996	National	100201	160.6	31.6	5.2	134.8	10.8	21.5	10.0	5.4	5.8	1.7	16.5
3 rd NNS, 1992	Urban	31177	148.0	16.8	6.1	148.6	13.4	36.7	16.1	13.2	10.7	2.8	23.0
	Rural	69024	177.3	39.4	4.8	127.6	9.3	13.7	7.0	1.4	3.2	1.1	12.8
			Nutrient Intake (caput/day)										
			Energy (kcal)	% Protein	% Fat	Protein (g)	% from Animal products	Fat (g)	% from Animal products				
INFH, 1985	National	71129	2485	10.8	18.4		66.8	11.4				49.3	40.3
2 nd NNS, 1982	Urban	21113	2446	10.9	25.0		66.7	16.9				68.2	46.6
	Rural	50016	2651	10.5	14.3		66.8	6.3				41.3	32.8
Ge et al., 1996	National	100201	2328	11.8	22.0		68.0	18.9				58.3	37.2
3 rd NNS, 1992	Urban	31177	2395	12.7	28.4		75.1	31.5				77.7	38.7
	Rural	69024	2294	11.3	18.6		64.3	12.4				48.3	36.4
			Share of major food groups in total energy intake (%)										
			Cereals	Roots/ Tubers	Pulses	Animal Products	Oils &	Fats &	Sweeteners				
INFH, 1985	National	71129	71.3	6.2	2.9	7.9				7.7			4.2
2 nd NNS, 1982	Urban	21113	65.0	2.3	3.2	12.4				11.8			5.9
	Rural	50016	74.6	9.0	2.6	4.2				5.8			4.0
Ge et al., 1996	National	100201	66.8	3.1	1.8	9.3				11.6			7.4
3 rd NNS, 1992	Urban	31177	57.4	1.7	2.1	15.2				14.3			9.4
	Rural	69024	71.7	3.9	1.7	6.2				10.2			6.4

Table 3b: Nutrient intake per caput per day, by province

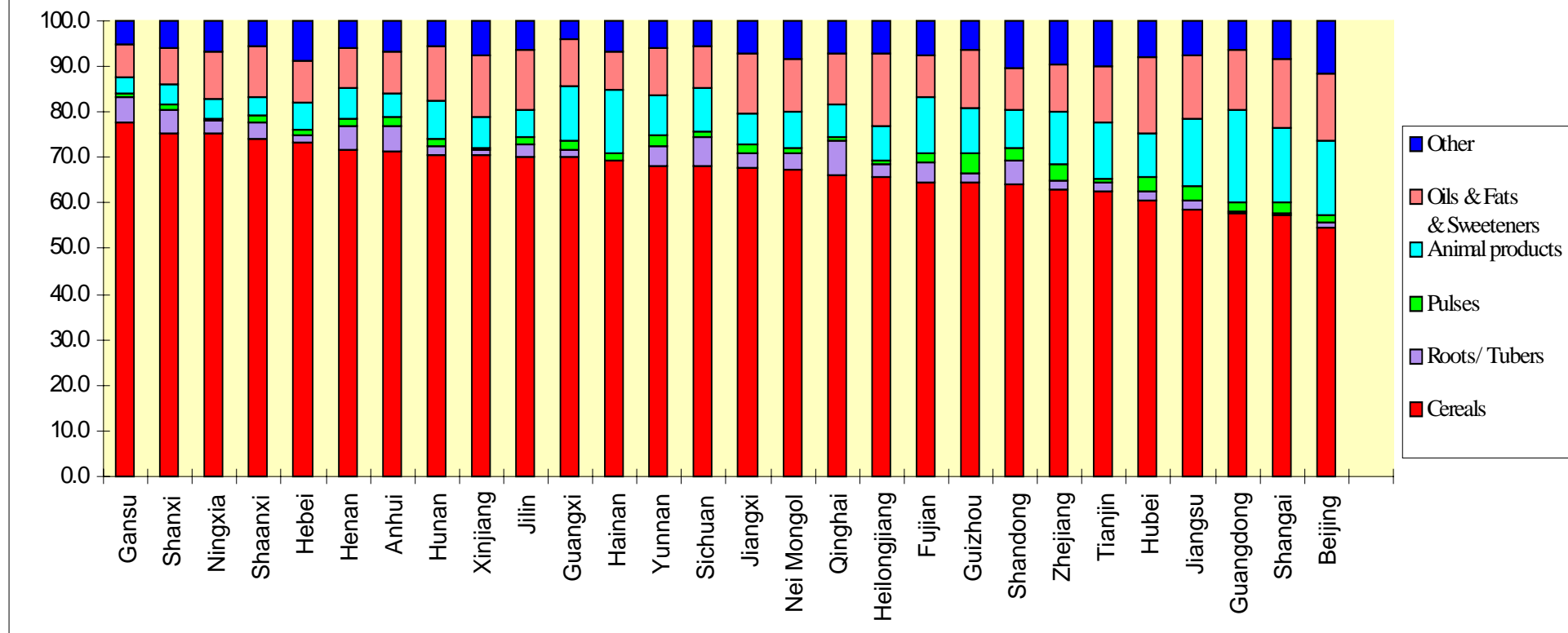
Source/ Year of survey	Province	Nutrient Intake (caput/day)							
		Energy (kcal)	% Protein	% Fat	Protein (g)	% from Animal products		Fat (g)	% from Animal products
Ge et al., 1996	Beijing	2492.4	12.4	31.5	77.0	...		87.2	...
3rd NNS, 1992	Tianjin	2318.2	12.5	27.3	72.5	...		70.4	...
	Hebei	2288.9	11.9	19.7	68.3	...		50.0	...
	Shanxi	2081.3	11.8	17.3	61.2	...		40.0	...
	Nei Mongol	2238.0	11.6	22.8	64.7	...		56.6	...
	Jilin	2347.2	10.6	22.0	62.3	...		57.3	...
	Heilongjiang	2152.4	10.6	25.8	57.2	...		61.6	...
	Shanghai	2371.2	13.1	28.8	77.4	...		76.0	...
	Jiangsu	2502.2	12.1	27.8	75.8	...		77.2	...
	Zhejiang	2432.8	12.9	22.2	78.5	...		60.0	...
	Anhui	2719.5	11.4	16.1	77.6	...		48.5	...
	Fujian	2122.0	12.7	22.1	67.2	...		52.2	...
	Jiangxi	2248.0	11.2	21.7	63.0	...		54.3	...
	Shandong	2319.0	12.7	21.1	73.5	...		54.4	...
	Henan	2233.7	12.0	18.6	67.2	...		46.1	...
	Hubei	2399.1	11.4	27.3	68.5	...		72.9	...
	Hunan	2482.3	10.6	20.6	65.9	...		56.7	...
	Guangdong	2225.3	13.5	29.4	75.0	...		72.6	...
	Guangxi	2092.0	11.9	21.8	62.0	...		50.7	...
	Hainan	1913.0	12.8	20.1	61.3	...		42.7	...
	Sichuan	2451.6	9.8	20.4	60.3	...		55.6	...
	Guizhou	2345.6	10.9	24.9	64.1	...		64.8	...
	Yunnan	2131.2	10.5	20.8	56.2	...		49.2	...
	Shaanxi	2181.9	11.3	18.7	61.5	...		45.3	...
	Gansu	2270.7	11.9	14.0	67.3	...		35.4	...
	Qinghai	2416.4	12.0	20.1	72.2	...		53.9	...
	Ningxia	2238.3	11.5	16.5	64.2	...		41.1	...
	Xinjiang	2696.7	12.0	22.8	80.7	...		68.2	...

...: No data available

Table 3d: Share of major food groups in total energy intake (%), by province

Source/ Year of survey	Province	Cereals	Roots/ Tubers	Pulses	Animal products	Oils & Fats & Sweeteners	Other
Ge et al., 1996	Beijing	54.4	1.3	1.8	16.4	14.5	11.5
3rd NNS, 1992	Tianjin	62.7	1.8	1.0	12.3	12.1	10.1
	Hebei	73.2	1.8	1.2	6.0	9.1	8.8
	Shanxi	75.3	5.0	1.3	4.4	8.2	5.7
	Nei Mongol	67.2	3.7	1.3	7.8	11.5	8.4
	Jilin	70.3	2.7	1.5	6.0	13.3	6.3
	Heilongjiang	65.7	2.7	1.0	7.3	16.1	7.2
	Shangai	57.3	0.6	2.1	16.4	15.1	8.5
	Jiangsu	58.4	2.3	3.2	14.4	14.0	7.8
	Zhejiang	62.9	1.9	3.8	11.5	10.2	9.7
	Anhui	71.2	5.7	2.0	5.2	9.0	6.9
	Fujian	64.6	4.3	2.0	12.2	9.2	7.6
	Jiangxi	67.9	3.0	2.1	6.8	13.0	7.2
	Shandong	64.1	5.1	3.0	8.1	9.3	10.3
	Henan	71.7	5.0	1.6	6.8	8.8	6.1
	Hubei	60.7	2.0	3.1	9.5	16.9	7.7
	Hunan	70.7	1.9	1.6	8.1	12.0	5.8
	Guangdong	57.9	0.4	1.7	20.3	13.4	6.4
	Guangxi	70.3	1.6	1.8	11.9	10.3	4.1
	Hainan	69.2	0.3	1.3	14.0	8.3	7.0
	Sichuan	68.0	6.5	1.2	9.4	9.5	5.5
	Guizhou	64.6	2.0	4.4	10.0	12.7	6.3
	Yunnan	68.1	4.3	2.6	8.7	10.3	6.1
	Shaanxi	74.3	3.5	1.3	4.1	11.3	5.5
	Gansu	77.8	5.6	0.6	3.8	7.0	5.3
	Qinghai	66.3	7.5	0.8	7.2	11.0	7.2
	Ningxia	75.2	2.8	0.6	4.3	10.3	6.8
	Xinjiang	70.6	1.3	0.3	6.8	13.3	7.7

Figure 6: Share of major food groups in total energy intake (%)



4. Anthropometric data

Children under 60 months old (Tables 4a1, 4a2, 4a3 and 4a4 - Maps 3 and 4)

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.

In this document the anthropometric data of Chinese children were obtained from three surveys one conducted in 1987 (**Tables 4a1** and the other two in 1992 (**Tables 4a2, 4a3** and **4a4**).

The 1987 survey conducted by the State Statistical Bureau (SSB) on 90,662 children aged from 0-59 months covered 9 provinces namely: Neimonggu, Heilongjiang, Jejiang, Shandong, Hubei, Guangdong, Sichuan, Yunnan and Ningxia (SSB, 1987).

The 1992 survey conducted by SSB on 176,976 children 0-59 months old covered 29 provinces including the 9 provinces surveyed in 1987 (SSB, 1992).

The 3rd National Nutrition Survey carefully collected and analysed anthropometric data of 8,120 children aged 0 to 71 months in 1992 (Ge et al., 1996).

When growth patterns of Chinese children are compared with international standards, it appears that the growth potential of children has yet to be met in spite of recent improvements (Ge et al., 1991a). In fact, the nutritional status of children under 59 months old has improved as indicated by the decrease in the prevalence of underweight and stunting from 22% and 31% respectively in 1987 to 12% and 18% in 1992 (Tables 4a1 and 4a2). In the same period, the prevalence of wasting did not undergo significant changes. It is important to underline the 1987 survey is not nationally representative since it covered only 9 provinces.

In China the nutritional status of children worsens with age especially after 3 years of age. For all age groups, the prevalence of underweight, stunting and wasting are systematically higher in rural areas indicating that the urban areas are less affected by malnutrition (Tables 4a2 and 4a4).

In China, there are important inter provincial differences in the nutritional status of individuals which are mainly due to differences in the socio-economic level, differences in food habits, health infrastructures and communication facilities. Thus, the nutritional status of the population in each province results from varying combinations of factors. The (**Maps 3** and **4**) show the inter provincial variations in the prevalence of underweight and stunting in children under five. The prevalence of underweight ranged from 3% in Beijing to 39% in Hainan and that of stunting from 7% in Beijing to 56% in Guizhou. According to the WHO, a prevalence of stunting above 40% or underweight above 30% in children under five years of age reflects a serious public health problem (WHO, 1995). According to this classification, the children in the provinces of Fujian, Jianxi, Hunan, Guanxi, Hainan, Sichuan, Guizhou, Yunnan, Qinghai and Xinjiang were found to be highly affected by stunting (>40%) and those in Guanxi and Hainan also showed a prevalence of underweight >30%.

The national prevalence of overweight in children under 71 months of age is less than 5% and does not reflect a significant problem. The prevalence of overweight children in the rural areas (4%) is slightly lower than that observed in urban areas 6% (Table 4a4). The prevalence of overweight decreases with age and is therefore systematically higher in children less than 12 months old (12% compared to 4% in children 60-71 month old) (Table 4a4).

Table 4a1: Anthropometric data on children under 59 months old by province (both sexes)

Source/ Year of survey	Location	Sample Size Number	Percentage of malnutrition						
			Underweight		Stunting		Wasting		Overweight
			% Weight/Age < -3SD	< -2SD	% Height/Age < -3SD	< -2SD	% Weight/Height < -3SD	< -2SD	% Weight/Height > +2SD
SSB, 1987 Child Survey,1987	National	90662	...	21.6	...	30.5	...	2.6	...
	Urban	18571	...	12.7	...	13.7	...	2.5	...
	Rural	72091	...	23.9	...	34.8	...	2.8	...
	<i>Provinces</i>								
	Neimenggu	8183	...	12.9	...	20.9	...	1.4	...
	Heilongjiang	8195	...	12.8	...	21.8	...	1.4	...
	Zhejiang	8144	...	10.2	...	15.5	...	1.5	...
	Shandong	9158	...	8.7	...	14.2	...	1.2	...
	Hubei	9551	...	16.9	...	24.9	...	2.4	...
	Guangdong	13465	...	35.9	...	40.9	...	5.4	...
	Sichuan	16846	...	27.5	...	44.0	...	2.2	...
	Yunnan	10860	...	34.8	...	41.5	...	4.3	...
	Ningxia	6260	...	15.7	...	27.8	...	1.9	...
	<i>Urban Provinces</i>								
	Neimenggu	2203	...	8.6	...	12.2	...	1.7	...
	Heilongjiang	1845	...	7.9	...	10.2	...	1.1	...
	Zhejiang	2113	...	5.9	...	5.9	...	1.6	...
	Shandong	1766	...	5.1	...	8.9	...	1.3	...
	Hubei	1924	...	10.1	...	10.0	...	2.2	...
	Guangdong	2002	...	22.9	...	17.0	...	5.3	...
	Sichuan	2933	...	19.9	...	27.0	...	1.5	...
	Yunnan	2413	...	15.5	...	8.9	...	5.2	...
	Ningxia	1356	...	15.1	...	19.3	...	2.6	...
	<i>Rural Provinces</i>								
	Neimenggu	5980	...	14.4	...	24.1	...	1.3	...
	Heilongjiang	6350	...	14.2	...	25.1	...	1.5	...
	Zhejiang	6031	...	11.7	...	19.0	...	1.5	...
	Shandong	7382	...	9.5	...	15.6	...	1.2	...
	Hubei	7627	...	18.6	...	28.7	...	2.4	...
	Guangdong	11463	...	38.1	...	45.0	...	5.4	...
	Sichuan	13913	...	29.1	...	47.6	...	2.3	...
	Yunnan	8447	...	40.3	...	50.9	...	4.1	...
	Ningxia	4904	...	15.9	...	30.2	...	1.6	...

Notes: ... data not available

The results shown in (**Tables 4a2, 4a3 and 4a4**) were obtained from the analysis and interpretation of different Chinese Institutions therefore, although the same data sets were used initially, the results and the sample sizes cannot be compared.

Table 4a2: Anthropometric data on children under 59 months in urban and rural

Source/ Year of survey	Location	Sample Size Number	Sex	Age Mths	Percentage of malnutrition						
					Underweight		Stunting		Wasting		Overweight
					% Weight/Age < -3SD	< -2SD	% Height/Age < -3SD	< -2SD	% Weight/Height < -3SD	< -2SD	% Weight/Height > +2SD
SSB, 1992 Child Survey, 1992	National	176976	F/M	0-59	4.7	12.4	15.8	17.7	1.1	3.4	...
		25164	F/M	0-11	2.9	6.8	12.2	13.1	1.3	3.4	...
		32381	F/M	12-23	6.1	13.9	17.7	18.9	1.4	4.4	...
		39894	F/M	24-35	5.3	13.2	14.5	16.5	1.0	3.1	...
		39953	F/M	36-47	4.4	13.0	15.8	19.0	0.9	2.9	...
		39584	F/M	48-59	4.9	14.0	17.6	19.3	1.2	3.3	...
	Urban	38399	F/M	0-59	1.2	5.3	3.7	7.7	0.7	2.3	...
		20132	M	0-59	1.2	5.3	3.7	7.7	0.8	2.5	...
		18267	F	0-59	1.1	5.3	3.7	7.7	0.6	2.0	...
		5427	F/M	0-11	0.7	2.4	2.9	5.2	0.9	2.7	...
		6902	F/M	12-23	1.4	5.7	4.1	8.9	0.8	3.0	...
		8521	F/M	24-35	1.4	5.8	3.3	6.6	0.5	1.9	...
		8681	F/M	36-47	1.0	5.8	3.7	8.0	0.5	1.9	...
		8857	F/M	48-59	1.2	5.7	4.1	9.0	0.8	2.3	...
		138577	F/M	0-59	5.7	14.3	19.2	20.6	1.3	3.7	...
		74864	M	0-59	5.6	14.2	18.8	20.4	1.4	3.8	...
		63713	F	0-59	5.9	14.5	19.8	20.7	1.2	3.7	...
		19737	F/M	0-11	3.4	7.6	14.6	15.1	1.5	3.7	...
		25479	F/M	12-23	7.3	15.9	21.6	21.8	1.6	4.8	...
		31372	F/M	24-35	6.3	15.1	17.7	19.4	1.1	3.4	...
		31272	F/M	36-47	5.3	14.8	19.3	22.3	0.9	3.4	...
		30716	F/M	48-59	5.8	16.1	21.8	22.6	1.4	3.6	...
	Rural	138577	F/M	0-59	5.7	14.3	19.2	20.6	1.3	3.7	...
		74864	M	0-59	5.6	14.2	18.8	20.4	1.4	3.8	...
		63713	F	0-59	5.9	14.5	19.8	20.7	1.2	3.7	...
		19737	F/M	0-11	3.4	7.6	14.6	15.1	1.5	3.7	...
		25479	F/M	12-23	7.3	15.9	21.6	21.8	1.6	4.8	...
		31372	F/M	24-35	6.3	15.1	17.7	19.4	1.1	3.4	...

Table 4a3: Anthropometric data on children under 59 months, by province (both sexes)

Source/ Year of survey	Location	Sample Size Number	Percentage of malnutrition						
			Underweight		Stunting		Wasting		Overweight
			% Weight/Age < -3SD	< -2SD	% Height/Age < -3SD	< -2SD	% Weight/Height < -3SD	< -2SD	% Weight/Height > +2SD
SSB, 1992 Child Survey, 1992	National	61580	3.8	8.1	13.7	17.6	1.0	3.2	8.0
	Urban	13815	0.9	5.2	3.2	7.6	0.5	2.2	4.0
	Rural	47765	4.7	13.8	16.7	20.0	1.2	3.3	9.2
	<u>Provinces</u>								
	Neimenggu	5854	1.7	7.4	10.6	15.2	0.5	1.9	9.4
	Heilongjiang	6594	1.7	6.6	7.9	12.4	0.5	1.8	5.8
	Zhejiang	6860	1.4	7.2	5.9	12.3	0.8	2.1	5.3
	Shandong	7048	2.7	6.2	10.3	11.2	0.8	2.9	11.9
	Hubei	7345	3.6	10.8	16.7	19.4	1.0	3.1	11.3
	Guangdong	7353	8.3	18.7	17.2	20.2	2.3	6.2	7.1
	Sichuan	6740	5.6	15.4	22.9	22.0	1.6	3.3	10.5
	Yunnan	6596	6.6	20.4	23.5	25.0	1.3	4.5	8.9
	Ningxia	7190	1.8	11.0	8.8	18.6	2.5	6.2	11.1
	<u>Urban Provinces</u>								
	Neimenggu	1829	0.1	3.5	3.0	6.3	0.2	1.5	4.6
	Heilongjiang	2591	0.8	2.8	3.6	6.2	0.7	2.1	6.1
	Zhejiang	1798	0.7	3.8	0.9	4.4	0.3	1.8	1.3
	Shandong	1398	0.4	1.2	1.6	3.2	0.3	1.2	6.8
	Hubei	1634	1.5	6.9	4.6	11.7	0.4	3.0	3.4
	Guangdong	1904	1.7	9.8	4.1	9.6	1.3	4.0	3.3
	Sichuan	1090	0.7	6.4	3.1	11.3	0.3	1.6	2.3
	Yunnan	644	2.0	11.9	8.1	14.4	0.3	3.1	4.1
	Ningxia	927	0.8	4.6	2.1	5.6	0.5	2.4	3.4
	<u>Rural Provinces</u>								
	Neimenggu	4024	2.5	9.1	14.1	19.2	0.6	2.2	11.6
	Heilongjiang	4004	2.3	9.1	10.8	16.4	0.4	1.6	5.6
	Zhejiang	5062	1.7	8.4	7.7	15.1	1.0	2.2	6.8
	Shandong	5650	3.2	7.4	12.5	13.3	1.0	3.3	13.2
	Hubei	5712	4.1	11.9	20.2	21.6	1.1	3.1	13.5
	Guangdong	5450	10.6	21.8	21.9	23.9	2.6	7.0	8.5
	Sichuan	5650	6.6	16.6	26.7	24.1	1.9	3.7	12.0
	Yunnan	5952	7.1	21.3	25.2	26.2	1.4	4.6	9.5
	Ningxia	6263	1.9	11.9	9.9	20.5	0.5	1.6	3.1

Table 4a4: Anthropometric data on children under 71 months, in urban and rural areas

Source/ Year of survey	Location	Sample Size Number	Sex	Age Mths	Percentage of malnutrition						
					Underweight		Stunting		Wasting		Overweight
					% Weight/Age < -3SD	< -2SD	% Height/Age < -3SD	< -2SD	% Weight/Height < -3SD	< -2SD	% Weight/Height > +2SD
Ge et al., 1996 3 rd NNS, 1992	National	8120	F/M	0-71	2.9	14.5	12.3	20.0	0.7	2.8	4.6
		786	F/M	0-11	1.8	7.0	2.5	10.1	1.4	3.4	12.0
		1168	F/M	12-23	4.4	14.1	10.6	22.1	1.5	4.3	5.7
		1494	F/M	24-35	3.6	15.1	12.7	17.7	0.6	2.8	3.0
		1526	F/M	36-47	3.5	16.3	14.8	21.2	0.6	2.5	3.7
		1445	F/M	48-59	2.4	15.5	15.5	21.8	0.2	2.1	3.5
		1683	F/M	60-71	1.9	15.5	12.8	22.9	0.3	2.2	3.6
	Urban	1528	F/M	0-71	1.0	9.0	5.8	13.9	0.6	2.1	5.8
		830	M	0-71	1.1	9.0	6.7	13.7	0.6	1.8	5.7
		689	F	0-71	0.9	9.0	4.6	14.0	0.6	2.4	6.0
		134	F/M	0-11	0.7	6.7	1.5	5.2	3.7	2.2	11.2
		231	F/M	12-23	0.4	8.2	5.2	13.4	0.0	1.7	8.7
		248	F/M	24-35	1.9	8.9	6.2	10.1	0.4	3.1	2.7
		303	F/M	36-47	0.7	6.6	3.6	15.2	0.3	1.7	5.0
		292	F/M	48-59	1.4	10.6	9.9	15.1	0.7	2.1	6.2
		310	F/M	60-71	0.6	11.6	5.8	18.7	0.0	1.9	4.5
	Rural	6574	F/M	0-71	3.4	15.8	13.9	21.5	0.7	2.9	4.3
		3590	M	0-71	3.0	15.9	13.6	22.3	0.8	3.0	4.3
		2984	F	0-71	3.9	15.7	14.1	20.5	0.6	2.9	4.3
		652	F/M	0-11	2.0	7.1	2.8	11.0	0.9	3.7	12.1
		937	F/M	12-23	5.3	15.6	12.0	24.2	1.9	4.9	4.9
		1236	F/M	24-35	4.0	16.3	14.1	19.3	0.6	2.8	3.1
		1153	F/M	36-47	4.3	18.6	17.6	22.6	0.7	2.7	3.4
		1153	F/M	48-59	2.6	16.7	16.9	23.5	0.1	2.1	2.8
		1373	F/M	60-71	2.2	16.4	14.3	23.8	0.4	2.3	3.4

Adolescents 9-18 years old (Tables 4b1, 4b2 and 4b3)

Thin or undernourished adolescents are usually identified using the Body Mass Index (BMI). This index is obtained from body weight (kg) divided by height squared (m²). The BMI-for-age <5th percentile of the NHANES I reference data was accepted as the pragmatical cut-off value between *normal* and *undernourished* adolescents (WHO, 1995).

The results of the 3rd National Nutrition Survey conducted on 13,183 adolescents 9-18 years old are presented in (**Tables 4b1, 4b2 and 4b3**) (Ge et al., 1996). For the Chinese adolescents of both sexes, the 50th percentile of the BMI-for-age was found to be lower than the NHANES I reference data and this was observed systematically for all age groups (**Tables 4b1**). Although the mean height-for-age and the 50th percentile of the BMI-for-age was systematically higher for adolescents in urban areas, for both males and females, these differences seem to disappear with age.

Table 4b1: Anthropometric data on adolescents (national data)

Source/ Year of survey	Location	Sample			Nutritional status					
		Size Number	Sex	Age Years	Height (in cm)			Body Mass Index (in kg/m ²)		
					mean	SD	median	mean	SD	median
Ge et al., 1996	National	830	M	9-10	127.5	8.5	127.2	...	...	15.5
3 rd NNS, 1992		961	M	10-11	132.5	8.9	132.5	...	...	15.8
		815	M	11-12	137.0	8.8	136.9	...	...	16.1
		787	M	12-13	142.5	9.9	142.0	...	...	16.7
		801	M	13-14	150.2	10.4	150.2	...	...	17.4
		733	M	14-15	155.1	10.2	155.5	...	...	17.9
		632	M	15-16	160.4	9.8	162.0	...	...	18.6
		649	M	16-17	163.2	8.2	164.0	...	...	19.3
		564	M	17-18	165.2	7.3	166.0	...	...	19.6
		743	F	9-10	127.2	9.0	126.4	...	...	15.2
		900	F	10-11	132.1	9.3	131.8	...	...	15.5
		686	F	11-12	137.5	9.4	137.5	...	...	16.1
		703	F	12-13	143.6	9.8	144.2	...	...	16.8
		746	F	13-14	149.1	8.7	150.0	...	...	17.8
		690	F	14-15	152.4	7.8	153.0	...	...	18.8
		659	F	15-16	153.5	7.1	154.0	...	...	19.5
		651	F	16-17	155.2	6.1	155.3	...	...	20.1
		633	F	17-18	156.2	6.2	156.2	...	...	20.3

Notes: ... data not available

Table 4b2: Anthropometric data on urban adolescents[illegible]

Table 4b3: Anthropometric data on rural adolescents

Source/ Year of survey	Location	Sample			Nutritional status					
		Size Number	Sex	Age Years	Height (in cm)			Body Mass Index (in kg/m ²)		
					mean	SD	median	mean	SD	median
Ge et al., 1996 3 rd NNS, 1992	Rural	618	M	9-10	126.3	7.7	126.1	...	...	15.5
		696	M	10-11	131.0	8.4	131.2	...	...	15.7
		600	M	11-12	135.4	8.3	135.0	...	...	16.0
		566	M	12-13	140.9	9.4	140.5	...	...	16.5
		586	M	13-14	148.5	9.8	148.1	...	...	17.3
		528	M	14-15	153.2	9.9	154.1	...	...	17.7
		467	M	15-16	159.0	9.7	160.3	...	...	18.6
		461	M	16-17	161.7	8.0	162.3	...	...	19.3
		404	M	17-18	164.1	7.3	165.0	...	...	19.5
		543	F	9-10	125.8	8.6	125.2	...	...	15.1
		639	F	10-11	130.5	8.7	130.0	...	...	15.4
		504	F	11-12	135.8	9.1	136.0	...	...	16.0
		493	F	12-13	141.7	9.0	141.6	...	...	16.4
		548	F	13-14	148.0	8.9	149.0	...	...	17.6
		474	F	14-15	151.1	7.8	151.9	...	...	18.8
		487	F	15-16	152.3	7.0	152.8	...	...	19.5
		481	F	16-17	154.6	6.0	155.0	...	...	20.2
		443	F	17-18	155.4	6.2	155.4	...	...	20.4

Notes: ... data not available

Adults (Table 4c and Maps 5 and 6)

The nutritional status of adults is usually assessed using the Body Mass Index (BMI). 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/m² are considered to suffer from chronic energy deficiency. A BMI of over 25.0 kg/m² indicates overweight.

Table 4c: Anthropometric data on adults

Source/ Year of survey	Location	Sample			Percentage of malnutrition						
		Size Number	Sex	Age Years	Body Mass Index (kg/m ²)			Chronic Energy Deficiency % BMI		Normal % BMI	Overweight % BMI
					mean	SD	median	<18.5		18.5-25.0	>25.0
INFH, 1985 2 nd NNS, 1982	Urban	5510	M/F	20-45	...	...	...	11.6		78.8	9.7
	Rural	7814	"	20-45	...	...	...	12.9		81.0	6.1
Ge et al., 1996 3 rd NNS, 1992	National	54006	M/F	>20	22.0	3.3	...	9.5		75.9	14.6
	"	25300	M	"	21.8	3.1	...	9.1		79.0	11.9
	"	28706	F	"	22.2	3.4	...	9.9		73.2	17.0
	Urban	18472	M/F	>20	22.8	3.6	...	8.0		68.9	23.1
	"	8538	M	"	22.6	3.5	...	8.1		71.1	20.8
	"	9934	F	"	22.9	3.8	...	8.0		67.0	25.1
	Rural	35534	M/F	>20	21.6	3.0	...	10.3		79.6	10.2
	"	16762	M	"	21.4	2.8	...	9.6		83.0	7.4
	"	18772	F	"	21.8	3.1	...	10.9		76.5	12.7
	Urban	8477	M/F	20-45	...	...	...	9.0		76.1	14.9
	Rural	20911	"	20-45	...	...	...	8.0		83.6	8.4

Notes: ... data not available

The anthropometric data on adults presented in (**Table 4c**) were obtained from the 2nd and 3rd National Nutrition Survey conducted in 1982 and 1992 respectively (INFH, 1985; Ge et al., 1996).

In 1992 the national prevalence of adults 20 years old and above with a BMI<18.5 kg/m² was 10% while the prevalence of overweight was 15%. The prevalence of chronic energy deficiency was higher in the rural areas (10%) compared to urban areas (8%). On the other hand, in rural areas, where the work is minimally mechanised and economic productivity depends on human energy and labour, the prevalence of overweight and obesity is lower (10% compared to 23% in urban areas) (**Table 4c**).

The national prevalence of overweight is higher in women (17%) than men (12%) and this tendency is also observed both in rural (13% compared to 7% for men) and urban areas (25% compared to 23% for men).

In 1982 in the rural areas the prevalence of adults 20-45 years old with a BMI<18.5 kg/m² was slightly higher (13%) therefore indicating that their nutritional status was slightly worse compared to the urban areas (12%) (**Table 4c**). However, the prevalence of overweight was lower in rural areas.

In 1992, the nutritional status of adults 20-45 years old has improved as indicated by a reduction of the prevalence of individuals with a BMI<18.5kg/m² both in rural and urban areas, although a tendency to overweight was observed in the urban areas (15%) (**Table 4c**).

The (**Maps 5 and 6**) show the inter provincial variations in the prevalence of adults with a BMI<18.5kg/m². This prevalence ranged from 2% to 24% for men respectively in Neimenggu and Hainan and from 4% to 25% for women respectively in Beijing and Hainan (**Maps 5 and 6**). In other words, the province of Hainan was found to be highly affected by malnutrition with about one fourth of the adult population having a BMI<18.5 kg/m².

Table 4c: Anthropometric data on adults

Source/ Year of survey	Location	Sample			Percentage of malnutrition						
		Size	Sex	Age	Body Mass Index (kg/m ²)			Chronic Energy Deficiency % BMI		Normal % BMI	Overweight % BMI
		Number		Years	mean	SD	median	<18.5		18.5-25.0	>25.0
INFH, 1985	Urban	5510	M/F	20-45	...	...	...	11.6		78.8	9.7
2 nd NNS, 1982	Rural	7814	"	20-45	...	...	...	12.9		81.0	6.1
Ge et al., 1996	National	54006	M/F	>20	22.0	3.3	...	9.5		75.9	14.6
3 rd NNS, 1992	"	25300	M	"	21.8	3.1	...	9.1		79.0	11.9
	"	28706	F	"	22.2	3.4	...	9.9		73.2	17.0
	Urban	18472	M/F	>20	22.8	3.6	...	8.0		68.9	23.1
	"	8538	M	"	22.6	3.5	...	8.1		71.1	20.8
	"	9934	F	"	22.9	3.8	...	8.0		67.0	25.1
	Rural	35534	M/F	>20	21.6	3.0	...	10.3		79.6	10.2
	"	16762	M	"	21.4	2.8	...	9.6		83.0	7.4
	"	18772	F	"	21.8	3.1	...	10.9		76.5	12.7
	Urban	8477	M/F	20-45	...	...	...	9.0		76.1	14.9
	Rural	20911	"	20-45	...	...	...	8.0		83.6	8.4

Notes: ... data not available

5. Micronutrient deficiencies

Iodine Deficiency Disorders (IDD) are a significant public health problem in China. Major consequences of IDD include thyroid enlargement (goitre), impaired mental functioning, increased rates of still birth, perinatal and maternal mortality, infertility and cretinism. The most common cause of IDD is inadequate dietary intake of iodine. Usually seafood is the best source of iodine, but unfortunately this is not part of the diet in many Chinese provinces.

There are 400 million people living in areas known as iodine deficient and 1,615 from the total of 2,141 counties are known as iodine deficient counties (DEDC, 1990). In China it was estimated that 6.7 million people suffered from endemic goitre and 0.2 million were affected by cretinism (DEDC, 1990). China 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 (DEDC, 1990).

The results of the surveys conducted in 1982 and in 1992 in rural endemic areas are presented in (Table 5a) (Huang et al, 1994). These surveys show that children 7-14 years old were highly affected by goitre but there has been an improvement of the situation as indicated by the reduction of the prevalence of goitre in 1992.

Total goitre rate in male and female individuals of all age groups in the Provinces of Liaoning and Jiangxi were found to be respectively, 1.5% in 1987 (sample size 304,200) and 1.9% in 1982-83 (sample size 23,532,799) (Shu et al., 1990; Yan et al., 1991) (Table 5a).

Table 5a: Surveys on iodine deficiency (total goitre rate)

Source/ Year of survey	Deficiency	Location	Sample Size Number	Sex	Age Years	Percentage
Shu et al., 1990						
1985	TGR	Liaoning, rural	272,933	M/F	All	3.6
1986		"	290,844	"	"	2.1
1987		"	304,200	"	"	1.5
Yan et al., 1991	TGR	Jiangxi	23,532,799	M/F	All	1.9
1982-83						
Huang et al., 1994	TGR	<u>Rural endemic areas:</u>	2029	M/F	All	23.2
1982	"	"	713	M/F	7-14	53.8
1992	TGR	<u>Rural endemic areas:</u>	2966	M/F	All	5.1
	"	"	802	M/F	7-14	17.0

World-wide it is estimated that up to half of all anaemic cases are caused by dietary iron deficiency anaemia (FAO/ILSI, 1997). The groups most affected by anaemia are pre-school-age children, women of child bearing age and adolescent girls. Anaemia in infants and children is associated with intellectual and physical growth retardation and reduced resistance to infections. In adults anaemia causes fatigue and reduced work capacity (FAO/ILSI, 1997).

Anaemia is the most common deficiency disease in China. The 3rd National Nutrition Survey conducted in 1992 showed that the whole population is affected (Ge et al., 1996). In this survey the cyanmethemoglobin method was used to determine the Hb concentration. Blood samples were drawn from the fingertip of left hand with a 10ul capillary and tested with a spectrophotometer under the wavelength of 450nm.

The national average prevalence of anaemia in children under 6 years of age in 1992 was 15% and the rural areas (16%) were more affected than urban (11%) (Hb<11.0g/dl) (**Table 5b**). As for children under 6, the prevalence of anaemia in children 6-14 years was 15% (Hb<12.0g/dl). Women 18 years and above were the most affected group with 23% of them suffering from anaemia (Hb<12.0g/dl) (**Table 5b**). There were important inter provincial variations in the prevalence of anaemia in women above 18 years of age, which ranged from 2% to 52% respectively in Nei Mongol Zizhiqu and Shanghai as shown in (**Map 7** and **Table 5c**.)

Table 5b: Surveys on iron deficiency (anaemia)

Source/ Year of survey	Deficiency	Location	Sample Size Number	Sex	Age Years	Percentage
Ge et al., 1996	Hb<11.0g/dl	National Total	7987	M/F	0-5.9	14.8
3rd NNS, 1992	"	National Urban	1577	"	"	11.4
	"	National Rural	6410	"	"	15.6
	Hb<12.0g/dl	National Total	24644	M/F	6-14	14.6
	"	National Urban	8281	"	"	13.9
	"	National Rural	16363	"	"	14.9
	Hb<13.0g/dl	National Total	24644	M	>18	14.6
	"	National Urban	8281	"	"	13.9
	"	National Rural	16366	"	"	14.9
	Hb<12.0g/dl	National Total	27996	F	>18	22.7
	"	National Urban	9658	"	"	24.7
	"	National Rural	18338	"	"	21.6

Table 5c: Prevalence of anaemia (Hb<12.0g/dl) in women above 18 years of age

Source/ Year of survey	Location	Sample Size Number	Percentage
Ge et al., 1996	<u>Province:</u>		
NNS, 1992	Anhui	1187	37.0
	Beijing	1164	20.5
	Fujian	...	...
	Gansu	1084	12.7
	Guangdong	958	15.4
	Guangxi	1094	27.6
	Guizhou	1165	28.8
	Hainan	520	34.0
	Hebei	899	16.7
	Heilongjiang	1193	18.4
	Henan	1045	19.9
	Hong Kong	...	...
	Hubei	1182	42.1
	Hunan	996	17.9
	Jiangsu	1183	42.9
	Jiangxi	1001	20.3
	Jilin	1114	16.6
	Liaoning	...	...
	Nei Mongol Zizhiqu	392	1.8
	Ningxia	1260	5.2
	Qinghai	1154	3.8
	Shaanxi	873	37.8
	Shandong	1112	14.5
	Shanghai	756	52.2
	Shanxi	1161	21.0
	Sichuan	1208	37.0
	Taiwan	...	...
	Tianjin	910	17.6
	Xinjiang Uygur	768	12.1
	Xizang Zizhiqu (Tibet)	...	...
	Yunnan	1102	6.4
	Zhejiang	1053	33.5

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 more susceptible to vitamin A deficiency (VAD). The consequences of VAD are tragic 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.

In China, Vitamin A deficiency does not represent a public health problem and clinical cases have only been reported sporadically.

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References for data presented in Table 1 on Global Statistics:

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

NCP of CHINA MAPS

- General map of China

- Map 1:

Population density by province in China

- Map 2:

Average energy intake (kcal/caput/day) by province in China and differences in energy intake between urban and rural areas (charts)

- Map 3:

Prevalence of underweight among children under five years of age by province in China

- Map 4:

Prevalence of stunting among children under five years of age by province in China

- Map 5:

Prevalence of men with a BMI<18.5 kg/m² by province in China

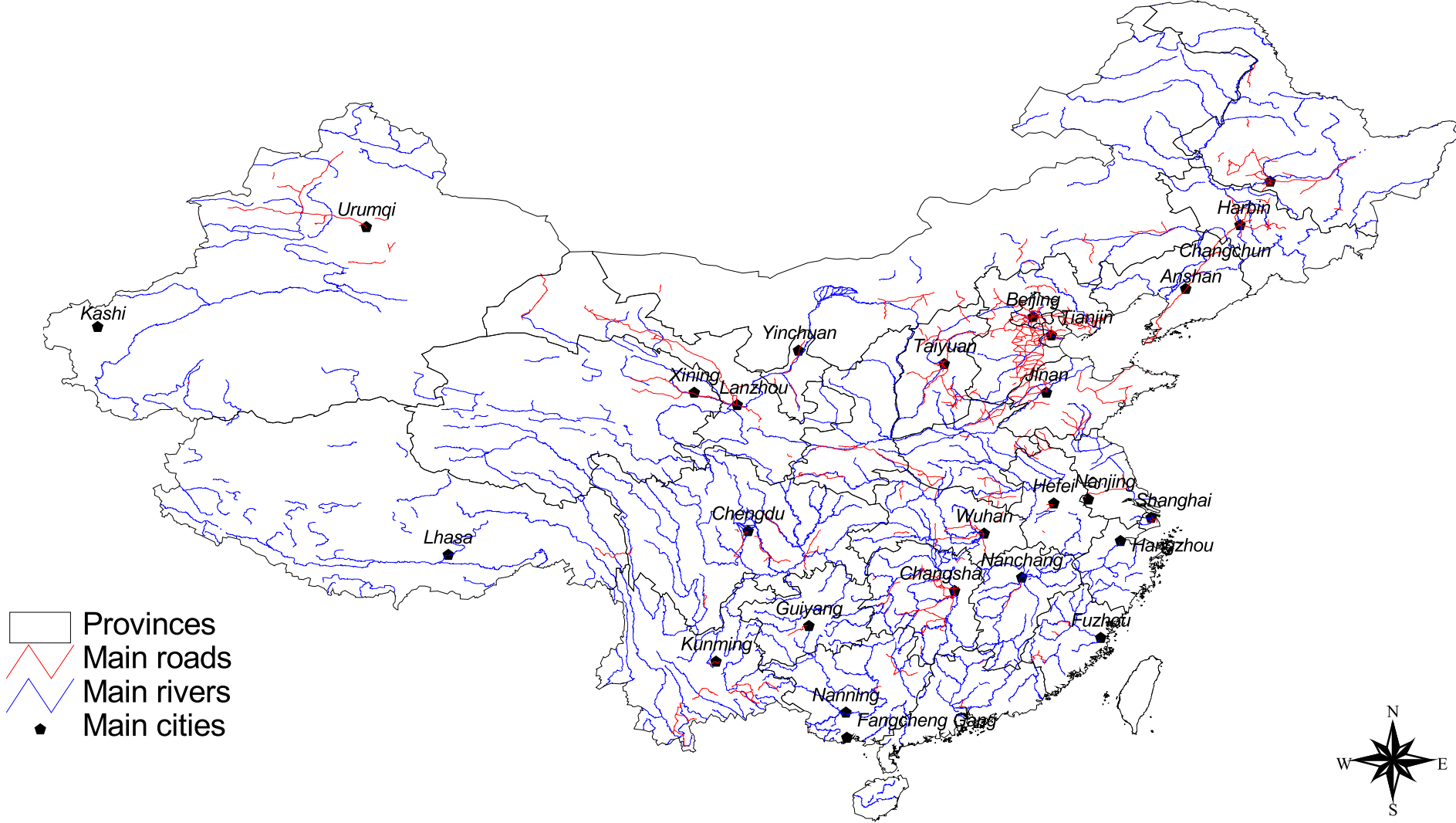
- Map 6:

Prevalence of women with a BMI<18.5 kg/m² by province in China

- Map 7:

Prevalence of anaemia in adult women by province in China

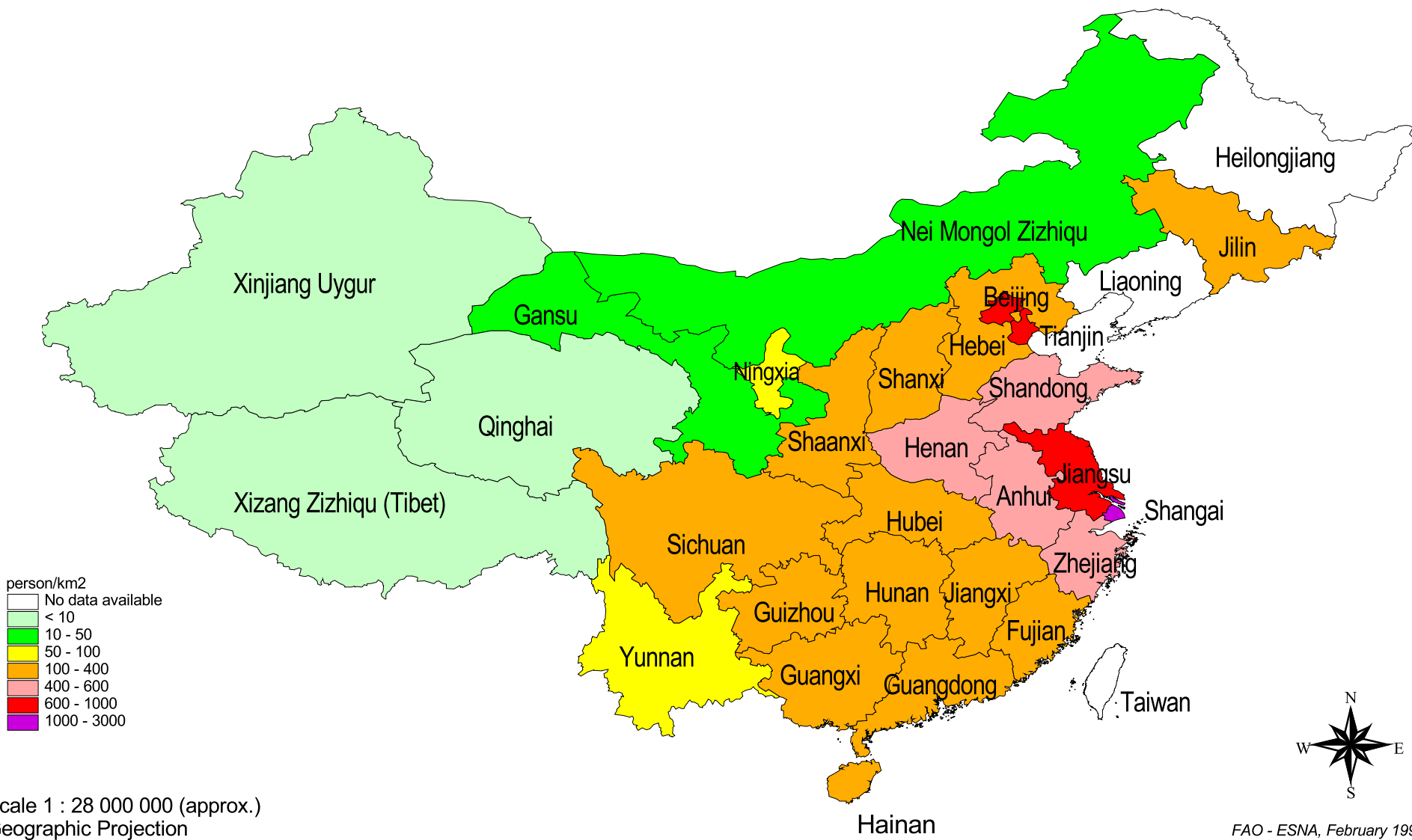
General map of China



Scale 1 : 28 000 000 (approx.)
Geographic Projection

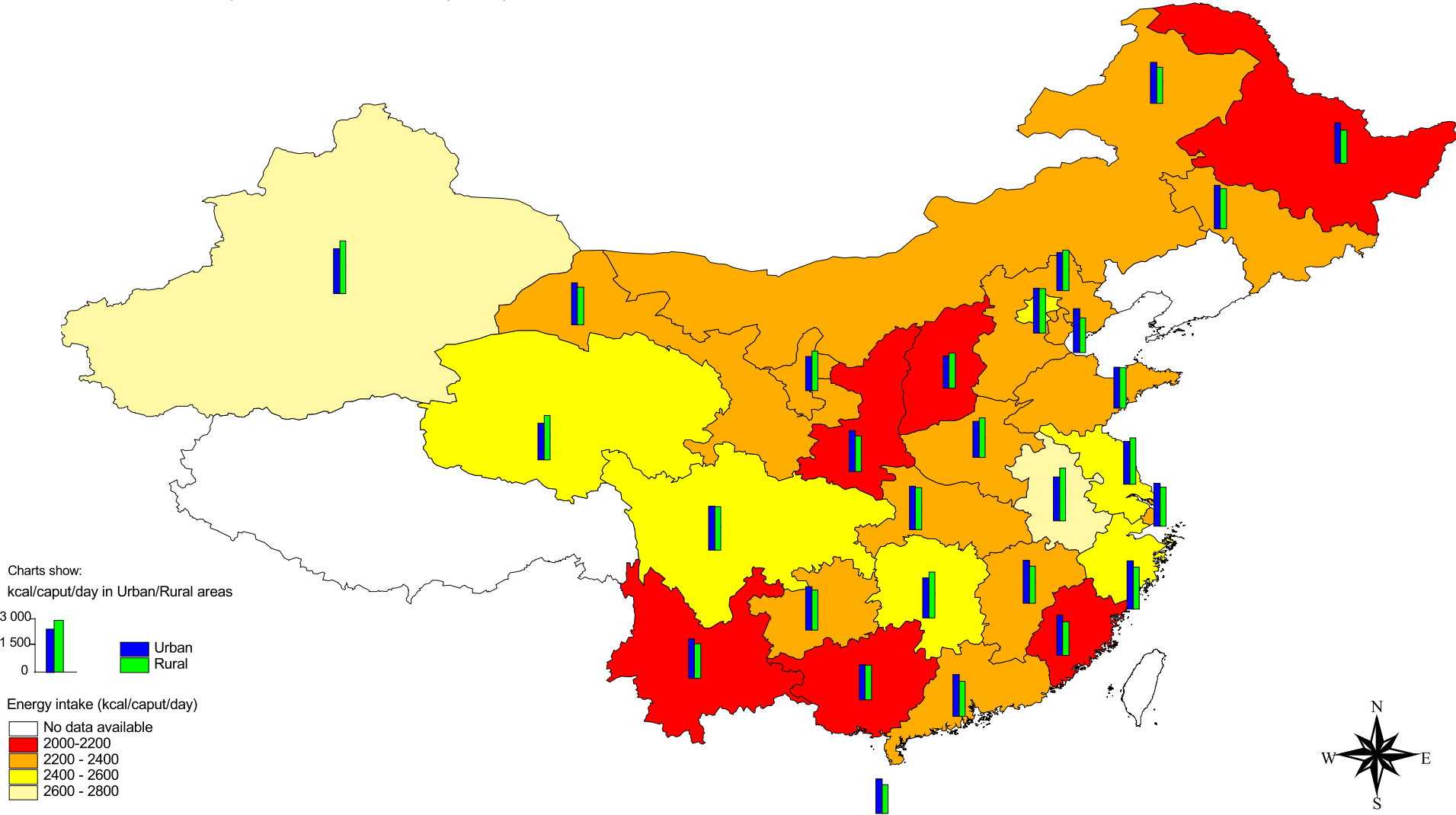
Map1: Population density by province in China

Source: CSY, 1997 (Census 1990)



Map2: Average energy intake (kcal/caput/day) by province in China, and differences in energy intake between urban and rural areas (charts).

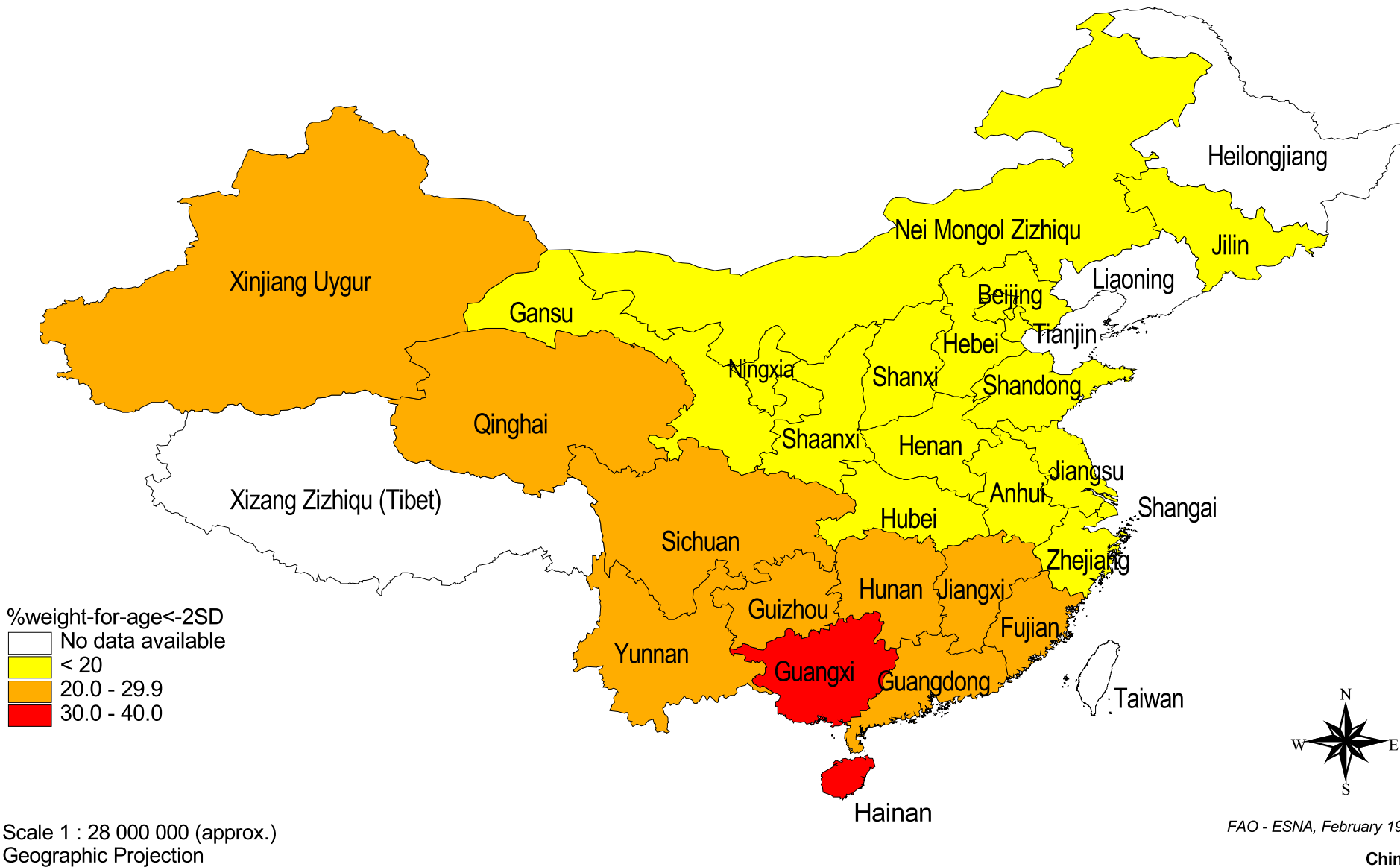
Source: Ge et al., 1996 (3rd National Nutrition Survey, 1992)



Scale 1 : 28 000 000 (approx.)
Geographic Projection

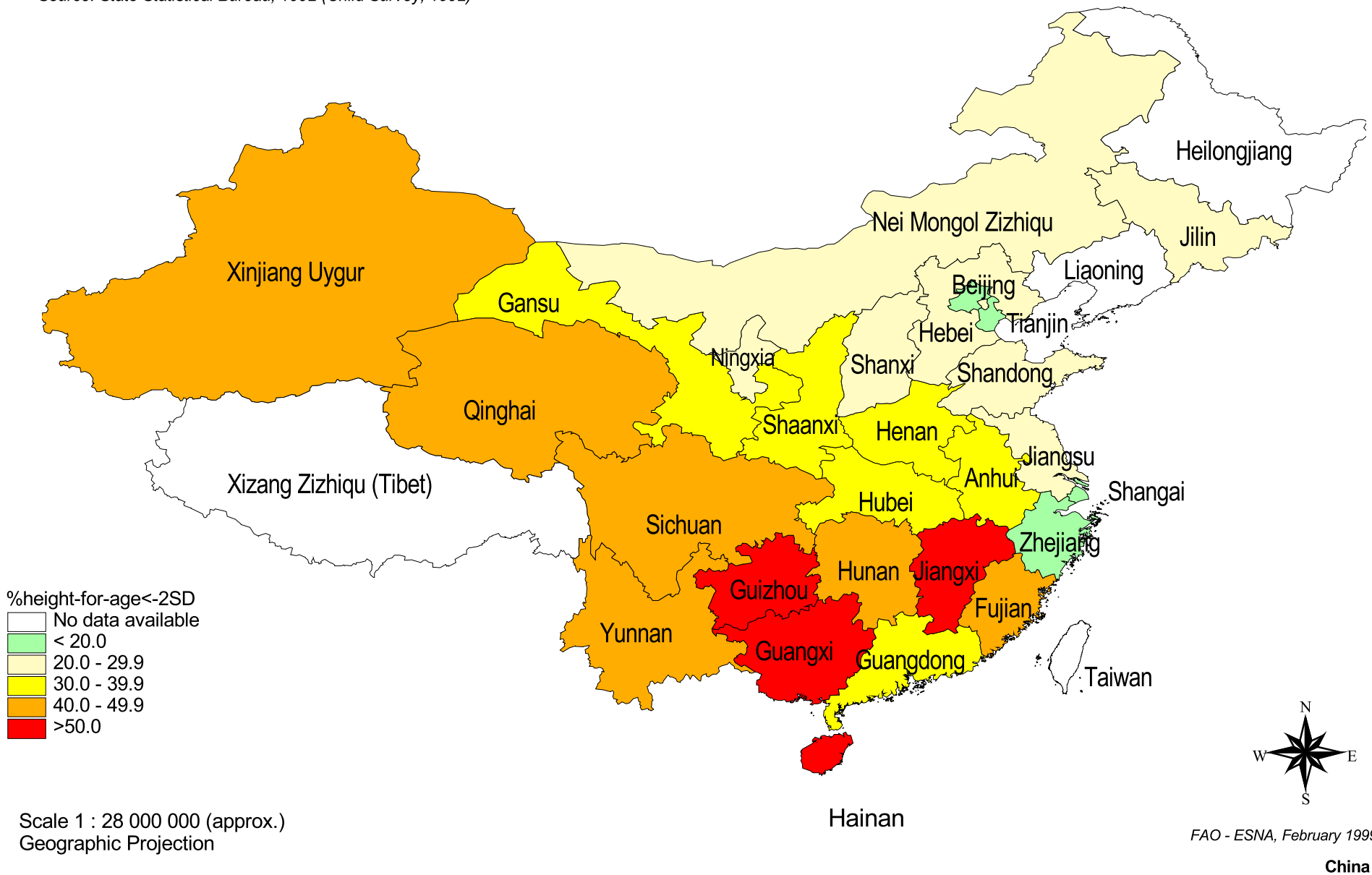
Map3: Prevalence of underweight in children under five years of age by province in China

Source: State Statistical Bureau, 1992 (Child Survey, 1992)



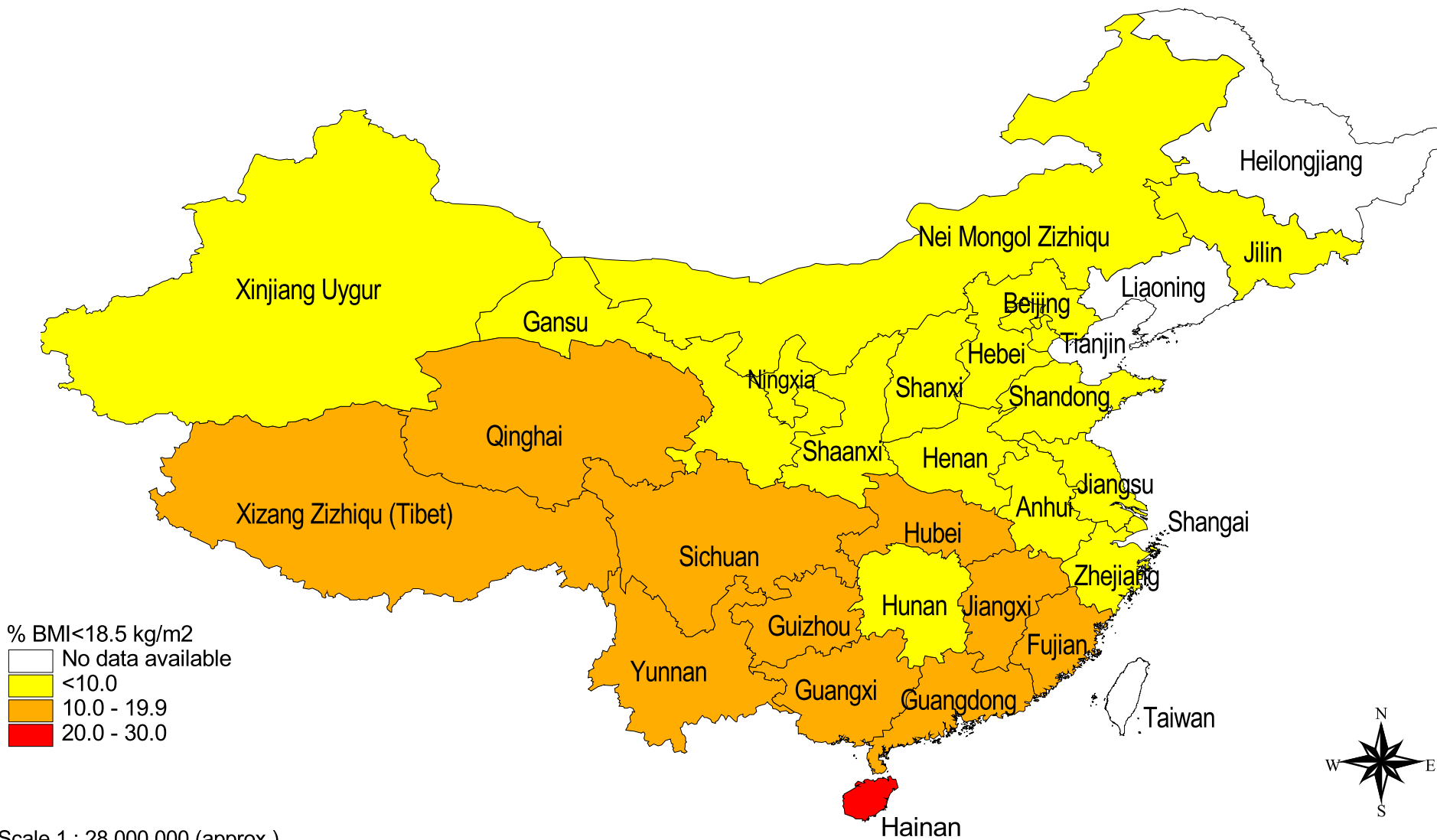
Map4: Prevalence of stunting in children under five years of age by province in China

Source: State Statistical Bureau, 1992 (Child Survey, 1992)



Map5: Prevalence of men with a BMI<18.5 kg/m2 by province in China

Source: Ge et al., 1996 (3rd National Nutrition Survey, 1992)



% BMI<18.5 kg/m2

- No data available
- <10.0
- 10.0 - 19.9
- 20.0 - 30.0

Scale 1 : 28 000 000 (approx.)
Geographic Projection

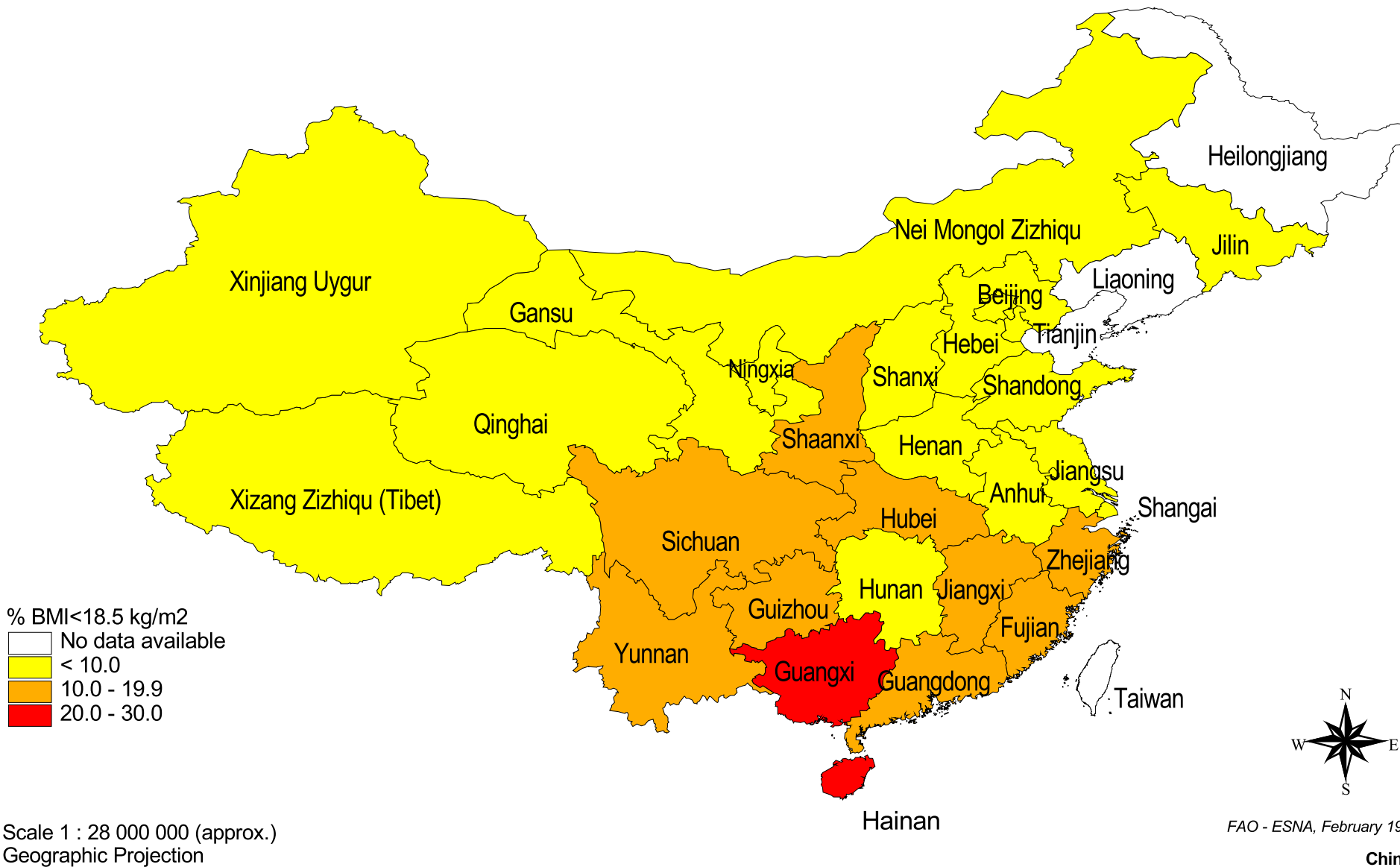


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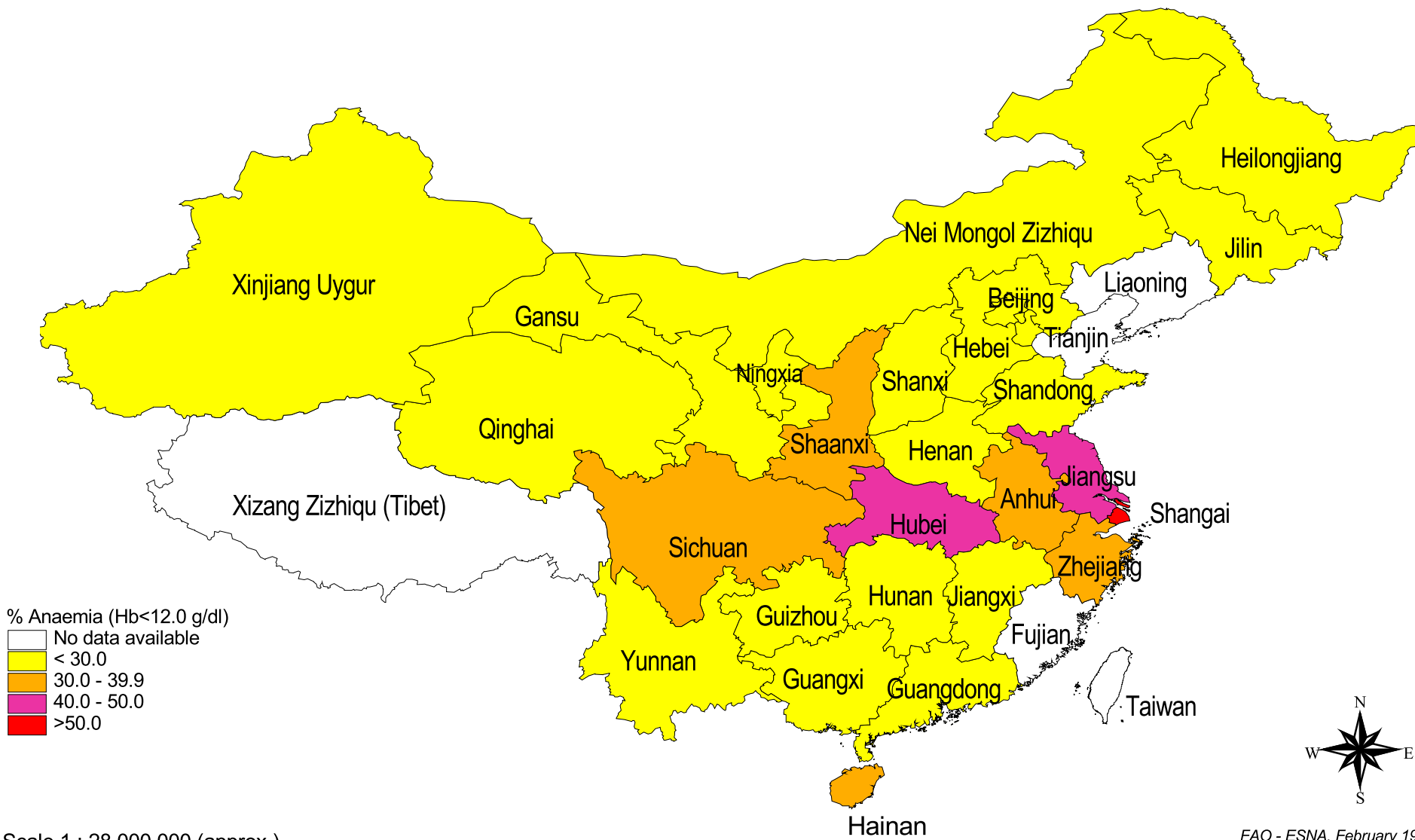
Map6: Prevalence of women with a BMI<18.5 kg/m2 by province in China

Source: Ge et al., 1996 (3rd National Nutrition Survey, 1992)



Map7: Prevalence of anaemia in adult women by province in China

Source: Ge et al., 1996 (3rd National Nutrition Survey, 1992)



Scale 1 : 28 000 000 (approx.)
Geographic Projection

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China