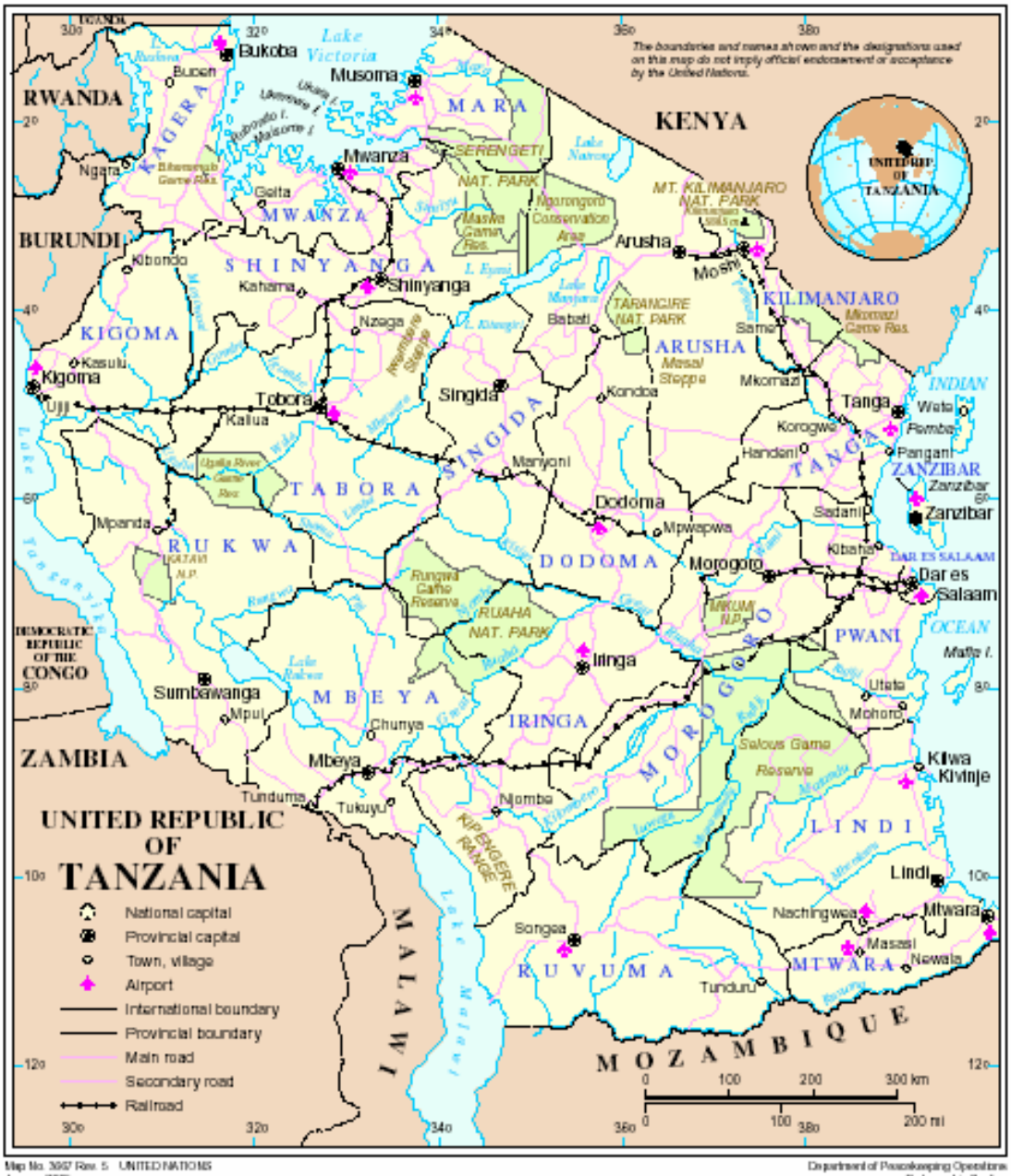
NUTRITION COUNTRY PROFILE
UNITED REPUBLIC OF TANZANIA



Source: UN, Cartographic Section.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Acknowledgments

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Summary

Tanzania is coastal country of Eastern Africa endowed with important land and water resources that has a high agricultural potential. Agriculture is a key sector of Tanzania's economy, as it accounts for 45% of GDP and is the source of livelihood for more than three-quarters of the population. The majority of the population is still rural although urbanization increased in the last three decades to reach 38%. Currently the rate of urbanization is slowing down. The population is very young, as 43% of Tanzanians are below 15 years of age. Life expectancy, now 46 years on average, has decreased in the past 20 years, probably due to increasing HIV/AIDS prevalence, which affects around 7% of the adult population.

Although improvement was observed during the last decade, infant and underfive mortality rates remain high. Eighty percent of the population has physical access to health facilities, but user fees and poor quality of services, mainly due to lack of skilled health personnel, reduce the effectiveness of the health system. However, immunization coverage among infants is very high.

Poor sanitation conditions are common both in the rural and urban areas, while access to safe water is a problem mainly for rural inhabitants. In the rural population, poverty is widespread, as approximately 40% of the population are below the basic needs poverty line, while in the urban areas approximately a quarter of the population is poor.

The diet is based on cereals (maize and sorghum), starchy roots (cassava) and pulses (mainly beans). Consumption of micronutrient dense foods such as animal products and fruits and vegetables is low and subsequently micronutrient deficiencies are widespread. At national level, the dietary energy supply does not fulfill average energy requirements of the population. The Dietary diversification index is very low, as starchy foods provide almost three quarters of the total energy supply, despite the wide variety of food produced in the country. Rapid urbanization and lower prices of imported foods have made imports of cereals rise.

Undernutrition is still highly prevalent in Tanzania. More than a third of children underfive years are affected by chronic malnutrition (stunting). In the Southern zone prevalence surpasses 50%. Stunting is due to a combination of factors including maternal malnutrition, inadequate infant feeding practices, low quality of health care and poor hygiene. Breastfeeding is widely practiced but exclusive breastfeeding is not widespread and complementary feeding practices are inadequate.

At the same time, the country is undergoing a nutrition transition due to changes in dietary habits, especially among middle and high income groups living in urban areas who consume energy dense and processed foods. The prevalence of overweight and obesity is noticeable among women (almost one woman out of five).

Thanks to the National Iodine Deficiency Disorder Control Programme launched in 1986, total goitre prevalence has drastically decreased (currently it is 7%). Vitamin A deficiency among children must be assessed as there are no data available currently to document the importance of the deficiency. Supplementation with Vitamin A capsules reaches less than half of preschool children and only 20% of mothers. Anemia is a major public health problem as almost three quarters of preschool children and half of the women are affected. Iron deficiency due to the low level of consumption of foods of animal origin is the main cause, but incidence of malaria and other parasitic diseases are contributing causes. Various national programmes have been implemented in the country to combat malnutrition and micronutrient deficiencies, but more efforts are needed.

Summary Table

Basic Indicators				Year
Population				
Total population		38.329	million	2005
Rural population		62	%	2005
Population under 15 years of age		43	%	2005
Annual population growth rate		2	%	2000-2005
Life expectancy at birth		46	years	2000-2005
Agriculture				
Agricultural area		51	%	2003
Arable and permanent cropland per agricultural inhabitant		<1	Ha	2003
Level of development				
Human development and poverty				
Human development index		0.467	[0-1]	2005
Proportion of population living with less than 1$ a day (PPP)	*MDG1*	58	%	2000
Proportion of population living below the national poverty line	*MDG1*	36	%	2000
Education				
Net primary enrolment ratio	*MDG2*	82	%	2002-2003
Youth literacy rate (15-24 years)	*MDG2*	78	%	2002
Ratio of girls to boys in primary education	*MDG3*	0.96	girl per 1 boy	2004
Health				
Infant mortality rate	*MDG4*	68	‰	2000-2004
Under-five mortality rate	*MDG4*	112	‰	2000-2004
Maternal mortality ratio (adjusted)	*MDG5*	1 500	per 100 000 live births	2000
Malaria-related mortality rate in under-fives	*MDG6*	676	per 100 000 deaths in under-fives	2000
Proportion of 1-year-old children immunized against measles	*MDG4*	80	%	2004-2005
Environment				
Sustainable access to an improved water source in rural area	*MDG7*	49	% of population	2004

Nutrition indicators				Year
Energy requirements				
Population energy requirements		2056	kcal per capita/day	2000
Food supply				
Dietary Energy Supply (DES)		1956	kcal per capita/day	2001-2003
Prevalence of undernourishment	*MDG1*	44	%	2001-2003
Share of protein in DES		10	%	2001-2003
Share of lipids in DES		14	%	2001-2003
Food diversification index		30	%	2001-2003
Food consumption				
Average energy intake (per capita or per adult)		n.a.		
Percent of energy from protein		n.a.		
Percent of energy from lipids		n.a.		
Infant and young child feeding				
Exclusive breastfeeding rate (<6 months)		41	%	2004-2005
Timely complementary feeding rate (6-9 months)		91	%	2004-2005
Bottle-feeding rate (0-11 months)		5	%	2004-2005
Continued breastfeeding rate at 2 years of age		55	%	2004-2005
Nutritional anthropometry				
Prevalence of stunting in children under 5 years		38	%	2004-2005
Prevalence of wasting in children under 5 years		3	%	2004-2005
Prevalence of underweight in children under 5 years	*MDG1*	22	%	2004-2005
Percentage of women with BMI<18.5 kg/m²		10	%	2004-2005
Micronutrient deficiencies				
Prevalence of goitre in school-age children		7	%	2004
Percentage of households consuming adequately iodized salt		43	%	2004-2005
Prevalence of sub-clinical or clinical vitamin A deficiency in preschool children		n.a.		
Prevalence of vitamin A supplementation in children		46	%	2004-2005
Prevalence of vitamin A supplementation in mothers		20	%	2004-2005
Prevalence of anemia in women		48	%	2004-2005
Prevalence of iron supplementation in mothers		59	%	2004-2005

MDG: Millennium Development Goal; n.a.: not available

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Acronyms

BCG	Bacille Calmette-Guérin
BFHI	Baby friendly hospital initiative
BMI	Body mass index
BoS	Bureau of Statistics
BoT	Bank of Tanzania
CED	Chronic energy deficiency
DES	Dietary energy supply
DHS	Demographic and Health Survey
DPT3	Diphtheria, pertussis (whooping cough) and tetanus vaccine – three doses
DPT- HB	Diphtheria, pertussis, tetanus and hepatitis B
ECC-SGD	Early childhood care and survival, growth and development
FAO	Food and Agriculture Organization of the United Nations
FAOSTAT	FAO Statistical Databases
FEWSNET	Famine Early Warning Systems Network
FGC	Female genital cutting
FIVIMS	Food Insecurity and Vulnerability Information and Mapping Systems
GDI	Gender related development index
GDP	Gross domestic product
GNP	Gross national product
GoT	Government of Tanzania
HDI	Human development index
HIV/AIDS	Human immunodeficiency virus/Acquired immune deficiency syndrome
HPI	Human poverty index
IDA	Iron deficiency anemia
IDD	Iodine deficiency disorders
IEC	Information, Education and Communication
ILO	International Labour Organization
IPEC	International Programme on the Elimination of Child Labour
ITN	Insecticide treated nets
ITU	International Telecommunication Union
JNSP	Joint Nutrition Support Programme
MAFC	Ministry of Agriculture Food security and Co-operatives
MoCT	Ministry of Communications and Transport
MoEVT	Ministry of Education and Vocational Training
NBS	National Bureau of Statistics
NCCIDD	National Council for Control of Iodine Deficiency Disorders
NFSD	National Food Security Division
NIDDCP	National Iodine Deficiency Disorder Control Programme
NSGRP	National Strategy for Growth and Reduction of Poverty
ORT	Oral rehydration therapy
PAL	Physical activity level
PEDP	Primary Education Development Programme
PHC	Primary health care
PLWHA	People living with HIV/AIDS
PPP	Purchase power parity
RCHC	Reproductive and child health clinics
SEDP	Secondary Education Development Programme
TACAIDS	Tanzania Commission for AIDS
TDHS	Tanzania Demographic and Health Survey
TFNC	Tanzania Food and Nutrition Centre
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNPD	United Nations Population Division
UNSTAT	United Nations Statistics Division
URT	United Republic of Tanzania
VAD	Vitamin A deficiency
WB	World Bank
WHO	World Health Organization
WFP	World Food Programme

Part I: Basic indicators

I.1 Context

The United Republic of Tanzania is situated on the Eastern Coast of Africa, immediately below the Equator, surrounded by Lake Victoria, Lake Tanganyika, Lake Nyasa (also known as Lake Malawi) and the Indian Ocean. It has a total area of 945 090 km^2, bordered on the south by Mozambique, Malawi, and Zambia, on the west by the Democratic Republic of Congo (through the Lake Tanganyika), on the northwest by Burundi and Rwanda and on the north by Kenya and Uganda. The three main islands of Zanzibar, Pemba and Mafia are situated near the coast.

The land rises, from east to west, from the coastal strip to rolling plains at about 350 m and continues rising to a central plateau with an elevation of around 1 200 m. Volcanic mountains rise up from this central plateau, including Mt. Meru and Mt. Kilimanjaro (5 895 m) in a central strip stretching from north to south.

Tanzania lies in the tropics but the temperature depends more on altitude than on season. Dar es Salaam and the coastal regions are hot but pleasant with temperatures varying from 22 to 33^{0}C. In the northern areas (Arusha and Kilimanjaro), temperatures vary from 19 to 21^{0}C in March, dropping to 16^{0}C in June. In the central highland plateau and around Lake Victoria basin the temperatures vary from 20 to 27^{0}C. Night temperatures may drop to 15^{0}C during the month of June. The coolest months are from June to October and the warmest months are from December to March.

Three climatic zones can be observed. The Lowland zone in the coastal area has annual precipitations decreasing from 1 800 to 750 mm as elevation rises to the west. The central Highland zone has two sub zones: the moist temperate highlands found on the eastern and southern slopes of mountains receive 1 000 to 1 800 mm of rain a year; the dry highlands found on the western mountain slopes receive 625 to 1 000 mm of rain. Further to the west, the Plateau zone is also divided in two subzones: the moist subzone around Lake Victoria's basin receives 1 000 to 2 000 mm of rain and the dry subzone, covering a very large area in central and western Tanzania, receives 625 to 1 000 mm of rain (FAO, Forestry Division; NBS and ORC Macro, 2005).

In most of the country, the dry season lasts from May to October, followed by a rainy season between November and April. Along the coast and in the areas around Mt. Kilimanjaro, long rains occur from March to May, with short rains between October and December. In the western part of the country around Lake Victoria, rainfall is well distributed throughout the year, with a peak period between March and May.

I.2 Population

Population indicators

The total population, estimated at 38.329 million in 2005, is quite young, with 43% below 15 years of age. The elderly (60 years and above) account for only 5% of the population. The dependency ratio is high (85%), indicative of a heavy economic burden on the productive age groups (UNPD; NBS and ORC Macro, 2005).

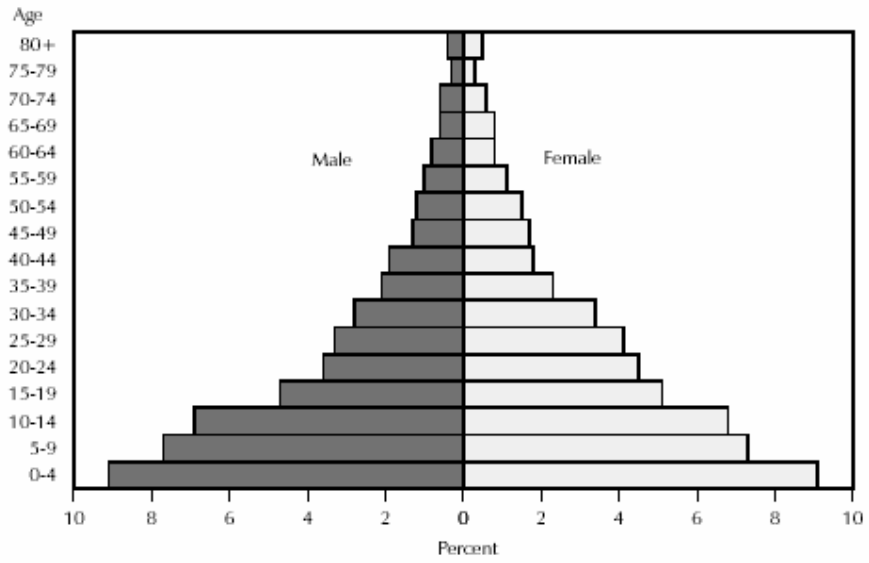
Life expectancy has dropped from 55 years in 1985-90 to 46 years in 2000-2005 (UNPD), partly due to an increasing disease burden including HIV/AIDS. This is further compounded by low access to quality health care services for the majority of the population, insufficiently trained and inappropriately distributed health workers. The decline in human resources has affected all sectors, especially the health and education sectors. A freeze in civil service employment adopted by the Government in 1993 contributed to this situation, the consequences of which are felt now.

The population is still predominantly rural but the proportion living in urban areas has increased from 10% in 1975 to more than a third in 2005. There is a continuous rural-urban migration trend, due to the possibility of earning higher wages in urban areas and the limited formal employment opportunities in rural areas. However migration fluxes seem to be stabilizing as the urban population growth rate has decreased from 11% in 1970-75 to 5% in 2000-2005 (UNPD; NBS and ORC Macro, 2005).

Table 1: Population indicators

Indicator	Estimate	Unit	Reference period	Source
Total population	38.329	million	2005	UNPD
Annual population growth rate	2	%	2000-2005	UNPD
Crude birth rate	38	‰	2005	UNPD
Population distribution by age:			2005	UNPD
0-4 years	16	%		
5-14 years	27	%		
15-24 years	21	%		
60 and over	5	%		
Rural population	62	%	2005	UNPD
Agricultural population	76	%	2004	FAOSTAT
Population density	40	inhabitants per km^2	2005	UNPD
Median age	18	years	2005	UNPD
Life expectancy at birth	46	years	2000-2005	UNPD
Population sex ratio	96	males per 100 female	2002	NBS
Net migration rate	-1.9	‰	2005	UNPD
Total dependency rate	85	%	2005	UNPD

Population pyramid



Source: NBS and ORC Macro, 2005.

I.3 Agriculture

The country's economy is highly dependent on agriculture which accounted for about 45% of the GDP and two thirds of the export earnings in 2005 (BoT, 2005). The agricultural sector is the main source of employment and livelihood for 76% of the population (BoT, 2005). Women constitute the main part of the agricultural labour force.

Tanzania has a dual agricultural economy: smallholder farmers on one side dominate the agricultural sector, carrying out rain-fed agriculture, producing a variety of subsistence crops, such as maize, sorghum, millet, cassava, sweet potatoes, pulses, paddy rice, wheat and fruit and vegetables. On the other side, cash crops are grown in large-scale commercial farms. Urban agriculture for household food consumption is increasing.

Agricultural land is allocated to smallholder farmers either through formal titles or customary rights. Rural households own an average of 2 Ha each. Major constraints in the agriculture sector are a decreasing labour force – due to urban migration – and declining land productivity – due to poor technology – and unreliable weather conditions. Both crops and livestock are adversely affected by periodical droughts (GoT, 2005a; NBS, 2002).

Between the 1970s and the 1980s food production was high and population growth was relatively low. During this period a number of programmes to improve agricultural production were initiated and implemented. Among these, the famous "villagisation policy", through which people were mobilized and encouraged to live in villages, and various campaigns such as "*Agriculture is life" (Kilimo ni Uhai)* of 1972, "*Agriculture as a matter of life and death" (Kilimo cha Kufa na Kupona)* of 1974-75 were implemented. The villagisation programme restricted movement of people and food from one area to another, thereby limiting migration to urban areas. Consequently the labour force for agricultural production was sufficient. Moreover, an increased budgetary allocation to the agricultural sector and favorable climate conditions led to increased production. On the contrary, currently the agricultural sector is facing many constraints including poor investment in terms of labour (quality and quantity), inadequate supply of production inputs and equipment.

Land use and irrigation statistics

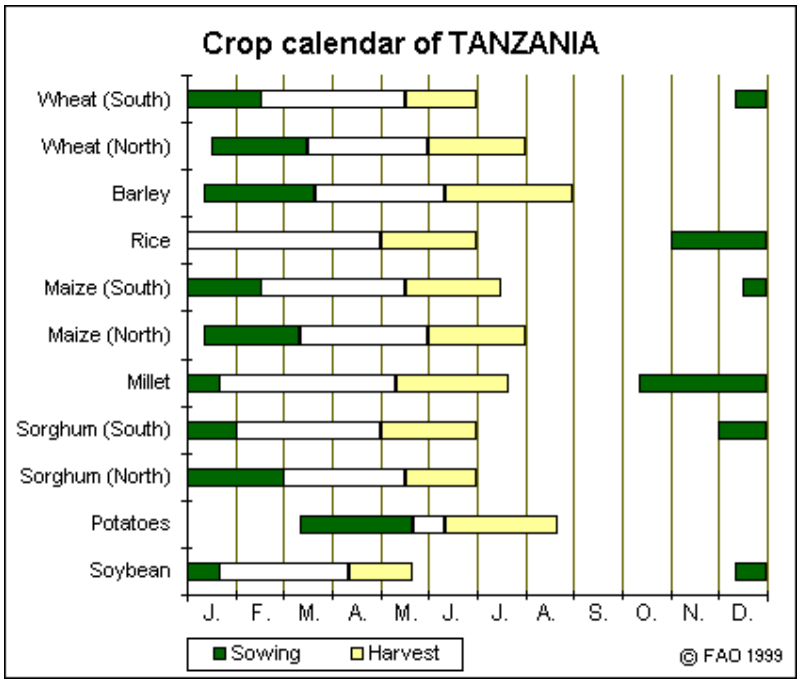
Table 2: Land use and irrigation

Type of area	Estimate	Unit	Reference period	Source
Total land area	94 509	1000 Ha	2003	FAO
Agricultural area	51	%	2003	FAO
Arable lands & permanent crops	5	%	2003	FAO
Permanent crops	1	%	2003	FAO
Permanent pasture	45	%	2003	FAO
Forested land areas	40	%	2005	FAO
Irrigated agricultural land	0.2	%	2003	FAO
Arable & permanent cropland in Ha per agricultural inhabitant	<1	Ha	2003	FAO

N.B. Percents are calculated on the total land area.

Main crops, agricultural calendar, seasonal food shortage

According to FAO estimates, the 5 major food and agricultural commodities produced in Tanzania in 2004 were cattle meat, cassava, maize, cow milk and fresh vegetables (FAO, Statistics Division). All these productions were mainly for local human consumption (FAO, Faostat).



Source: FAO/GIEWS.

Food shortages in Tanzania occur during the rainy season, from November to February in the central and western part of the country, and from January to May in the eastern and northern parts.

Livestock production and fishery

Livestock is mainly composed of traditional breeds, and raised under four systems. Nomadic pastoralism, of which the main production is milk, is practiced in the Maasai steppe where climate and soil conditions do not favour crop production. However, increased livestock population and pressure on traditional land are causing herds to migrate to other non-traditional grazing areas. Extensive agropastoralism is found in low rainfall areas of Western (Shinyanga and Tabora) and Central zones (Dodoma and Singida). Intensive agropastoralism is common in the Northern region (Shinyanga and Mwanza). Smallholder dairy and beef production systems are found in coastal regions, highlands and peri-urban areas (FAO, 2000).

About 62% of poultry birds are raised by smallholders for household subsistence (NBS, 2002).

Tanzania is extremely well endowed with freshwater fishery resources. Inland waters cover about 7% of the total land area, and account for about 90% of the total national fish catch, mainly through traditional fisheries. Moreover FAO assessments note that there is a good potential for aquaculture development in Tanzania (FAO, 2001).

Table 3: Livestock and fishery statistics

Livestock production and fishery	Estimate	Unit	Reference period	Source
Cattle	17 800 000	number of heads	2005	FAO
Sheep and goats	16 071 000	number of heads	2005	FAO
Poultry birds	31 320	thousands	2005	FAO
Fish catch and aquaculture	336 200	tons	2001	FAO

I.4 Economy

Non-agricultural activities in the country include mining, manufacturing, construction and leisure and tourism services. The Tanzanian construction sector accounts for about 6% of GDP with an annual growth rate of 11% mainly due to construction of new commercial and residential buildings, roads and

mining facilities (URT, 2006). The manufacturing industry accounts for 9% of the GDP while mining accounts for about 3%. The number of prospecting licenses has increased steeply since 1990. Tourism is well developed and transport and telecommunication sectors are considered as key points for economic development. Nevertheless Internet services and connectivity remain poor and expensive (BoT, 2005).

The country has a road network of about 85 000 km, of which only 9% is paved (MoCT, 2003; WB). Tanzania has two railway systems, for a total of 4 265 km, three international airports and four major harbours along the Indian Ocean coastal line.

The GDP annual growth rose from 3% in 1997 to 7% in 2004 and in 2005, mainly due to increased non-agricultural activities (BoT, 2005; WB).

Table 4: Basic economic indicators

Indicator	Estimate	Unit	Reference period	Source
Gross Domestic Product per capita	744	PPP US $	2005	UNDP
GDP annual growth	7	%	2005	WB
Gross National Income per capita	340	$	2005	WB
Industry as % of GDP	18	%	2005	WB
Agriculture as % of GDP	45	%	2005	WB
Services as % of GDP	38	%	2005	WB
Paved roads as % of total roads	9	%	2003	WB
Internet users	9	per 1 000 people	2004	ITU
Total debt service as % of GDP	0.9	%	2003	WB
Military public expenditure	1	% of GDP	2005	UNDP

Major non-food imports include raw materials, petrol and chemicals. Exports include forestry products, minerals (diamonds and gold), traditional export crops such as sisal, cotton, along with emerging crops such as cut flowers (BoT, 2005).

I.5 Social indicators

Health indicators

The Tanzania Demographic and Health Survey (TDHS) 2004-2005 indicates a significant decline in infant mortality rate from 100‰ in 1995-99 to 68‰ in 2000-2004. During the same period, under five mortality rate also declined from 156‰ to 112‰ (NBS and ORC Macro, 2005).

Major health problems among children include malaria, acute respiratory infections, fever and diarrhoea. The underlying causes are poor sanitation and care practices, low level of education and awareness, low accessibility to clean and safe drinking water and to adequate health services. Nevertheless immunization coverage of young children is high. According to the TDHS, in 2004-2005, 71% of children age 12-23 months were fully immunized (BCG, measles, and three doses each of DPT-HB and polio vaccine - excluding polio vaccine given at birth) (NBS and ORC Macro, 2005).

Maternal mortality ratio has remained high during the last decade (529 per 100 000 live births for the period 1987-1996 and 578 per 100 000 live births for the period 1995-2004) (BoS and Macro International Inc., 1997; NBS and ORC Macro, 2005). However, the maternal mortality estimates are subject to large sampling errors. Although the 2004-2005 maternal mortality ratio is higher than the 1996 estimate, the difference between the two figures is not statistically significant. Thus, it is not possible to conclude that there has been any change in maternal mortality ratio in Tanzania during the last decade (NBS and ORC Macro, 2005).

To combat the HIV/AIDS epidemic, the Tanzania Commission for AIDS (TACAIDS) was established in 2001 to provide strategic leadership and to coordinate multisectoral responses. In 2003, the prevalence of HIV/AIDS among adults aged 15-49 was about 7% ; knowledge of HIV is widespread (99%) and almost half of adult women and men have a comprehensive knowledge of HIV/AIDS transmission and prevention methods. However, awareness is weaker among the young and sexually

active 15-24 year olds, whose likelihood of contracting the virus is high (UNAIDS, 2006; NBS and ORC Macro, 2005).

Table 5: Health indicators

Indicator	Estimate	Unit	Reference period	Source
Mortality:				
Infant mortality rate	68	‰	2000-2004	TDHS
Under-five mortality rate	112	‰	2000-2004	TDHS
Maternal mortality ratio :				
reported	578	per 100 000 live births	1995-2004	TDHS
adjusted	1500	per 100 000 live births	2000	UNICEF
Morbidity:				
Malaria-related mortality rate in under-fives	676	per 100 000 deaths in under-fives	2000	UNSTAT
Percentage of under-fives sleeping under a treated bed net	16	%	2004-2005	TDHS
Percentage of under-fives with diarrhoea in the last 2 weeks	13	%	2004-2005	TDHS
Percentage of under-fives with diarrhoea in the last 2 weeks who receive oral rehydration therapy (ORT)	70	%	2004-2005	TDHS
Percentage of under-fives with acute respiratory infections in the last 2 weeks	8	%	2004-2005	TDHS
Tuberculosis prevalence	476	per 100 000 people	2003	UNSTAT
AIDS/HIV:				
Prevalence in adults (15-49 years)	6.5	%	2003	UNAIDS
Percentage of women (15-24) who know that a person can protect herself from HIV infection by consistent condom use	77	%	2004-2005	TDHS
Immunization:				
Percent of children age 12-23 months immunized against tuberculosis	91	%	2004-2005	TDHS
Percent of children age 12-23 months immunized with DPT-HB 3	86	%	2004-2005	TDHS
Percent of children age 12-23 months immunized against measles	80	%	2004-2005	TDHS
Percent of pregnant women immunized against tetanus	56	%	2004-2005	TDHS

** Proportion of children under 5 years of age ill with diarrhoea at any time during the two weeks preceding the survey who received oral rehydratation therapy (ORT). ORT includes solution prepared from oral rehydration salt (ORS) packets, recommended home fluids, or increased fluids.*

Water and sanitation

Access to clean and safe water is still a problem in many areas. According to UNICEF, 62% of the population have access to an improved drinking water source, and 47% have access to proper sanitation (53% in urban areas and 43% in rural areas) (UNICEF, 2007).

Table 6: Access to safe water and sanitation

Indicator	Estimate	Unit	Reference period	Source
Sustainable access to an improved water source:				
Urban	85	% of population	2004	UNICEF
Rural	49	% of population	2004	UNICEF
Access to improved sanitation:				
Combined urban/rural	47	% of population	2004	UNICEF

Access to health services

Health care in Tanzania is provided by a mixture of government, private non-profit (eg. mission hospitals), private for-profit (including traditional healers) and company services. The government provides more than half of the facilities in the health sector and coverage is improving: 80% of the population has physical access to health services and 90% of households report living within 10 km from a dispensary or health centre. However, there are still great disparities between urban and rural areas (Shiner, 2003; NBS, 2002).

The quality of health care is still low, also due to the limited number of skilled staff at primary health facilities. Moreover, the introduction of user's fees at national, regional and district health facilities has made access more difficult.

Table 7: Access to health services

Indicator	Estimate	Unit	Reference period	Source
Health personnel: number of physicians	2	per 100 000 people	1990-2004	UNDP
Percentage of children under-five with fever (in the last two weeks) receiving anti-malarial drugs	58	%	2004-2005	TDHS
Percent of births attended by skilled health personnel	46	%	2004-2005	TDHS
Public expenditure on health	2.4	% of GDP	2003	UNDP

Education

In 2001, 57% of children between 5 and 17 years old were attending school (ILO/IPEC et al., 2001). Enrolment in primary school has been increasing as a result of intensive government efforts. These efforts include implementation of the Primary Education Development Programme (PEDP) and the Secondary Education Development Programme (SEDP), abolishing schools fees and other related school contributions, addressing the problem of non-compliance with regulations, construction of classrooms, building of new schools, employment of new teachers and retraining of old ones. As a result, net primary enrolment ratio has increased from 50% in 1990-91 to 82% in 2002-03 and 96% in 2006 (MoEVT, 2006).

Many public schools however lack equipment and other facilities for learning and basic services such as school canteens. Pupils depend on street food vendors for their meals while at school. The rate of dropouts in primary schools was around 4% in 2001-2002, but is currently 3% (MoEVT, 2006).

Table 8: Education

Indicator	Estimate	Unit	Reference period	Source
Adult literacy rate	69	%	2002	UNESCO
Adult literacy rate : females as % of males	80	%	2002	UNESCO
Youth literacy rate (15-24 years)	78	%	2002	UNESCO
Net primary enrolment ratio	96	%	2006	UNESCO
Grade 5 completion rate	82	%	2001-2002	UNESCO
Ratio of girls to boys in primary education	0.96	number of girls per 1 boy	2004	UNESCO
Public expenditure on education	4.3	% of GDP	2003-2004	MoEVT

Level of development, poverty

Poverty is still a big challenge especially in rural areas, where about 39% of the population lives below the basic needs poverty line compared with 26% in urban areas. There is a slow trend towards decrease in the prevalence of poverty. Data from the Household Budget Surveys of 1991-92 and 2000-2001 indicate that in a decade basic needs poverty decreased from 39% to 36% and extreme food poverty from 22% to 19% (GoT, 2005b).

While programmes to support poverty reduction through economic growth, such as the National Strategy for Growth and Reduction of Poverty (NSGRP) – which in Kiswahili is known as *Mkukuta* – are undertaken by the government, social programmes for the poor are limited or non-existing. Religious groups or non-governmental organisations are the main actors involved in social programmes supporting poor people.

Table 9: Human development and poverty

Indicator	Estimate	Unit	Reference period	Source
Human development index (HDI)	0.467	value between 0-1	2005	UNDP
Proportion of population living with less than 1$ a day (PPP)	58	%	2000	UNSTAT
Population living below the national poverty line	36	%	2000	UNDP
Human poverty index (HPI-1)	36	%	2005	UNDP

Other social indicators

In 2004 about 82% of adult men and 79% of adult women were employed, the majority in the agricultural sector. Among women working in agriculture, many were not paid because working for family members (NBS and ORC Macro, 2005).

Female genital cutting (FGC) is prohibited by law in Tanzania since 1998 and a growing number of women and men consider it should be abandoned. However, according to the most recent TDHS survey, in 2004 the FGC prevalence was still 15%, with significant variations according to regions and ethnic groups (NBS and ORC Macro, 2005).

Child labour is forbidden by law in Tanzania under the apparent age of 12 years and also for children above 12 if the employment can affect health, is dangerous or otherwise unsuitable. However, in 2001, only 4% of all children between 5 and 17 years old were engaged exclusively in school activities. Moreover, 40% were engaged in economic activities ranging from agriculture, mining, transports, constructions, manufactures and personal services, especially in rural areas where poverty levels are higher (ILO/IPEC et al., 2001).

Table 10: Other social indicators

Indicator	Estimate	Unit	Reference period	Source
Gender related development index (GDI)	0.414	value between 0-1	2003	UNDP
Women's wage employment in non-agricultural sector as % of total non agricultural employees	45	%	2001	UNSTAT
Ratification of ILO Convention 182 on The Worst Forms of Child Labour	Ratified		2001	ILO

Part II: Food and nutrition situation

II.1 Qualitative aspects of the diet and food security

Food consumption patterns

Cereals and roots and tubers serve as staples for the majority of the population in rural as well as in urban areas. Maize is consumed in all regions, but especially in urban areas. Other staples include plantain, potatoes, rice, cassava and sorghum. Other cereals, roots and tubers such as yams, millet and sweet potatoes are know but contribute less to the diet as they are less preferred than maize.

The main dish is a stiff porridge, known in Kiswahili as *ugali*, made from maize flour, sorghum or cassava. The staple is eaten with a relish either made of vegetables, sardines, pulses or meat.

The diet is often monotonous with a limited diversity of foods; it is based on starchy foods with high fibre content. Frequency of vegetable consumption is high, especially among rural communities where they are included in every meal, but generally quantities are small. Therefore, vegetables do not contribute substantially to nutrient intake. Fruits are not commonly consumed, as they are not considered as important by many adults.

In the past some ethnic groups, such as the Maasai, had a different diet composed mainly of meat, milk and blood. However, this ethnic group has adopted a cereal-based diet because of changes in their economic situation.

In rural settings, family members eat from the same pot: this can affect negatively nutrient intake of members of the household who do not eat fast enough, e.g. children. In certain communities food distribution is governed by gender norms: males and females eat separately and often the latter only eat once the males are satisfied. Similarly, children are fed first or last depending on community norms.

Common food preparation techniques such as cooking vegetables for a long time and discarding the cooking water, removal of bran and soaking of maize before milling, can lead to significant destruction and loss of nutrients such as heat sensitive vitamins (vitamin C and carotenes) and water soluble vitamins (especially B group vitamins). Inadequate information and knowledge of food and nutrition can contribute to a poor diet in terms of nutrient intake.

There are wide regional variations in the types of staples that are consumed by residents in the various regions. For example, residents in the Central regions of Tanzania consume mainly maize and sorghum as their staple but in Arusha and Kilimanjaro, the staple is plantain. Tanzania is divided into seven agro-ecological zones, each one having a main staple. Common staples are: plantain in north western tip and northern Tanzania; maize and some sorghum in the central and southern highlands zones; rice in the river basins of Kilombero, Rufiji and eastern zones; cassava in western and south eastern zones.

In rural areas and among the low-income section of the urban population, the quantity of food consumed can be limited and meal frequency varies with the season. It is limited to one meal per day during the wet season (lean months) and to two meals during the dry or harvest season. Frequency of meat and milk consumption is extremely low, on average once a week or even less. Among certain communities these products are consumed very rarely, for example once a month or less.

In the urban areas, food habits and dietary patterns have drastically changed in the last decades, especially among the high-income group, partly due to trade liberalization and globalization. Energy dense foods and western-type fast foods have become readily available on the market and their consumption has increased significantly. The dietary pattern has changed from a traditional diet high in carbohydrates and fibre to consumption of non-traditional processed foods, meat and alcohol. Nutrition related problems among the high-income group include obesity, diabetes, and cardiovascular diseases. The diet is also changing among the middle-income group as this group also replaces traditional vegetables and plant food with highly processed imported food. This segment of the population is likely to suffer from micronutrient deficiency. Low and middle-income groups often eat street foods. A study conducted in Dar es Salaam showed that street-foods can provide a very large

share of energy intake (Mjawa, 2003, unpublished). Food prepared by street vendors can have a high fat content and high microbial contamination due to poor hygiene and handling methods.

Food security situation

Food security is defined as "A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy productive and reproductive life" (FIVIMS). Food insecurity may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household or individual level. Food insecurity may be chronic, temporary,seasonal or transitory.

Food availability

In good years, Tanzania produces enough food to meet per capita needs with surplus for export (MAFC, 2006a). However, during drought, floods or other natural calamities, Tanzania faces serious shortages of food and therefore imports food. According to the production data released in August 2006 by the Ministry for Agriculture, Food Security and Co-operatives, the national crop production has been increasing since 2002-2003 crop season (FEWSNET, 2006).

Although overall food availability at national level is good, there are inter/intra regional and district disparities. Only five regions, namely Mtwara, Ruvuma, Rukwa, Kigoma and Mara, experience regional overall food self-sufficiency and food surpluses. The remaining regions either have surpluses at regional level but pockets of food shortages or experience food deficits of varying degrees at both regional and district level. In these regions, locally produced food may be sufficient for consumption only for three to four months after harvest, obliging farmers to buy food to cover the deficit (MAFC, 2006a). In 2005-2006 the livestock in pastoral areas was affected by drought.

Food accessibility

Even in years of high food availability, such as the 2006-2007 seasons, resource poor households of both rural and urban areas face difficulties to access food from markets due to lack of purchasing power. Food prices, particularly of maize, can remain high all year round despite good availability.

Variations also affect the price of livestock and, as a consequence, livestock keepers can experience food insecurity because of price fluctuations on district markets. Drought has forced farmers to sell their animals at very low prices in order to buy fodder or to access staple foods to feed their family.

The terms of trade between cattle and grain can fluctuate and livestock keepers sometimes have to sell an increased number of animals in order to obtain the same quantity of grain. This year a similar situation occurred, and livestock keepers are trying to rebuild their stock after massive animal deaths encountered as the result of a prolonged dry spell.

Stability of food supply

Food self-sufficiency lasts for only four to six months in most regions of the country. In regions with one rainy season, food shortages are common during several months, especially between February and April, while the next harvest matures in the fields. Food supplies are also reduced due to inadequate storage facilities.

Surveys of dietary diversity and variety

Food consumption studies in Tanzania are scanty. The few surveys (Mazengo et al., 1997; Rikimaru, 2000; Kinabo et al., 2004) carried out to assess dietary intake among adults in Dar es Salaam, Morogoro and Iringa regions showed that diets lack diversity. Diets are composed mainly of high carbohydrate foods. The low economic status group in Dar es Salaam does not commonly consume milk and meat products, fruit and vegetables. However, in rural areas, vegetables are included in each meal but are consumed in small amounts.

II.2 National food supply data

Supply of major food groups

Table 11: Trends in per capita supply of major foods groups (in g/per day)

Major food groups	Supply for human consumption in g/day					
	1966-68	1973-75	1980-82	1987-89	1994-96	2001-2003
Starchy roots	742	755	691	494	592	518
Cereals (excl. beer)	181	245	318	328	283	307
Fruit and vegetables	283	257	262	228	173	158
Other	149	152	280	211	203	191
Milk and eggs	87	75	71	67	62	72
Pulses, nuts, oilcrops	54	51	52	55	44	42
Meat and offals	32	30	30	33	31	30
Fish, seafood	28	33	32	42	26	19
Sweeteners	20	23	18	13	18	21
Vegetable oils	7	9	10	11	11	14
Animal fats	3	3	2	2	2	2

Source: FAOSTAT

Starchy roots and cereals are the main staples at national level. Table 11 shows that the per capita supply of starchy roots has been declining since the 1960s while the per capita supply of cereals has been increasing and slowly replacing the starchy roots and tubers in the diets.

The supply of starchy roots is mainly comprised of locally produced cassava. The supply of cereals is mainly composed of maize and, to a lesser extent, rice, wheat and sorghum.

Per capita supply of the fruit/vegetable group, which includes mainly plantain, has declined regularly. However, it should be noted that part of the production of fruit and vegetables is not captured in national production statistics. It is more likely that the supply of fruit and vegetables has increased but was not recorded as observation of the countryside shows that land used for production of fruit and vegetables has increased. Moreover, production of new non-traditional fruit such as watermelon and passion fruits has increased significantly over recent years (Kinabo, personal communication).

The supply of food of animal origin, which is a vital source of quality protein and micronutrients, has been irregular over the years. The per capita supply of the milk/eggs group has declined regularly, except in 2001-2003, and the per capita supply of meat/offal has remained almost constant over the whole period. The per capita supply of fish/seafood increased until the late 1980s. After this period, the supply declined sharply. Overall, the supply of foods of animal origin remains very low.

The per capita supply of pulses, nuts and oilcrops, which is comprised mainly of beans and coconuts, has declined since the late 1980s. Supply of vegetable oils (mainly imported palm oil) has increased steadily over the past 40 years but remains at a low level.

The most recent food supply data confirm that a wide variety of foods are grown in Tanzania, ranging from tropical to temperate climate foods. However, the diet remains insufficiently diversified, as the major food crops are limited to starchy foods such as maize, rice and cassava (MAFC, 2006b).

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

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

Figure 1: Trends in DES per capita and percentages from protein, lipids & carbohydrates

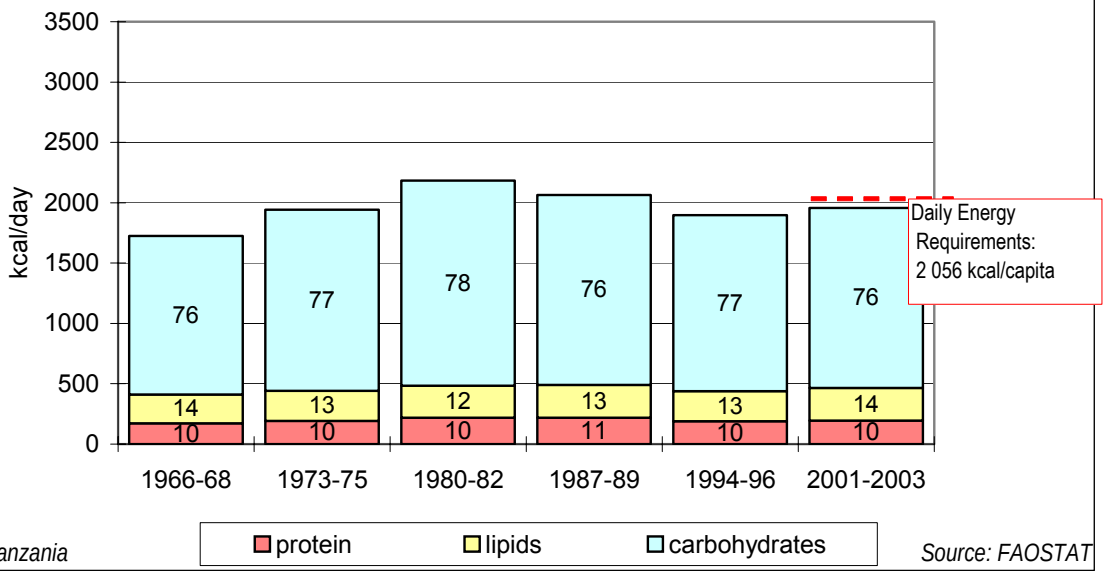


Figure 1 shows the trends in dietary energy supply (DES) per capita. In 2001-2003, the DES of 1956 kcal per capita per day did not meet daily energy requirements[1] (2056kcal per capita). Moreover, during the whole period from 1966 to 2003, the DES has remained low, exceeding 2000kcal/per capita/day in 1980-82 and 1987-89 only.

According to "The State of Food Insecurity in the World" (2006), the prevalence of undernourishment was very high, estimated at 44% for the period 2001-2003. During the last decade, the prevalence of undernourishment increased from 37% in 1990-92 to 44% in 2001-2003 (FAO, 2006).

The share of energy from protein is at the lower limit of recommendations (10-15%) (WHO/FAO, 2003). The share of energy from lipids has always been low (12% to 14%), lower than the recommended level of 15-30% of energy from fat (WHO/FAO, 2003).

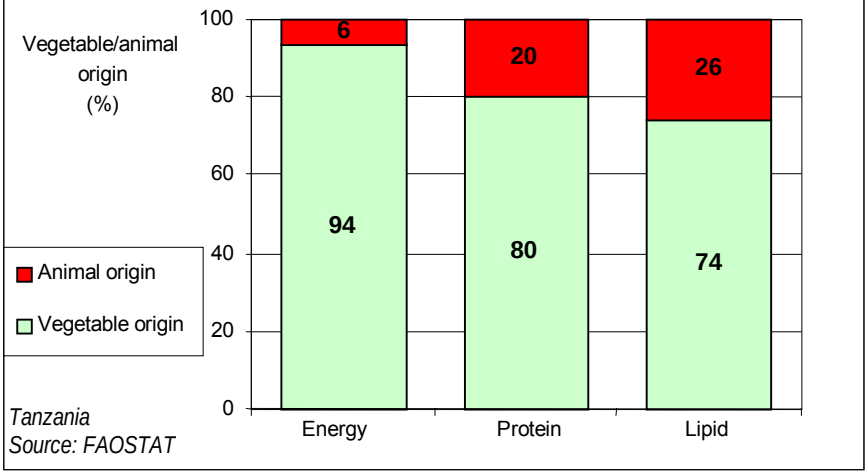
When acquiring food, poor households often give priority to bulky staple foods (maize, cassava, rice). Oil is considered as a luxury by most rural communities.

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

Vegetable/animal origin of macronutrients

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

Figure 2: Origin of energy, protein and lipid supplies, 2001-2003

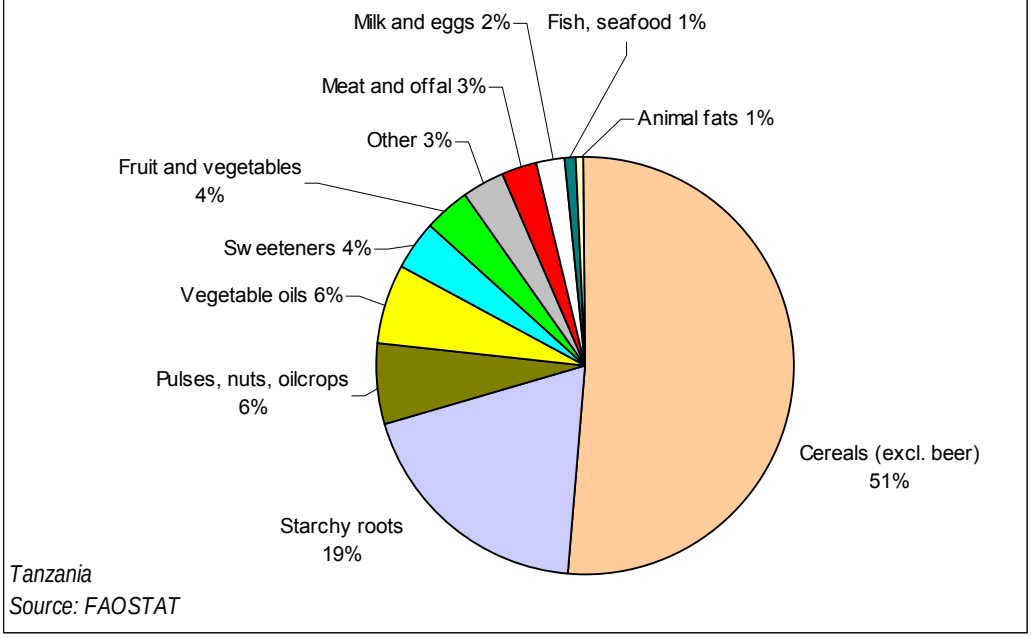


The diet in Tanzania is dominated by foods of vegetable origin, which provide a considerable part of the food energy (94%), protein (80%) and lipid supply (74%).

Dietary energy supply by food group

- Figure 3: Dietary energy supply by food group

Figure 3: Percentage of energy provided by major food groups in 2001-2003



In Tanzania, cereals contribute more than half (51%) to the total dietary energy supply, followed by starchy roots (19%). The dietary diversification index, i.e. the contribution of food groups other than cereals and starchy roots to the DES, is therefore very low (30%). Animal foods contribute only 7% to total energy; pulses/nuts/oilcrops and vegetable oils only 6% each. Given such a situation the diet is poor in micronutrient-rich foods.

Table 12: Share of the main food groups in the Dietary Energy Supply (DES), trends

Food groups	% of DES					
	1966-68	1973-75	1980-82	1987-89	1994-96	2001-2003
Cereals (excl. beer)	34	41	47	52	49	51
Starchy roots	31	28	23	18	22	19
Pulses, nuts, oilcrops	9	8	7	8	7	6
Fruit and vegetables	7	5	5	5	4	4
Vegetable oils	3	4	4	5	5	6
Sweeteners	4	4	3	2	3	4
Other	3	3	4	3	4	3
Meat and offals	3	3	2	3	3	3
Milk and eggs	3	3	2	2	2	2
Fish, seafood	1	1	1	1	1	1
Animal fats	1	1	1	1	1	1

Source: FAOSTAT

Contribution of cereals and starchy roots has not changed significantly over the whole period, but cereals are gradually replacing starchy roots. The share of pulses, nuts and oilcrops also showed a slight downward trend. The share of fruit and vegetables, already initially low, declined over the period but it is not known whether this trend accurately reflects the situation as consumption of own production on the farm could be underestimated.

The share of starchy roots, pulses/nuts/oilcrops in the diet and their contribution to the total energy supply is decreasing due to the changing economic situation of the population (especially in urban areas), urbanization, changes in the taste and loss of culinary skills to prepare traditional dishes based on these foods.

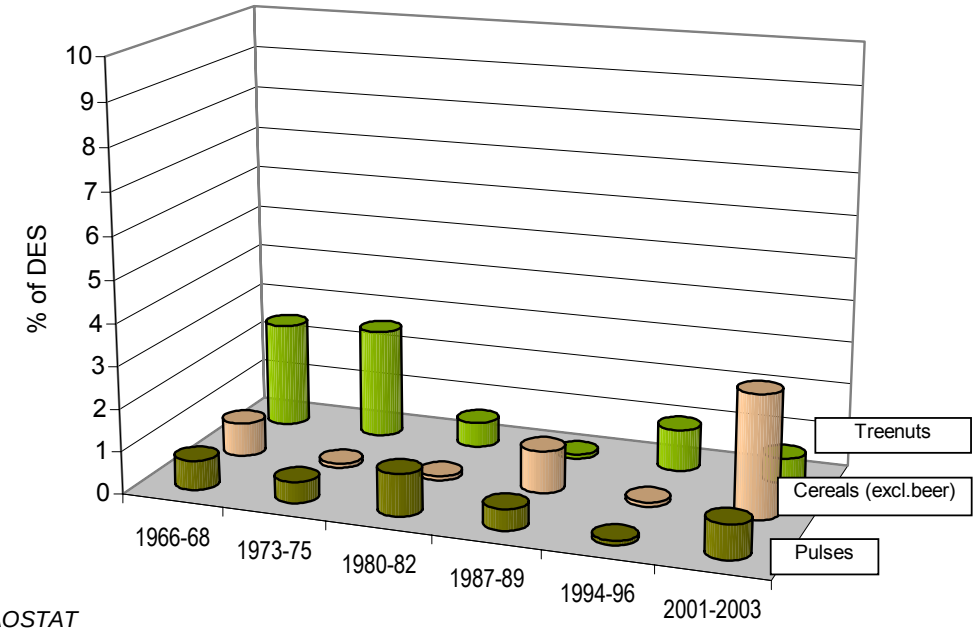
Food imports and exports

The level of food exports is low, consisting mainly of maize, refined sugar, pulses and tree nuts (cashew).

Major food imports include cereals (wheat and rice) and vegetable oils (palm oil). Tanzania has the potential to produce enough food for human consumption and not be dependent on imports, but urbanization and low prices of imported staples, as well as ease of preparation, have encouraged the consumption of imported foods. Tanzania also currently imports a very wide range of processed foods.

- Figure 4: Major food exports as percentage of Dietary Energy Supply (DES), trends
  Note that only the 3 most important food groups are shown.

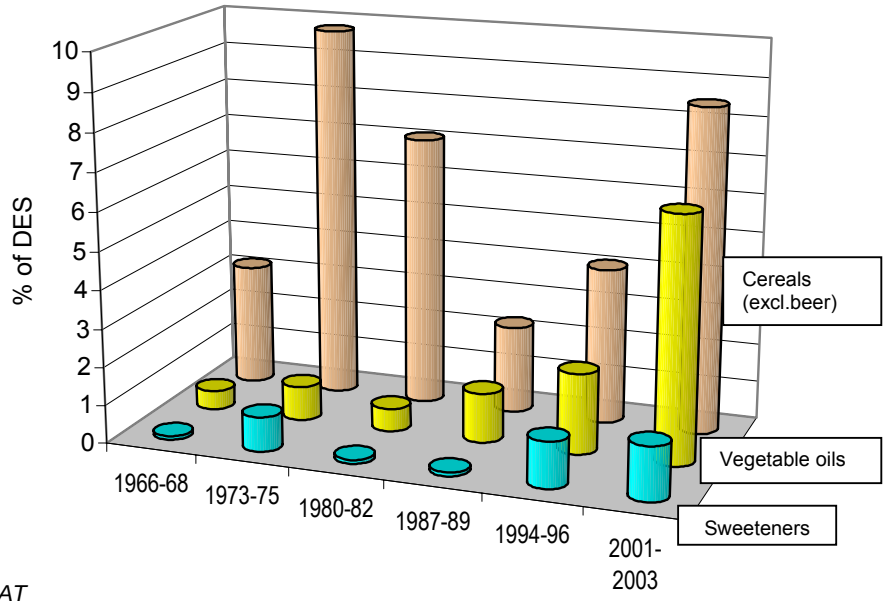
Figure 4: Food exports expressed as percentage of DES, trends.



Tanzania
Source: FAOSTAT

- Figure 5: Major food imports as percentage of Dietary Energy Supply (DES), trends
  Note that only the 3 most important food groups are shown.

Figure 5: Food imports expressed as percentage of DES, trends.



Tanzania
Source: FAOSTAT

Food aid

In 2005, Tanzania received a total of 116 353 t of food aid from different institutional and bilateral donors. Of these, 97 289 t were cereals (76% of coarse grains, 17% of rice and 5% of blended/fortified food commodities) and 19 064 t were non-cereal commodities (74% of pulses, 21% of oils and fats, and 5% of other non specified non-cereal food commodities). In comparison with the national food

supply, cereal food aid represents a small share (2% of the cereal supply for human consumption) (WFP, 2006a).

About 72% of the food aid was delivered as emergency food aid to food insecure populations affected by drought, and to refugees (mainly from Burundi and Congo, DRC) in refugee camps situated in the northwest of the country. Fourteen percent was delivered as project, and another 14% as programme food aid [2] (WFP, 2006a; WFP, 2006b; UNHCR, 2006).

II.3 Food consumption

National level surveys

There are no data on food consumption at national level. The Household Budget Survey of 2000-2001 does not present results in terms of food consumption. A few local studies document the dietary patterns of the population but are not representative at national level (Kinabo et al., 2004).

II.4 Infant and young child feeding practices

During the last decade, three national surveys provide information on infant and young child feeding practices: Tanzania Demographic and Health Survey (TDHS) 2004-2005, Tanzania Reproductive and Child Health Survey 1999 and TDHS 1996 (NBS and ORC Macro, 2005; NBS and Macro International Inc., 2000; BoS and Macro International Inc., 1997).

Results presented in Table 13 show that breastfeeding is a universal practice in Tanzania: in 2004-2005, 96% of children born in the five years preceding the survey had been breastfed. Differentials by sex, background characteristics of mother, urban or rural residence, or zone were small.

Among children ever breastfed, 59% were put to the breast within one hour from birth (early initiation) and 92% within one day of birth (NBS and ORC Macro, 2005). The rate of early initiation of breastfeeding was similar in the survey conducted in 1996 while the percentage of children breastfed within one day of birth slightly increased from 88% in 1996 to 92% in 2004-2005 (NBS and ORC Macro, 2005; BoS and Macro International Inc., 1997).

According to TDHS 2004-2005, the rate of early initiation of breastfeeding varies with zone, residence and mother's education. Early initiation is more common in urban areas (67% of neonates) than in rural areas (58%). Similarly, babies born to educated mothers are more likely to be breastfed early than those born from non-educated mothers. The rate of early initiation of breastfeeding varies considerably by zone: in the Western zone, only 37% of children are breastfed within one hour of birth while more than twice as many are in the Lake zone (NBS and ORC Macro, 2005).

The median duration of exclusive breastfeeding is 1.8 months with little variation according to background characteristics. The median duration of breastfeeding, calculated among infants and children under three years of age, is 21 months (NBS and ORC Macro, 2005)

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

Table 13: Initiation and duration of breastfeeding

Survey name/date (Reference)	Background characteristics	Sample size (all children under five years)*	Percentage of children under five years everbreastfed	Number of children under five years ever breastfed	Among children everbreastfed, percentage breastfed within one hour of birth	Among children everbreastfed, percentage breastfed within 24 hours of birth[1]	Number of children under three years	Median duration of breastfeeding in children under three years (in months)
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	8725	96.4	8413	59.3	92.0	5393	21.1
	Sex							
	M	4377	96.3	4213	58.4	91.3	2679	21.4
	F	4347	96.6	4199	60.2	92.6	2714	20.7
	Residence							
	Urban	1691	95.8	1620	66.9	93.0	1038	20.7
	Rural	7034	96.6	6792	57.5	91.7	4355	21.2
	Zone							
	Western	1912	94.8	1812	37.2	86.5	1212	19.7
	Northern	1122	97.6	1095	61.9	91.2	669	22.1
	Central	716	93.1	667	66.6	94.8	450	22.7
	Southern highlands	1283	96.0	1232	46.8	88.9	783	21.8
	Lake	1868	98.3	1835	79.6	95.1	1172	18.7
	Eastern	969	97.0	940	77.1	95.8	583	21.0
	Southern	637	96.8	617	51.4	96.5	387	23.7
	Zanzibar	219	98.4	216	53.8	94.0	138	20.7
	Mother's education							
	No education	2318	95.2	2206	55.7	91.3	1438	21.5
	Primary	6020	96.8	5827	60.1	92.2	3699	20.9
	Secondary or higher	387	97.9	379	67.3	92.4	256	21.6

* Based on all children born in the five years preceding the survey

[1] Includes children who started breastfeeding within one hour of birth

Exclusive breastfeeding for the first six months is not widely practiced in Tanzania. In 2004-2005 only 41% of infants below six months of age were exclusively breastfed (NBS and ORC Macro, 2005). However, there has been an improvement since 1996 (26%) and 1999 (27%) (BoS and Macro International Inc., 1997; NBS and Macro International Inc., 2000).

The prevalence of timely complementary feeding (at 6-9 months) is high, with 91% of infants receiving complementary foods at that age. More than 90% of children are breastfed for at least one year and 55% are still breastfed at 2 years of age (NBS and ORC Macro, 2005). Bottle-feeding is not a common practice in Tanzania.

Table 14: Type of infant and young child feeding

Survey name/date (Reference)	Type of feeding in the 24 hours preceding the survey		
	Indicator by age	Sample size	Percentage of children
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Exclusive breastfeeding rate		
	0-1 month	256	70.0
	2-3 months	304	42.4
	4-5 months	277	13.5
	<6 months	837	41.3
	Timely complementary feeding rate		
	6-9 months	606	90.9
	Bottle-feeding rate		
	0-11 months	1741	4.5
	Continued breastfeeding rate		
	12-15 months (1 year)	545	91.0
	20-23 months (2 years)	482	55.4

In many cases, complementary feeding starts too early. About 32% of children below five months of age are given complementary foods (solid or semisolid) and about 9% of infants are introduced to complementary foods very late, i.e. when they are more than 9 months old (NBS and ORC Macro, 2005).

The most common types of complementary foods given to infants 6-11 months include foods made from grains (maize, finger millet) usually in the form of thin porridge/gruel. Meat, fish, poultry and pulses are not commonly fed at this age. These are introduced in the diet when children are at least 10 months old, while fruit and vegetables are introduced around 6 months of age. Almost half of the infants 6-11 months of age consume fruit and vegetables rich in vitamin A (NBS and ORC Macro, 2005).

Although infants and young children are commonly given fruit and vegetables rich in vitamin A, their complementary foods are insufficiently diversified; in particular, consumption of animal foods, which are rich in essential micronutrients, especially vitamin A, iron and calcium, is not widespread even in the older age group.

Table 15: Consumption of complementary foods by breastfeeding status and age

Survey name/date (Reference)	Age (months)	Breastfeeding status*	Number of children	Foods consumed by children in the 24 hours preceding the survey					
				Percent of children having consumed the following foods					
				Infant formula	Other milk and dairy products	Pulses	Meat/ fish/ eggs	Foods with oil/ fat/butter	Fruit and vegetables rich in vit. A
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	6-11	bf	882	4,1	29,2	20,2	25,0	21,7	48,0
	12-23	bf + non bf	1581	4,2	28,8	29,7	35,1	26,8	69,9
	24-35	bf + non bf	1056	3,4	28,0	32,9	33,8	36,5	74,2

* Breastfed children (bf) or non breastfed (non bf) children or breastfed and non breastfed taken together

The "National Consultative Group on Infant and Young Child Nutrition" has the mandate to improve infant and young child feeding practices in the country. Actions under the Consultative Group include training of health providers at regional and district levels on implementation of the Code of Marketing of Breastmilk Substitutes and on lactation management, and on implementation of the Ten Steps to Successful Breastfeeding.

The International Code of Marketing of Breastmilk Substitutes has been adopted and incorporated in a national law. The Baby-Friendly Hospital Initiative (BFHI) was launched in 1992 by the WHO and UNICEF Tanzania. Since then about 128 hospitals out of 4844 have been trained on lactation management and about 68 hospitals in the country have been certified as "Baby Friendly" (Nnally and Katana, 2005).

The maternity leave legislation provides 12 weeks of fully paid leave for the purpose of protecting and supporting breastfeeding among working mothers. In addition partners/spouses are allowed one week of paid leave immediately after delivery to provide physical and psychological support to breastfeeding mothers during the first week. Nevertheless, these measures only benefit mothers who are working in the formal employment sector.

II.5 Nutritional anthropometry

Low birth weight

It is estimated that in 2004 7% of weighed newborns had a low birth weight (less than 2500g) (NBS and ORC Macro, 2005). However, it must be noted that about half of the newborns are not weighed at birth because more than half of the deliveries occur at home (NBS and ORC Macro, 2005). In addition, the majority of the neonates weighed at birth were born in a favorable environment, in urban areas

and/or of mothers having a higher educational level (NBS and ORC Macro, 2005). Therefore the prevalence of 7% low birth weight is not representative of the true situation in the country.

Anthropometry of preschool children

Malnutrition, as measured by anthropometry, is the most widespread nutritional disorder in Tanzania alongside vitamin A deficiency, iron deficiency anemia and iodine deficiency disorders. Malnutrition results from inadequate intake of food and/or frequent infections. Nutritional status of preschool children (below five years of age) is a proxy indicator for the economic and nutritional status of the population of a country. It is also a reflection of maternal nutritional status.

During the last decade, three national surveys documented the prevalence of malnutrition among children under five years: Tanzania Demographic and Health Survey (TDHS) 2004-2005, Tanzania Reproductive and Child Health Survey 1999 and TDHS 1996 (NBS and ORC Macro, 2005; NBS and Macro International Inc., 2000; BoS and Macro International Inc., 1997).

According to the most recent national survey conducted in 2004-2005, the proportion of children underfive who were underweight was 22%, while the prevalence of stunting was 38%, and that of wasting was 3% (NBS and ORC Macro, 2005).

As shown in Table 16, while the overall prevalence of stunting in underfives is 38%, that of severe stunting is quite high (13%). Children living in rural areas are more likely to be stunted than their counterparts living in urban areas. Results also indicate that the Southern zones have the highest prevalence of stunting while Zanzibar and the Eastern zone have the lowest (NBS and ORC Macro, 2005). This seems paradoxical since the southern regions contribute about 70% to the total cereal supply of the country (MAFC, 2006a). This suggests that there could be other factors responsible for the high prevalence of stunting in that region, e.g. poor caring practices, low feeding frequency and low diversity of the diet, and poor access to health care services. Mothers' level of education is associated with prevalence of stunting: prevalence is low in children of mothers with secondary or higher education. Interpretation should however be cautious as the influence of education is confounded by other socio-economic factors.

As is typical, stunting prevalence increases with age: at 0-6 months about 8% of infants are stunted, which could be due to intrauterine growth retardation (IUGR) or prematurity. Prevalence increases during the first year of life and peaks at 45% in the age group 12-23 months (NBS and ORC Macro, 2005). Deterioration of the nutritional status after six months can be explained by inappropriate feeding practices such as the introduction of inadequate complementary foods and the cumulative effects of illnesses and lack of access to health care.

According to the TDHS 2004-2005, only 3% of children under five years were wasted. This percentage is only slightly higher than what is observed in the reference population (2.3%) therefore it can be concluded that wasting is not a major public health problem overall in Tanzania. Nevertheless, prevalence varied with age, peaking at 6% in the age group 12-23 months. Prevalence was higher in the Northern zone and Zanzibar while it was negligible in the Southern zone, characterized by a high prevalence of stunting (NBS and ORC Macro, 2005).

Comparison of the three national surveys of 1996, 1999 and 2004-2005 shows that the nutritional status of children under five years of age has remained unchanged between 1996 and 1999, but has improved after this period (NBS and ORC Macro, 2005; NBS and Macro International Inc., 2000; BoS and Macro International Inc., 1997). Between 1999 and 2004-2005, both the prevalence of stunting and wasting decreased. Most of the reduction in stunting prevalence took place in the rural sector (prevalence of stunting remained at 26% in the urban areas) while the decrease in prevalence of wasting was observed in both the urban and rural sectors (NBS and Macro International Inc., 2000; NBS and ORC Macro, 2005).

Table 16: Anthropometry of preschool children

Name/date of survey (month/year) (Reference)	Background characteristics	Age (years)	Sex	Sample size	Prevalence of malnutrition						
					Percentage of children with						
					Stunting Height-for-age		Wasting Weight-for-height		Underweight Weight-for-age		Overweight Weight-for-height
					< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	> +2 Z-scores
Tanzania Demographic and Health Survey 2004-2005 (Oct. 2004 - Jan. 2005) (NBS and ORC Macro, 2005)	Total	0-4.99	M/F	7989	12.8	37.7	0.4	3.0	3.7	21.8	n.a.
	Sex										
		0-4.99	M	3988	13.6	38.6	0.4	3.3	3.9	22.1	n.a.
		0-4.99	F	4001	12.0	36.8	0.3	2.7	3.5	21.5	n.a.
	Age										
		0-0.49	M/F	758	1.4	8.0	0.0	1.2	0.2	2.4	n.a.
		0.5-0.99	M/F	899	5.0	23.8	0.4	2.7	3.3	19.7	n.a.
		1-1.99	M/F	1662	15.4	45.2	0.9	6.3	6.0	29.0	n.a.
		2-2.99	M/F	1653	13.8	39.2	0.1	3.1	3.8	24.5	n.a.
		3-3.99	M/F	1520	16.4	45.2	0.2	1.4	3.6	22.1	n.a.
		4-4.99	M/F	1496	15.6	43.3	0.4	1.9	3.2	21.5	n.a.
	Residence										
	Urban	0-4.99	M/F	1536	7.4	25.8	0.4	2.8	2.1	17.0	n.a.
	Rural	0-4.99	M/F	6453	14.1	40.5	0.4	3.0	4.1	22.9	n.a.
	Zone										
	Western	0-4.99	M/F	1720	15.4	39.7	0.7	2.6	5.0	23.2	n.a.
	Northern	0-4.99	M/F	1019	11.7	34.2	0.7	5.0	3.8	26.0	n.a.
	Central	0-4.99	M/F	685	16.1	42.3	0.3	4.4	7.6	28.7	n.a.
	Southern highlands	0-4.99	M/F	1159	14.6	42.6	0.1	1.5	2.8	20.1	n.a.
	Lake	0-4.99	M/F	1737	10.2	34.3	0.2	2.4	2.8	17.4	n.a.
	Eastern	0-4.99	M/F	879	7.2	27.8	0.2	4.0	1.8	17.3	n.a.
	Southern	0-4.99	M/F	593	17.5	52.2	0.0	1.5	2.7	26.2	n.a.
	Zanzibar	0-4.99	M/F	197	7.0	23.1	0.7	6.1	3.1	19.0	n.a.
	Mother's education										
	No education	0-4.99	M/F	1949	14.8	41.2	0.3	3.2	4.5	24.9	n.a.
	Primary	0-4.99	M/F	5121	11.9	36.9	0.4	3.2	3.6	21.1	n.a.
	Secondary or higher	0-4.99	M/F	326	4.4	19.1	0.1	1.5	0.6	12.4	n.a.

* Category <-2 Z-scores includes <-3 Z-scores.
n.a.: not available.

Table 16 : Anthropometry of preschool children (cont.)

Name/date of survey (month/year) (Reference)	Background characteristics	Age (years)	Sex	Sample size	Prevalence of malnutrition						
					Percentage of children with						
					Stunting Height-for-age		Wasting Weight-for-height		Underweight Weight-for-age		Overweight Weight-for-height
					< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	> +2 Z-scores
Tanzania Reproductive and Child Health Survey 1999 (Sept.- Nov. 1999) (NBS and Macro International Inc., 2000)	Total	0-4.99	M/F	2820	17.1	43.8	0.6	5.4	6.5	29.4	n.a.
	Sex										
		0-4.99	M	1423	16.9	44.9	0.1	5.4	6.0	28.5	n.a.
		0-4.99	F	1397	17.3	42.7	1.2	5.3	7.0	30.4	n.a.
	Age										
		0-0.49	M/F	304	2.5	9.2	0.0	3.3	0.0	3.9	n.a.
		0.5-0.99	M/F	303	5.5	23.2	0.4	5.8	3.9	21.5	n.a.
		1-1.99	M/F	571	21.0	50.8	1.0	10.0	11.8	41.8	n.a.
		2-2.99	M/F	568	17.3	48.5	1.2	5.4	9.0	38.2	n.a.
		3-3.99	M/F	527	23.9	51.9	0.4	1.9	6.0	26.4	n.a.
		4-4.99	M/F	547	20.8	54.5	0.4	4.7	3.9	29.0	n.a.
	Residence										
	Urban	0-4.99	M/F	500	7.7	26.1	0.4	5.9	4.9	20.6	n.a.
	Rural	0-4.99	M/F	2321	19.1	47.6	0.7	5.3	6.8	31.3	n.a.
	Region (Mainland/Zanzibar)										
	Mainland	0-4.99	M/F	2746	17.2	44.0	0.6	5.3	6.5	29.5	n.a.
	Urban	0-4.99	M/F	479	7.8	26.1	0.4	5.9	5.0	20.7	n.a.
	Rural	0-4.99	M/F	2268	19.2	47.8	0.7	5.2	6.8	31.4	n.a.
	Zanzibar	0-4.99	M/F	(74)	(12.2)	(35.8)	(0.5)	(6.3)	(7.0)	(25.8)	n.a.

* Category <-2 Z-scores includes <-3 Z-scores.
n.a.: not available.
Results in parenthesis are based on small samples (<100) and therefore must be interpreted with caution.

Table 16 : Anthropometry of preschool children (cont.)

Name/date of survey (month/year) (Reference)	Background characteristics	Age (years)	Sex	Sample size	Prevalence of malnutrition						
					Percentage of children with						
					Stunting Height-for-age		Wasting Weight-for-height		Underweight Weight-for-age		Overweight Weight-for-height
					< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	< -3 Z-scores	< -2 Z-scores*	> +2 Z-scores
Tanzania Demographic and Health Survey 1996 (July-Nov. 1996) (BoS and Macro International Inc., 1997)	Total	0-4.99	M/F	5344	17.8	43.4	1.3	7.2	7.8	30.6	n.a.
	Sex										
		0-4.99	M	2727	18.6	44.9	1.5	8.1	8.4	30.8	n.a.
		0-4.99	F	2617	17.1	41.9	1.2	6.4	7.1	30.4	n.a.
	Age										
		0-0.49	M/F	597	2.8	10.7	2.4	5.5	1.4	7.0	n.a.
		0.5-0.99	M/F	647	7.3	26.6	1.6	6.6	7.8	27.1	n.a.
		1-1.99	M/F	1236	20.9	52.3	2.1	13.4	11.8	40.9	n.a.
		2-2.99	M/F	1018	23.2	51.6	1.3	6.1	10.7	38.1	n.a.
		3-3.99	M/F	955	22.2	51.9	0.5	5.0	6.4	30.7	n.a.
		4-4.99	M/F	892	20.6	46.9	0.3	4.2	4.6	26.3	n.a.
	Residence (Mainland/Zanzibar)										
	Mainland	0-4.99	M/F	5180	17.9	43.6	1.3	7.1	7.7	30.5	n.a.
	Total urban	0-4.99	M/F	898	12.0	32.9	1.6	7.6	4.1	19.5	n.a.
	Dar es Salaam city	0-4.99	M/F	239	13.4	31.1	1.4	8.8	3.5	23.0	n.a.
	Other urban	0-4.99	M/F	659	11.5	33.5	1.7	7.2	4.4	18.3	n.a.
	Total rural	0-4.99	M/F	4282	19.2	45.9	1.3	7.0	8.5	32.9	n.a.
	Zanzibar	0-4.99	M/F	163	14.7	37.1	1.8	11.0	8.8	33.8	n.a.
	Mother's education										
	No education	0-4.99	M/F	1541	20.8	49.4	1.2	8.5	10.0	36.9	n.a.
	Primary	0-4.99	M/F	3618	17.1	41.9	1.4	6.8	7.1	28.9	n.a.
	Secondary or higher	0-4.99	M/F	184	7.5	24.1	1.1	5.2	2.3	11.9	n.a.

* Category <-2 Z-scores includes <-3 Z-scores.
n.a.: not available.

Anthropometry of school-age children

Currently no data are available on anthropometry of school-age children.

Anthropometry of adolescents

Currently no data are available on anthropometry of adolescents.

Anthropometry of adult women

Two national surveys document the nutritional status of women aged 15 to 49 years: the TDHS 2004-2005 and the TDHS 1996 (NBS and ORC Macro, 2005; BoS and Macro International Inc., 1997). In the 1996 survey, the sample included women who had a birth in the five years preceding the survey while in the 2004-2005 survey data refer to all women aged 15-49. In both surveys, the samples excluded women who were less than two months postpartum (BoS and Macro International Inc., 1997; NBS and ORC Macro, 2005).

As shown in Table 17, according to the most recent survey conducted in 2004-2005, the mean height of women was 156 cm and only about 3% were shorter than 145 cm, which is considered a risk in terms of pregnancy outcome. The mean body mass index (BMI) was 22 kg/m² and about 10% had a BMI below 18.5 kg/m², indicative of chronic energy deficiency (CED). Prevalence of CED was highest among very young women. Prevalence of CED did not vary markedly with women's level of education. CED was more prevalent in rural areas than in urban areas.

There were large differences in prevalence of CED by zone, prevalence being high in the Northern, Central and Southern zones and in Zanzibar. In the Central zone, mothers' and children's nutritional status appeared to be related, as the region had the highest prevalence of CED in women as well the highest prevalence of underweight (29%) among preschool children (NBS and ORC Macro, 2005).

Overall 18% of women 15 to 49 years old were overweight or obese. Urban women were more than twice as likely to be overweight or obese as women from rural areas. Age and high educational level were significantly associated with overnutrition: women over 30 were more likely to be overweight or obese than women in the younger age group.

Although the samples of the two surveys are not strictly identical, comparison of the 1996 and 2004-2005 surveys does not show significant differences in prevalence of CED (BoS and Macro International Inc., 1997; NBS and ORC Macro, 2005).

The observation that there is more overnutrition than undernutrition (CED) among adult women shows that Tanzania is undergoing a nutrition transition. The problem of overnutrition is particularly serious in the urban sector but is also emerging in the rural sector.

Table 17: Anthropometry of adult women

Name/date of survey (month/year) (Reference)	Background characteristics	Age (years)	Anthropometry of adult women								
			Height			Body Mass Index[1] (kg/m²) (BMI)					
								Percentage of women with BMI			
			Sample size	Mean (cm)	% of women with height < 1.45 m	Sample size	Mean (kg/m²)	<18.5 (chronic energy deficiency)	18.5-24.9 (normal)	25.0-29.9 (overweight)	≥30.0 (obesity)
Tanzania Demographic and Health Survey 2004-2005 (Oct. 2004 - Jan. 2005) (NBS and ORC Macro, 2005)	Total	15-49	10241	156.4	3.4	8888	22.3	10.4	71.8	13.3	4.4
	Age										
		15-19	2224	155.0	5.1	1997	20.9	18.7	74.3	6.5	0.5
		20-24	1982	156.2	4.1	1614	22.2	6.9	77.8	13.1	2.2
		25-29	1877	157.2	2.6	1534	22.5	8.0	74.4	13.5	4.0
		30-34	1529	157.2	2.0	1321	23.1	8.0	67.7	16.8	7.5
		35-39	1042	157.2	2.8	913	23.3	6.0	68.4	17.8	7.8
		40-44	830	156.5	1.8	766	23.1	10.3	63.8	16.5	9.4
		45-49	757	155.9	4.0	743	22.7	10.5	67.0	16.7	5.8
	Residence										
	Urban	15-49	2895	156.3	3.5	2638	23.8	7.9	59.6	21.6	10.9
	Rural	15-49	7346	156.4	3.3	6249	21.7	11.5	77.0	9.8	1.7
	Zones										
	Western	15-49	1862	157.6	1.7	1531	21.6	9.8	79.2	9.6	1.4
	Northern	15-49	1477	156.4	3.7	1316	22.4	12.6	67.2	15.2	5.0
	Central	15-49	796	156.5	1.8	675	21.3	16.8	72.4	9.0	1.9
	Southern highlands	15-49	1436	156.2	2.9	1241	22.6	7.2	75.3	13.3	4.2
	Lake	15-49	1852	158.4	2.2	1556	22.0	8.9	77.2	11.3	2.6
	Eastern	15-49	1647	154.8	4.3	1520	23.6	8.4	61.0	20.4	10.3
	Southern	15-49	863	152.9	9.6	773	21.6	12.1	75.7	10.0	2.2
	Zanzibar	15-49	310	155.5	3.4	275	22.9	17.1	56.0	17.3	9.6
	Education's level										
	No education	15-49	2483	156.2	3.9	2126	21.8	11.3	76.0	10.5	2.2
	Primary	15-49	6881	156.3	4.0	5934	12.0	10.2	72.4	13.5	4.0
	Secondary or higher	15-49	877	157.3	2.2	827	23.9	9.9	57.5	19.4	13.2

[1] excludes pregnant women and women with a birth in the 2 preceding months.

Note: the sample includes all women aged 15-49

Anthropometry of adult men

No data are currently available for anthropometry of adult men.

II.6 Micronutrient deficiencies

Iodine deficiency disorders (IDD)

Prevalence of goitre and level of urinary iodine

According to the National IDD survey conducted in 2004, the total goitre prevalence among primary school children in Tanzania was 7% (Table 18) (TFNC, 2005). The observed prevalence of goitre at national level was above the threshold defined by WHO (5%) to consider IDD as a mild public health problem (WHO, 2001a). However, this aggregated prevalence masks a geographical pattern, where prevalence of goitre in the Iringa and Rukwa regions exceeded 20% (TFNC, 2005).

The median urinary iodine concentration was 203µg/L. About 25% of the children had urinary iodine concentration below 100µg/L (Table 18) (TFNC, 2005).

In Tanzania, the prevalence of goitre is highest in the highlands and in the mountainous regions such as Iringa, Arusha, Mbeya, Rukwa and Ruvuma situated along the Rift valley (Kimboka et al., 2004; Kavishe, 1993). A similar pattern was observed for urinary iodine levels, except for Arusha region. It is not surprising to find high levels of iodine deficiency disorders in the areas surrounding the Rift valley, as the ecological conditions influence the availability of iodine in the soil and eventually the level of the mineral in the crops grown in these areas (TFNC, 2005).

Table 18: Prevalence of goitre and level of urinary iodine

Survey name/date (Reference)	Background characteristics	Sex	Age (years)	Prevalence of goitre		Level of urinary iodine		
				Sample size	Percentage with goitre [Total Goitre]	Sample size	Median (µg/L)	Percentage with urinary iodine <100µg/L
Prevention and Control of Iodine Deficiency Disorders in Tanzania. Second National Survey 2004 (TFNC, 2005)	Total	M/F	6.0-11.99	140758	7.0	2340	203.0	25.0
	Sex							
		M	6.0-11.99	69907	6.5	1219	204.4	n.a.
		F	6.0-11.99	70851	7.4	1421	202.8	n.a.
	Region							
	Dodoma	M/F	6.0-11.99	6562	4.8	210	247.3	n.a.
	Arusha	M/F	6.0-11.99	8659	9.8	209	280.0	n.a.
	Kilimanjaro	M/F	6.0-11.99	5928	5.7	220	396.5	n.a.
	Tanga	M/F	6.0-11.99	7783	3.9	325	185.7	n.a.
	Morogoro	M/F	6.0-11.99	6437	5.3	212	166.7	n.a.
	Pwani	M/F	6.0-11.99	5310	0.5	210	863.3	n.a.
	Dar es Salaam	M/F	6.0-11.99	3438	0.3	211	887.0	n.a.
	Lindi	M/F	6.0-11.99	4314	0.7	209	72.6	n.a.
	Mtwara	M/F	6.0-11.99	5240	0.0	212	64.7	n.a.
	Ruvuma	M/F	6.0-11.99	4190	8.1	206	45.1	n.a.
	Iringa	M/F	6.0-11.99	6845	24.8	212	92.9	n.a.
	Mbeya	M/F	6.0-11.99	8957	19.6	208	147.0	n.a.
	Singida	M/F	6.0-11.99	4176	2.1	210	90.2	n.a.
	Tabora	M/F	6.0-11.99	9251	2.5	210	236.4	n.a.
	Rukwa	M/F	6.0-11.99	4603	21.1	201	270.8	n.a.
	Kigoma	M/F	6.0-11.99	7037	6.2	210	254.6	n.a.
	Shinyanga	M/F	6.0-11.99	9160	1.1	208	224.5	n.a.
	Kagera	M/F	6.0-11.99	7147	1.7	209	192.5	n.a.
	Mwanza	M/F	6.0-11.99	12635	1.0	208	373.8	n.a.
	Mara	M/F	6.0-11.99	6038	16.0	211	230.5	n.a.

n.a.: not available

Iodization of salt at household level

In 1986, a National Iodine Deficiency Disorder Control Programme (NIDDCP) was launched with the aim of eliminating severe IDD by the year 2000. Strategies included distribution of iodine capsules to populations with severe cases of IDD and a salt iodization programme, which started in 1988. Initially the programme focused on 27 highly endemic districts, but currently covers the whole country. A Salt Act was approved in 1995 to ensure that salt for human consumption was iodized. As a result of the programme about 84% of households in Tanzania currently consume iodized salt (TFNC, 2005).

When the NIDDCP programme started in 1986, the prevalence of total goitre among primary school children (6-15 years) in 27 endemic districts was 68%, while national prevalence in the same age group was 25%. In 1999-2000, the prevalence of total goitre in endemic districts for the same age group had decreased to 24% while visible goitre prevalence had decreased from 17% to 14% (Kavishe, 1993; TFNC, 2000). In a national IDD survey of school children aged 6-11 years, conducted in 2004 by TFNC, the prevalence of total goiter was 7% (Table 18) and that in endemic districts was 12% (TFNC, 2005).

Table 19 shows the proportion of households which used iodized salt as assessed at national level during the last TDHS survey in 2004-2005 (NBS and ORC Macro, 2005). Salt was tested for iodine in 93% of households. Among households where salt was tested, 43% used salt that was adequately iodized (≥15 ppm) while almost one third used salt that was insufficiently iodized (<15 ppm), and the remaining used salt with no iodine (NBS and ORC Macro, 2005).

Although only 44% of households on the Mainland were found to use adequately iodized salt, 74% used salt containing some iodine. An IDD evaluation survey conducted in 2004 by the Tanzania Food and Nutrition Centre (TFNC) in Mainland Tanzania found an estimated prevalence of 84% of households with iodized salt (TFNC, 2004). Therefore, the results from the two studies do not differ substantially when sampling variation and test kit accuracy are taken into consideration (NBS and ORC Macro, 2005).

The proportion of households using adequately iodized salt is higher in urban areas (72%) than in rural areas (34%). In the Southern zone, only 11% of households consume adequately iodized salt. In the Central zone and Zanzibar, consumption of iodized salt is also very limited (NBS and ORC Macro, 2005). Paradoxically Arusha is one of the regions with the highest proportion of households using adequately iodized salt (93% - data not presented here), while it is among regions with a high rate of goitre (10%) (NBS and ORC Macro, 2005; TFNC, 2005). This could be due to high consumption of brassica type of vegetables (cabbage and kale), which contain goitrogenic substances.

Table 19: Iodization of salt at household level

Survey name/date (Reference)	Background characteristics	Total number of households	Percentage of households tested	Iodine level of household salt		
				None (0 ppm)	Inadequate (<15 ppm)	Adequate (≥15 ppm)
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	9735	92.7	26.9	29.8	43.4
	Residence					
	Urban	2569	90.5	11.6	16.6	71.7
	Rural	7166	93.5	32.1	34.3	33.5
	Zone					
	Western	1474	93.6	15.9	44.4	39.7
	Northern	1486	89.3	30.1	7.8	62.1
	Central	820	94.0	49.1	31.7	19.2
	Southern highlands	1424	91.7	31.9	29.4	38.8
	Lake	1684	95.2	15.1	34.8	50.1
	Eastern	1665	90.9	8.0	29.2	62.7
	Southern	930	95.7	58.8	30.7	10.6
	Zanzibar	252	93.8	51.8	29.9	18.3

Note: ppm = parts per million

Vitamin A deficiency (VAD)

Prevalence of sub-clinical and clinical vitamin A deficiency

No data are available on prevalence of sub-clinical and clinical vitamin A deficiency in children at national level. There is an urgent need for assessment of vitamin A deficiency in this age group in order to evaluate the magnitude of the problem and to monitor the impact of the many supplementation programmes that have been implemented.

The 2004-2005 TDHS showed that 3% of mothers with a recent birth reported night blindness during pregnancy. After adjusting by day blindness, 1% of women were estimated to suffer from clinical signs of vitamin A deficiency. Differentials by background characteristics were not significant (NBS and ORC Macro, 2005). Prevalence in mothers does not reach the level defined by WHO as indicating significant VAD in the population (more than 5% night blindness during pregnancy) (Sommer and Davidson, 2002).

The main cause of vitamin A deficiency in Tanzania appears to be the low intake of animal products, which contain high amounts of absorbable retinol, along with insufficient intake of fruit and vegetables rich in vitamin A. In Tanzania, poverty is widespread and the high financial cost of animal products limits consumption. Meat and milk consumption is extremely low, on average once a week or even less (Mazengo et al, 1997; Rikimaru, 2000; Kinabo et al, 2004). Plant sources of vitamin A (carotenes) are more affordable, but bioavailability from animal sources is higher.

Table 20: Prevalence of clinical and sub-clinical vitamin A deficiency in mothers during their last pregnancy and in breastfeeding mothers

Survey name/date (Reference)	Background characteristics	Age (years)	Prevalence of night blindness during pregnancy[1]			Prevalence of low level of retinol in breastmilk	
			Number of mothers	Percentage non adjusted	Percentage adjusted for daytime blindness	Number of breastfeeding mothers	Percentage with retinol in breastmilk ≤1.05 µmol/L
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	<20-49	5772	2.7	0.9	n.a.	n.a.
	Residence						
	Urban	<20-49	1277	1.6	0.5	n.a.	n.a.
	Rural	<20-49	4496	3.0	1.0	n.a.	n.a.
	Zone						
	Western	<20-49	1143	5.1	0.8	n.a.	n.a.
	Northern	<20-49	774	2.8	0.9	n.a.	n.a.
	Central	<20-49	473	2.5	1.6	n.a.	n.a.
	Southern highlands	<20-49	844	2.1	0.9	n.a.	n.a.
	Lake	<20-49	1126	2.2	1.1	n.a.	n.a.
	Eastern	<20-49	766	0.4	0.0	n.a.	n.a.
	Southern	<20-49	503	3.0	1.4	n.a.	n.a.
	Zanzibar	<20-49	144	2.4	0.5	n.a.	n.a.

[1] During the last pregnancy of women with a live birth in the 5 years preceding the survey
n.a: not available

Vitamin A supplementation

As shown in Table 21, according to TDHS 2004-2005, slightly less than half of the children under five years of age had received vitamin A capsules in the 6 months preceding the survey (NBS and ORC Macro, 2005).

Despite a significant increase since 1999, when only 14% of children were supplemented in the 6 months preceding the survey, supplementation coverage in Tanzania remains unsatisfactory (NBS and Macro International Inc., 2000).

In 2004-2005, supplementation of children was more common in urban areas than in the rural sector. Coverage was low in Zanzibar. Children whose mother had had some formal education were more likely to have received vitamin A supplements (NBS and ORC Macro, 2005).

Overall, only 20% of the mothers had received vitamin A capsules within two months postpartum and significant differences were noted between urban (34%) and rural areas (16%) (NBS and ORC Macro, 2005).

More recently, in 2005-2006, vitamin A supplementation was carried out throughout the country as part of an immunization campaign which took place on “AIDS day” where it was estimated that supplementation reached 94% of targeted children between 1 and 5 years of age (Ndossi et al., 2006; Mulokozi et al., 2006).

Table 21: Vitamin A supplementation of children and mothers

Survey name/date (Reference)	Background characteristics	Children				Mothers		
		Age (months)	Sex	Number of children	Percent of children who received vit. A supplements in the 6 months preceding the survey	Age (years)	Number of mothers[1]	Percent of mothers who received vit. A supplements within 2 months postpartum
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	6-59	M/F	7130	45.5	<20-49	5772	20.1
	Sex							
		6-59	M	3579	44.2			
		6-59	F	3552	46.8			
	Residence							
	Urban	6-59	M/F	1398	54.0	<20-49	1277	34.2
	Rural	6-59	M/F	5732	43.4	<20-49	4496	16.2
	Region							
	Western	6-59	M/F	1548	52.7	<20-49	1143	18.3
	Northern	6-59	M/F	940	46.2	<20-49	774	23.3
	Central	6-59	M/F	588	63.7	<20-49	473	16.1
	Southern highlands	6-59	M/F	1066	31.4	<20-49	844	17.6
	Lake	6-59	M/F	1497	41.1	<20-49	1126	20.3
	Eastern	6-59	M/F	792	52.2	<20-49	766	25.4
	Southern	6-59	M/F	518	41.2	<20-49	503	21.3
	Zanzibar	6-59	M/F	181	22.4	<20-49	144	13.0

[1] Women with a birth in the 5 years preceding the survey. For women with two or more births during that period, data refer to the most recent birth.

Iron deficiency anemia (IDA)

Prevalence of IDA

The TDHS of 2004-2005 is the only nationally representative survey which documents the prevalence of anemia among preschool children and women of childbearing age (Table 22 and 23).

According to this survey, in 2004-2005, more than two-thirds of children aged 6-59 months were anemic (hemoglobin concentration <11 g/dL) and about 4% were severely anemic (hemoglobin concentration <7 g/dL) (NBS and ORC Macro, 2005).

According to WHO criteria, anemia can be defined as a severe public health problem in Tanzania, as prevalence is above the 40% threshold (WHO, 2001b).

The prevalence of anemia (moderate and severe) was highest among infants aged 10-11 months and lowest among older children (48-59 months). The first two years of life are especially critical because of the high iron requirement. Overall, there are no differences in prevalence by gender. Prevalence is slightly higher among children from rural areas than among their counterparts from urban areas. Interregional variations in the prevalence of anemia exist, ranging from 57% in Northern zone to 81% in the Southern zone (NBS and ORC Macro, 2005).

One of the factors contributing to the high prevalence of anemia in the Southern zone is low consumption of fruit and animal foods, and low awareness about the relationship between food consumption and nutritional status.

Table 22: Prevalence of anemia in preschool children

Survey name/date (Reference)	Background characteristics	Age (months)	Sex	Sample size	Percentage of children with	
					Any anemia (Hb<11.0 g/dL)	Severe anemia (Hb<7.0 g/dL)
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	6-59	M/F	7300	71.8	4.2
	Sex					
		6-59	M	3673	72.1	4.6
		6-59	F	3628	71.6	3.8
	Age					
		6-9	M/F	604	83.3	4.2
		10-11	M/F	304	87.5	11.3
		12-23	M/F	1669	82.6	7.9
		24-35	M/F	1658	75.0	3.8
		36-47	M/F	1546	63.1	2.7
		48-59	M/F	1520	57.8	0.8
	Residence					
	Urban	6-59	M/F	1399	66.8	3.2
	Rural	6-59	M/F	5902	73.0	4.5
	Zone					
	Western	6-59	M/F	1552	77.6	4.5
	Northern	6-59	M/F	936	56.7	1.6
	Central	6-59	M/F	615	68.8	3.2
	Southern highlands	6-59	M/F	1080	62.5	1.5
	Lake	6-59	M/F	1583	78.5	8.2
	Eastern	6-59	M/F	810	73.5	4.2
	Southern	6-59	M/F	545	80.7	3.4
	Zanzibar	6-59	M/F	180	75.1	1.9

Hb: Hemoglobin

No data are available on anemia among school-age children.

Prevalence of anemia in women of childbearing age is shown in Table 23. About 48% of women aged 15-49 years were anemic, and 1% were severely anemic (NBS and ORC Macro, 2005).

Pregnant women are more likely to be anemic than women who are breastfeeding or non-pregnant and non-breastfeeding (NBS and ORC Macro, 2005). This is due to the high iron and folate requirements of pregnancy. Urban/rural differences in prevalence are small. Non educated women are more likely to be anemic than their educated counterparts (NBS and ORC Macro, 2005).

Table 23: Prevalence of anemia in women of childbearing age

Survey name/date (Reference)	Background characteristics	Age (years)	Sample size	Percentage of women with	
				Any anemia (pregnant women Hb<11.0 g/dL; non pregnant women Hb<12.0 g/dL)	Severe anemia (all women Hb<7.0 g/dL)
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	15-49	10139	48.4	1.2
	Age				
		15-19	2207	49.0	0.8
		20-24	1962	48.7	0.8
		25-29	1846	48.6	1.3
		30-34	1515	44.5	1.7
		35-39	1038	49.4	1.4
		40-44	822	50.1	1.3
		45-49	749	49.3	1.6
	Pregnancy/Breastfeeding status				
	Pregnant	15-49	1075	58.2	2.7
	Breastfeeding	15-49	3008	47.7	0.7
	Non-pregnant/ Non-breastfeeding	15-49	6057	46.9	1.2
	Residence				
	Urban	15-49	2830	46.5	1.2
	Rural	15-49	7309	49.1	1.2
	Zone				
	Western	15-49	1843	56.0	1.0
	Northern	15-49	1459	37.8	1.6
	Central	15-49	788	44.6	2.0
	Southern highlands	15-49	1432	33.7	0.7
	Lake	15-49	1843	55.5	1.3
	Eastern	15-49	1609	54.9	1.2
	Southern	15-49	860	44.9	0.3
	Zanzibar	15-49	305	62.8	1.9

Hb: Hemoglobin

In Tanzania anemia is mainly caused by the largely plant based diet, consisting mostly of cereals, legumes and vegetables. The poor bioavailability of iron from these plant foods is a major cause of iron deficiency anemia. In addition, prevalence of diseases such as malaria and AIDS as well as parasitic infestation, aggravate the phenomenon.

Currently, no national data are available on anemia among adult men. However, isolated investigations have shown that anemia is prevalent among men.

Interventions to combat IDA

Interventions to fight iron deficiency include: supplementation of pregnant women and children with iron and folic acid through the Reproductive and Child Health Clinics (RCHC) and through the health delivery system; promotion of production and consumption of iron and vitamin C rich foods through education and provision of resources for the production of foods known to contain high levels of iron; public health measures for the control of malaria, such as promotion of the use of insecticide treated bed-nets for children and pregnant women and the control of helminth infestation in children through the parasite control programme being implemented by the Ministry of Health.

Table 24 shows the proportion of pregnant women who took iron tablets/syrups during pregnancy as assessed at national level during the last TDHS survey (2004-2005). Among pregnant women, only 59% took iron tablets or syrups during pregnancy. Very little differences are shown between rural and urban women but variations by zone are marked: the Southern zone has the highest coverage of iron supplementation followed by the Central zone (NBS and ORC Macro, 2005).

Supplementation of pregnant women needs to be expanded. High prevalence of anemia among women is also probably due to insufficient and/or ineffective supplementation programmes.

Table 24: Percentage of mothers who took iron tablets/syrups during pregnancy

Survey name/date (Reference)	Background characteristics	Number of mothers with a birth in the 5 years preceding the survey	Percent who took iron tablets/syrups during pregnancy
Tanzania Demographic and Health Survey 2004-2005 (NBS and ORC Macro, 2005)	Total	5772	59.3
	Residence		
	Urban	1277	61.7
	Rural	4496	58.6
	Zone		
	Western	1143	58.3
	Northern	774	52.3
	Central	473	64.8
	Southern highlands	844	59.6
	Lake	1126	56.9
	Eastern	766	54.8
	Southern	503	80.4
	Zanzibar	144	54.1

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

International context and national economic policies with an impact on food security and nutrition

The Arusha declaration policies (e.g. “villagisation”, free social services, progressive taxation, subsidies, etc.) of the late 1960s and early 1970s were geared towards reducing economic inequalities and disparities in the society and ensure food and nutrition security for all. However, the impact of the measures was limited because of changes at national and international level in the climatic as well as in the economic context. Among others, drought, increasing oil prices and increasing interest rates of the late 1970s and early 1980s had a negative impact on agriculture and the economy.

Structural adjustment policies implemented in the 1980s, and liberalisation of the economy in early 1990s resulted in removal of subsidies and of social safety nets, and cessation of control over prices; hence market forces now determine prices. Implementation of the structural adjustment has had a negative impact on the food and nutrition security of the majority of the population in Tanzania, and more so for resource poor households. Although the structural adjustment policy was also aimed at reducing economic inequalities between rural and urban areas, the disparities continued to increase, as well as migration from rural to urban areas. Consequently, under and unemployment rates continue to increase in urban areas.

Subsequently the government allowed unemployed people to engage in petty business as street vendors, but this has had a negative impact on food safety in particular. Recently, the government has relocated the petty traders in designated areas. The rural-urban migration has also created a labour vacuum in

agricultural production, reducing agricultural productivity and hence food availability. Social safety net programmes ended in the 1990s, but currently there is some discussion of re-instating them.

National Food and nutrition policy

The Tanzanian Food and Nutrition Policy provides guidelines and methods for combating food and nutrition problems in the country. In order to achieve the aims and objectives of this policy, the following important areas have been identified and defined : Food Security, Care for Special Groups, Essential Human Services, Food and Nutrition. Various sectors, e.g. Health, Agriculture, Education, Gender and Children affairs, Economic, Institutions of Higher Learning are involved in the implementation of the Food and Nutrition Policy of Tanzania.

National Health policy

The Health policy of Tanzania aims at improving the health and well-being of all Tanzanians, with a focus on those most at risk and to encourage the health system to be more responsive to the needs of the people through Primary Health Care (PHC). PHC is the central element of health promotion aiming at coordinated action by all stakeholders concerned e.g. health and health related sectors, local authorities, industry, non-governmental and voluntary agencies, the media and the whole community.

Health care services are offered for free to children below 5 years of age, the elderly, pregnant women and PLWHA (People Living with HIV/AIDS), and those suffering from tuberculosis in all public institutions. However all other services are charged a fee (cost sharing) in public services.

Health insurance schemes are in place and can be accessed by workers but not by non-workers or farmers. In addition, the Primary Health Care Programme emphasizes health education, promotion of improved water supply and basic sanitation, elements that are key to the prevention of most communicable diseases. Other programmes include the Essential Drugs Programme, Control of Infectious diseases, Hygiene Education and Sanitation and School Health and Nutrition.

National Food security policy

Food security for all in the 1970s was synonymous with food sufficiency, and therefore all programmes that were implemented were geared towards food sufficiency. Examples of these programmes include the National Strategic Food Reserve, the Early Warning System, the National Maize and National Food Strategy adopted in 1984, and Comprehensive Food Security (1991). The impact of the programmes was reflected in an increased food production. The National Food Security Division (NFSD) in the Ministry of Agriculture, Food and Cooperatives is now coordinating food security activities. The division has formulated a National Food Security Policy, which provides guidance on how to deal with food security issues at all levels by all relevant sectors. The policy is in the final stages of approval. Currently, the division is in the process of formulating the National Food Security Strategy. The strategy identifies various interventions and the main actors for addressing food insecurity in the country.

National Nutrition Programmes

There have been various efforts to control malnutrition in Tanzania. Nutrition programmes have been categorized into two major groups:

1. Programmes to control malnutrition in children
2. Programmes to control micronutrient deficiencies

Name	Programme focus	Activities	Coverage
1) Programmes to control malnutrition in children			
Infant and young child nutrition: The programme started in 1990s aims at preventing infants and young child malnutrition through improved child feeding practices	Breastfeeding practices	Code of Marketing of Breast Milk Substitutes adopted and enacted in 1994. Maternity leave for working mothers extended to 12 weeks (working days)	128 hospitals trained through BFHI on breast-feeding practises, 68 hospitals confirmed.
	Complementary feeding	Establishment of a multi-sector National consultative group on infant and young child nutrition. Training of community workers on infant feeding and development of the national implementation plan and strategy	National, focusing on health facilities and communities
Joint Nutrition Support Programme (JNSP, 1980) to Early Childhood Care and Survival, Growth and Development (ECC-SGD) (2002)	JNSP was an Integrated community based nutrition programme to reduce malnutrition, morbidity and mortality	Information generation and sharing among key players for decision-making, rehabilitation of severely malnourished children, and awareness creation and community mobilisation.	Iringa region in the Southern Highlands of Tanzania
	ECC-SGD	Child survival and development programme in 1987 was a scale up of the JNSP. Also included, establishment of village health committees and village health days, community participation and resource mobilisation at district level.	13 regions and 57 districts

Name	Programme focus	Activities	Coverage
2) Programmes to control micronutrient malnutrition			
Iron deficiency anemia	Started in 1974. Currently it is implemented through a National Anemia Consultative Group. Focus is on major causes of anemia i.e. deficiencies of iron and folic acid in the diet and anemia-causing diseases (malaria and helminths). The malaria and parasite control programmes in the Ministry of Health.	Iron and folic acid supplementation to pregnant women in RCHC since 1974, promotion of production and consumption of iron and vitamin rich foods, public health measures for the control of malaria and helminths and development of IEC (Information, Education and *C*ommunication) materials on anemia, capacity building on rapid methods for assessing hemoglobin concentration, promotion and distribution of insecticide treated nets (ITN).	All RCHC in the country provided with haemoglobin meters Distribution of iron, folic acid tablets and anti-helminths to all dispensaries and health centres but coverage is not 100% as this excludes hospitals and private/faith based facilities. Coverage for ITN may be high but actual use of the bednets is still very low (10%)
Vitamin A deficiency	Started in 1981 in drought stricken regions of the country	Vitamin A supplementation to children below 5 years of age is done routinely as it is integrated in the government health delivery system and through campaigns twice a year in June and December and to lactating mothers; promotion of production and consumption of vitamin A rich foods and improving child feeding practices in general and prevention of diseases and infections.	National coverage (Mulokozi et al., 2006)
Iodine deficiency disorders	Started in 1986. A multi-sectoral council "National council for control of iodine deficiency disorders" (NCCIDD) guides implementation of the programme activities.	Distribution of iodine capsules in areas with high prevalence of IDD and salt iodization	National coverage approximately 43% of households have adequately iodized salt (NBS and ORC Macro, 2005)

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