



WORKING PAPER

The Policy Environment for Linking Agriculture and Nutrition in Tanzania

AgriDiet Working Paper 1

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July 2014



The Policy Environment for Linking Agriculture and Nutrition in Tanzania

Table of Contents

Part I – The Current Socio-Economic, Agriculture and Nutrition Situation in Tanzania	1
1. Current Socio-Economic Situation	1
1.1 Introduction	1
1.2 Background	1
1.3 Location and geographical area	1
1.4 Economy.....	1
1.5 Population characteristics.....	3
1.6 Poverty levels	5
1.7 Human development indicators	6
1.8 Natural resource base	9
1.9 Summary	10
2 Situation and Trends in Agriculture	10
2.1 Staple Crop Production	10
2.2 Vegetable and fruit production.....	12
2.3 Cash crop production	13
2.4 Livestock production and consumption.....	14
2.5 Fisheries production and consumption	16
2.6 Land use	16
2.7 Food Security Situation in Tanzania	17
2.8 Summary	20
3 Nutrition Situation	21
3.1 Current Status and Recent Trends	21
3.2 Gender and nutrition	24
3.3 Summary	25
Part II - Review of National Policies and Programmes.....	26

4	Key National Policies	26
4.1	National Goals and Targets for Agriculture.....	26
4.2	National Goals and Targets for Nutrition	27
4.3	National Nutrition Strategy (2011 – 2015/16)	28
4.4	Tanzania Five Year Development Programme (FYDP) (2012 – 2017)	29
4.5	Comprehensive African Agriculture Development Programme	29
4.6	Tanzania Agriculture Food Security Investment Plan (TAFSIP)	30
4.7	Summary	30
5	Institutional Arrangements and Key Actors Addressing Nutrition.....	31
5.1	Prime Minister’s Office	31
5.2	National Multi-Sectoral Nutrition Technical Working Group	32
5.3	Ministries and Stakeholders.....	32
5.4	Summary	39
6	Overview of Key Sectoral Policies and the Extent of Nutrition Focus.....	39
6.1	Policy Analysis for Nutrition: Methodology	39
6.2	Identified Gaps in Policy Documents	40
6.3	Contribution of sectoral policies to facilitating linkage between nutrition and agriculture	41
6.4	Agricultural planning “with a nutrition lens”	43
6.5	Summary	44
7	Conclusions	44
	Appendix 1: Semi-structured interview guide	46
	Appendix 2: List of policies, strategies and programmes reviewed	49
	Appendix 3: Sector specific issues for improving nutrition	52
	Appendix 4: Eight priorities for improving the nutrition situation of Tanzanians contained in The National Nutrition strategy	54
	Appendix 5: Strategies for achieving the goal of the national nutrition strategy	54
	Appendix 6: Graduates from Sokoine University since 2006.....	55
	Bibliography	56

Table 1: Population of Tanzania based on National Census 2012	4
Table 2: Household expenditure on durable items by quintile in Tanzania (2001-2007)	9
Table 3: Agricultural Production (million tonnes).....	11
Table 4: Vegetable and Fruit Production Trend (tonnes)	12
Table 5: Per capita meat consumption: comparison between sources in East African countries.....	15
Table 6: Nutrition targets for NNS and NSRPG (2010-2015)	28
Figure 1: Real GDP growth rate in Tanzania (annual %)	2
Figure 2. Relationship between GDP and nutritional status (prevalence of stunting), developed and developing countries.....	3
Figure 3: Gross national income and nutritional status (prevalence of stunting), Tanzania.....	4
Figure 4: Population structure based on 2012 census.....	5
Figure 5: Basic and food needs poverty line in Tanzania	6
Figure 6: Human Development Index Trends	7
Figure 7: HDI Components for Tanzania - 2012	7
Figure 8: Infant and under-five mortality rate in Tanzania 1996-2010	8
Figure 9: Trends of food crop production 2005-2012	11
Figure 10: Production and requirement levels of various crops 2010/11 and 2012/13	12
Figure 11: Trends of cash crop production	13
Figure 12: Contribution of animal products to energy, protein and fats intake.....	15
Figure 13: Food self-sufficiency ratio trend	18
Figure 14: Prevalence of stunting and food self-sufficiency (maize) by regions	19
Figure 15: Map showing food deficit regions in 2011/12	20
Figure 16: Prevalence of low birth weight in Tanzania 1992-2010	22
Figure 17: Prevalence of low birth weight in Tanzania 2000-2014	22
Figure 18: Trends in nutritional status of children	24

Abstract

Tanzania is heavily dependent on agriculture and faces ongoing challenges in meeting nutritional targets. Poverty and under-nutrition are concentrated in rural areas; amongst households engaged in small-scale agriculture, stunting levels remain high, at 42%, whilst moderate wasting is at 4% and underweight is at 16%. Under-five and infant mortality rates have declined significantly but are still high, at 108/1,000 and 68/1,000 live births, respectively. Malnutrition, including micronutrient deficiencies, is constraining labour productivity in both the smallholder and large scale sub-sectors. In addition, increased population is pressing hard on the environment and diminishing resources. Strategic initiatives to harness the potential of agriculture to meet nutritional targets have been endorsed as key national priorities in the past five years, with support from a range of external agencies and donors, and have direct implications for agricultural policy and programmes, agricultural research, market reforms and the delivery of nutritional and wider public health programmes. This review provides an overview of the Tanzanian economy, poverty levels, agricultural production levels and nutrition situation, as well as a critical review of the policy environment for linking agriculture and nutrition. Economic growth and poverty reduction as well as increased food security are brought about by; (i) increased investment in the agriculture sector by both the government/public and private sector; (ii) increased use of inputs (improved seeds and fertilisers), to improve land and labour productivity and per capita food production; and (iii) better infrastructure and markets. The key recommendation is to prioritise the nutrition agenda in all policy document reviews since nutrition is paramount and a cross-cutting issue that will help steer Tanzania towards healthier and more productive citizens.

Part I – The Current Socio-Economic, Agriculture and Nutrition Situation in Tanzania

1. Current Socio-Economic Situation

1.1 Introduction

Tanzania relies on agriculture as a source of sustenance for its population. The country is implementing the second phase of the strategic plan on National Strategy for Growth and Reduction of Poverty (2011-2015) that emphasises, among other things, implementation of agricultural and other policies that address poverty and the lack of adequate nutrients among poor members of households, in particular women and children. The goals of the strategy include ensuring food and nutrition security, reducing income poverty and climate change adaptation and mitigation. This paper examines how agriculture and nutrition goals could be closely aligned, and analyses the policy environment for linking agriculture and nutrition to ensure an adequate supply of nutrients for all citizens. The paper is divided into two major sections; firstly, it describes the current socio-economic situation, agriculture production and nutrition situation in Tanzania; secondly, it analyses the policy environment, initiatives and programmes in agriculture and nutrition and describes the role of various sectors in linking agriculture and nutrition.

1.2 Background

Tanzania is a United Republic consisting of the former Tanganyika and the islands of Zanzibar and Pemba. Tanganyika became independent in 1961 and Zanzibar in 1963; the two countries subsequently united to form Tanzania in 1964.

1.3 Location and geographical area

Tanzania is located in the Eastern African region between longitudes 29° and 41° east and latitude 1° and 12° south of the equator. It shares borders with Kenya and Uganda to the North, Rwanda, Burundi, and the Democratic Republic of Congo to the West, and Zambia, Malawi, and Mozambique to the South and the Indian Ocean to the East.



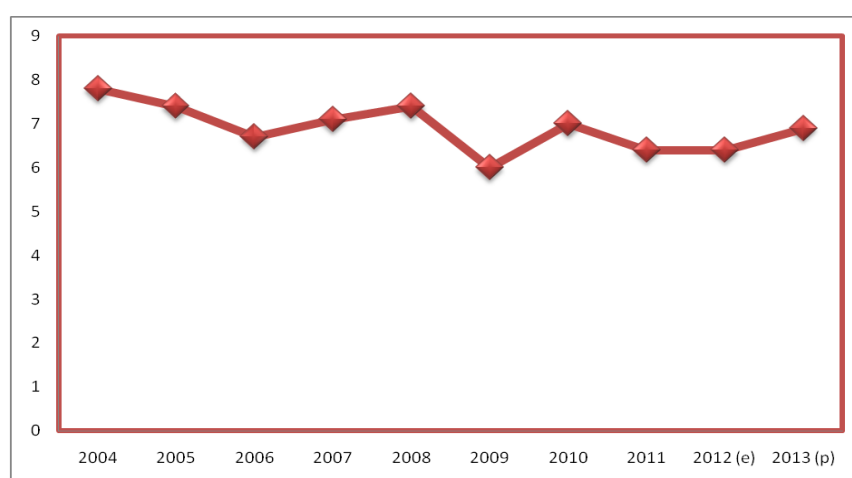
Tanzania has a total area of 945,087 km². The climate ranges from tropical along the coast and central parts to temperate in the highlands. Most of Tanzania lies above 200 metres above mean sea level. Mount Kilimanjaro rises to more than 5,000 metres above sea level, the highest point in Africa.

1.4 Economy

Tanzania has a mixed economy, but depends heavily on agriculture, which plays a dominant role. The country's Gross Domestic Product (GDP) has been increasing since the early 1990s. It was growing by

about 3% in the early 1990s, but is currently expanding by 6 to 8% per annum (Figure 1). Agriculture contributes 25% to the GDP, is practiced by 75% of the workforce and provides 85% of the export earnings. Other sectors contributing to the economy of Tanzania include transport and communication (16.5%), wholesale, hotels and restaurants (16%), manufacturing (11.5%), real estate (10.1%) and construction (4.4%). The main drivers of GDP growth are agriculture, transport and communication and wholesale, hotels and restaurants (Bank of Tanzania, 2013). In 2011, Tanzania recorded a strong export performance of 8.7 billion USD, largely from the sale of gold and other minerals, which contributed 5.7% to GDP (World Bank, 2011). The agricultural sector grew by 3.1% in 2012, is estimated to have grown by 5.1% in 2013 and projected to grow by 5.4% in 2014. In aggregate terms, the contribution of various sectors to GDP in 2012 was as follows: agriculture contributed 27.2%, industry 25.3% and services 47.5%, an increase of 0.6% and 2.7% for agriculture and industry, respectively, but a decline of 3.3% for services from 2010.

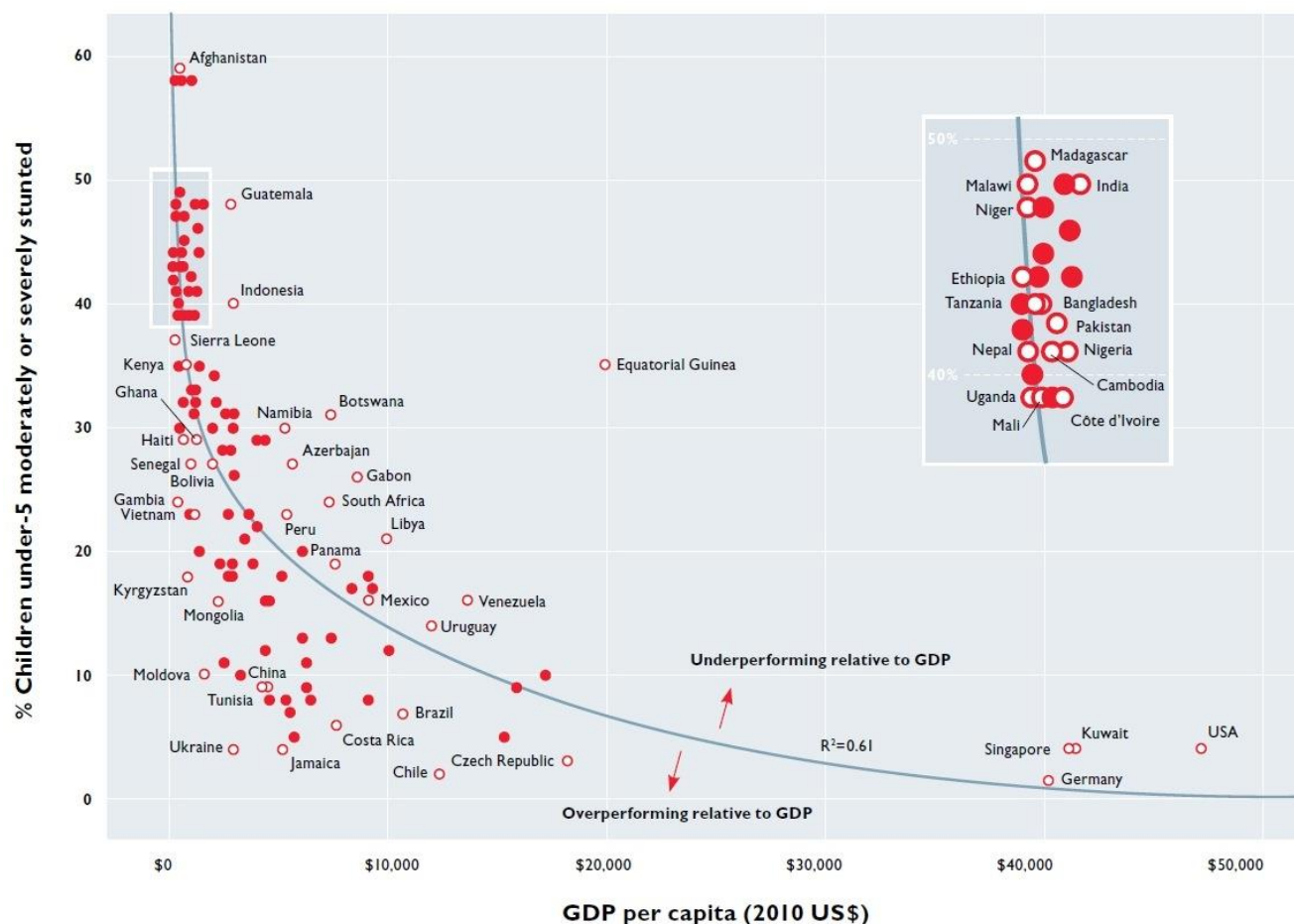
Figure 1: Real GDP growth rate in Tanzania (annual %)



Source: *African Economic Outlook, 2013*

A country's economic status, as reflected in its Gross Domestic Product (GDP) or Gross National Income (GNI), has a significant influence on the nutritional status of the population as shown in Figure 2. Countries that have a low GDP per capita also have a high prevalence of stunting. In recent years Tanzania has been showing tremendous growth in terms of national income per capita, but insignificant growth has been recorded in reducing stunting rates (Figure 3). So although there is a relationship between higher national income and stunting, that link is not yet obvious for Tanzania, as the stunting rate has remained high despite economic growth in recent years. This clearly shows that national economic growth indicators are probably not translated into nutrition benefits within a short period of time at least in low income countries. This could also be related to the nature of the nutritional status indicator being considered as stunting rates usually take a long time to be reduced significantly. If it were for other indicators such as wasting and underweight the relationship may be more easily observed within a shorter period of time. In a recent Lancet article, Vollmer et al analysed 121 Demographic and Health surveys finding little association between economic growth and reduced early childhood undernutrition, emphasising the need to focus on direct investments in health and nutrition (Vollmer et al, 2014).

Figure 2. Relationship between GDP and nutritional status (prevalence of stunting), developed and developing countries

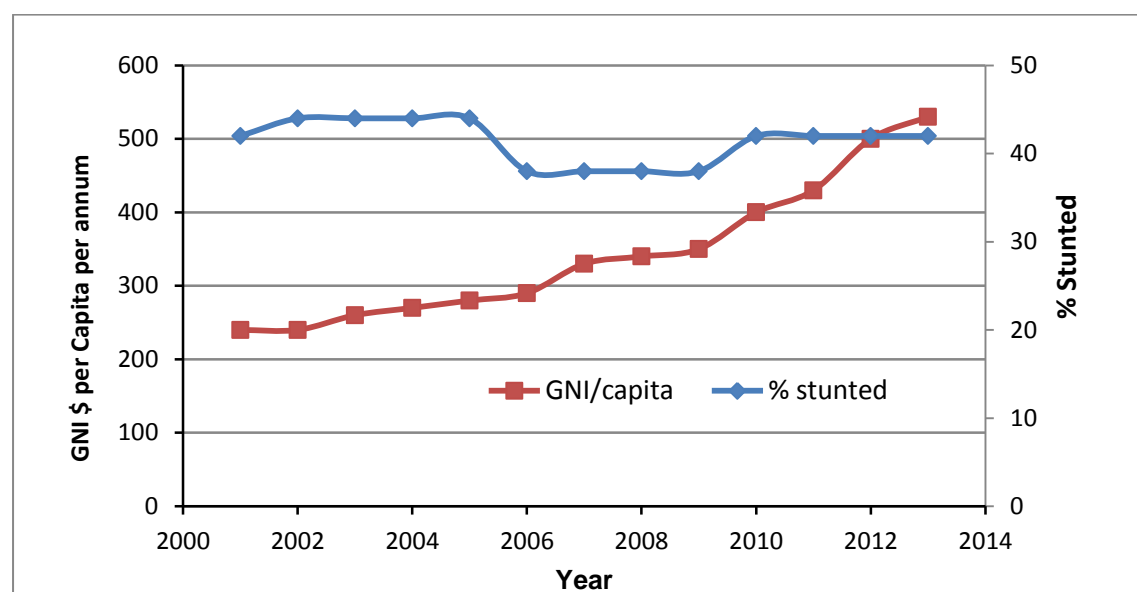


Source: Save the Children, 2012

1.5 Population characteristics

The total population of Tanzania is 44.9 million (2012 Census) comprising 21.9 million (48.7%) males and 23.1 million (51.3%) females (Table 1). The inter-census growth rate (2002 – 2012) is 2.7% per annum for mainland Tanzania and 2.8% for Zanzibar. The total fertility rate is 5.1 children per woman (2012 estimates). The population structure of Tanzania shows that the proportion of children below 15 years is 45% and of adults above 65 years is 2.9%, indicative of a high dependency ratio (91.8%): this means that the economic burden on persons in the productive age groups is also high. The current population distribution also suggests that there is a high rate of migration from rural to urban areas and the urbanisation rate is 8% per annum. This does not mean that small villages are turning into urban settings, but rather people are leaving the rural areas to go and settle in urban areas where it is assumed that there are more prospects for employment and a better life. The rural-urban migration is caused by a differential rate of growth and development in the two settings. The high migration of young people from rural to urban areas not only creates a different dimension in terms of reduced labour productivity and agricultural production in rural areas, but also affects the provision of adequate services in urban areas.

Figure 3: Gross national income and nutritional status (prevalence of stunting), Tanzania



Source: UNICEF State of the World's Children, 2013

Table 1: Population of Tanzania based on National Census 2012

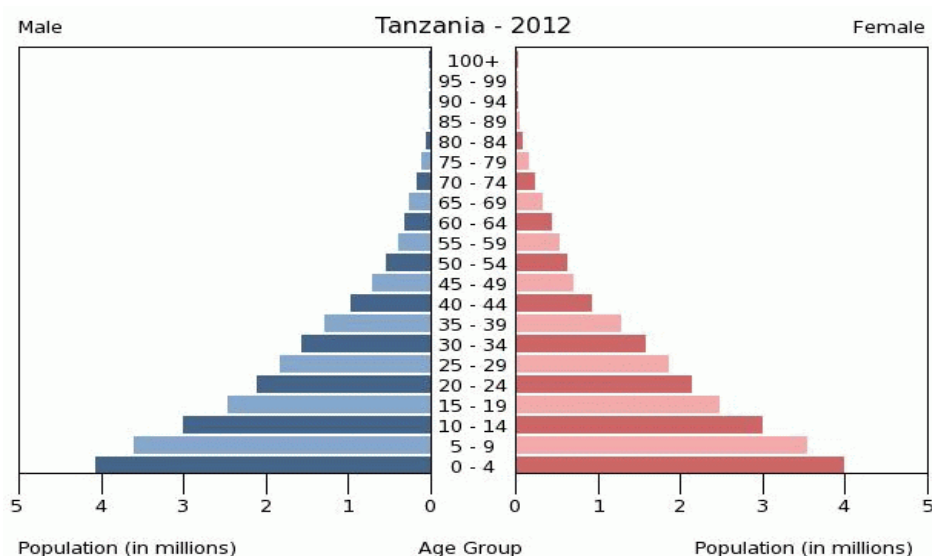
	Number	%	Urban	Rural
Total Population, Tanzania	44,928,923	100	13,305,004	31,623,919
Male Population	21,869,990	48.7	6,407,396	15,462,594
Female Population	23,058,933	51.3	6,897,608	16,161,325
Total Population, Mainland	43,625,354	100		
Male Population	21,239,313	48.7		
Female Population	22,386,041	51.3		
Total Population, Zanzibar	1,303,569	100		
Male Population	630,677	48.4		
Female Population	672,892	51.6		
Average Annual Inter-census Growth Rate, Tanzania (2002 and 2012)	2.7			

Average Annual Inter-census Growth Rate, Mainland	2.7			
Average Annual Inter-census Growth Rate, Zanzibar	2.8			

Source: Tanzania National Bureau of Statistics, 2012

The age structure of a population has significant socio-economic implications. A country with a high proportion of young people (age under 15 years) needs to invest more in schools, while a country with an older population (high proportion of people of age 65 years and above) needs to invest more in the health sector. Therefore, depending on the economic situation of a country, this may have an influence in attaining significant development because of the high dependency ratio in Tanzania (Figure 4). Also, the Tanzanian population consists of more than 120 ethnic groups. Each ethnic group has its own traditions, culture and beliefs, some of which may influence feeding patterns positively and others negatively. Therefore ethnic differentials exist in terms of feeding practices and even the nutrition situation.

Figure 4: Population structure based on 2012 census



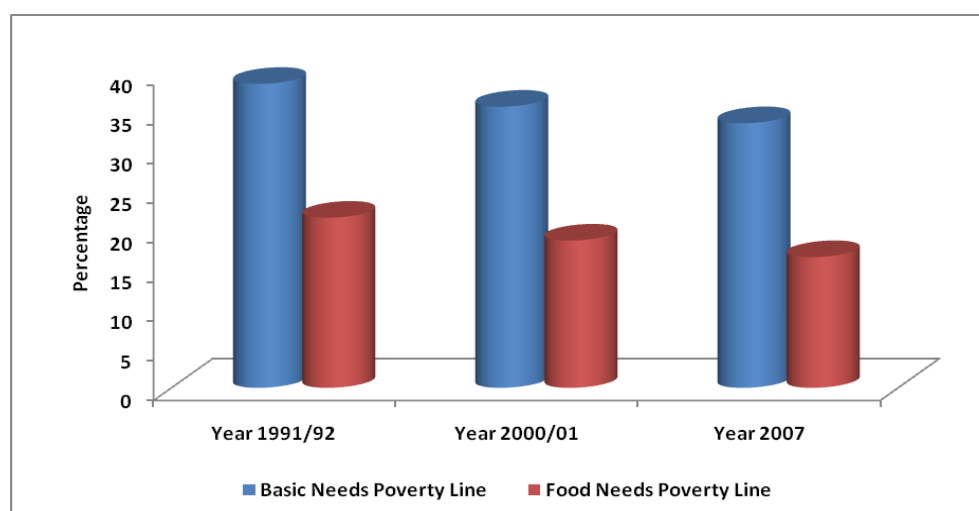
Source: Tanzania National Bureau of Statistics, 2012

1.6 Poverty levels

Poverty is still a big challenge, especially in rural areas. About 34% of the population lives below the basic needs poverty line (approximately USD 0.40 per day) and 17% below the food poverty level (National Bureau of Statistics (NBS), 2007). About 45% of the population comprises children, 6 million of whom are living below the basic needs poverty line and 3 million below the food poverty line. Data from the Household Budget Surveys of 1991-92 and 2000-2001 indicated that, over a decade, basic needs poverty decreased from 39% to 36%; between 2000/01 and 2007 it decreased from 36% to 34% and decreased further to 28% in 2012. Extreme food poverty decreased from 22% in 1991/92 to 19% in 2000/01, to 17% in 2007 and to 9.7% in 2012 indicating an average decrease rate of 0.62% per year (Figure 5). This was a very slow trend towards poverty reduction especially during the period between 1991/92 and 2007 when the country was implementing various economic adjustment programmes and there were a limited number

of organisations to support government efforts in ensuring social security programmes. While programmes to support poverty reduction through economic growth, such as the National Strategy for Growth and Reduction of Poverty (NSGRP), are undertaken by the government, social programmes for the poor are limited or non-existent. Religious or non-governmental organisations are the main actors who are involved in social programmes supporting poor people and most of these have increased their activities in the mid-2000s.

Figure 5: Basic and food needs poverty line in Tanzania



Source: Household Budget Survey, 2007

1.7 Human development indicators

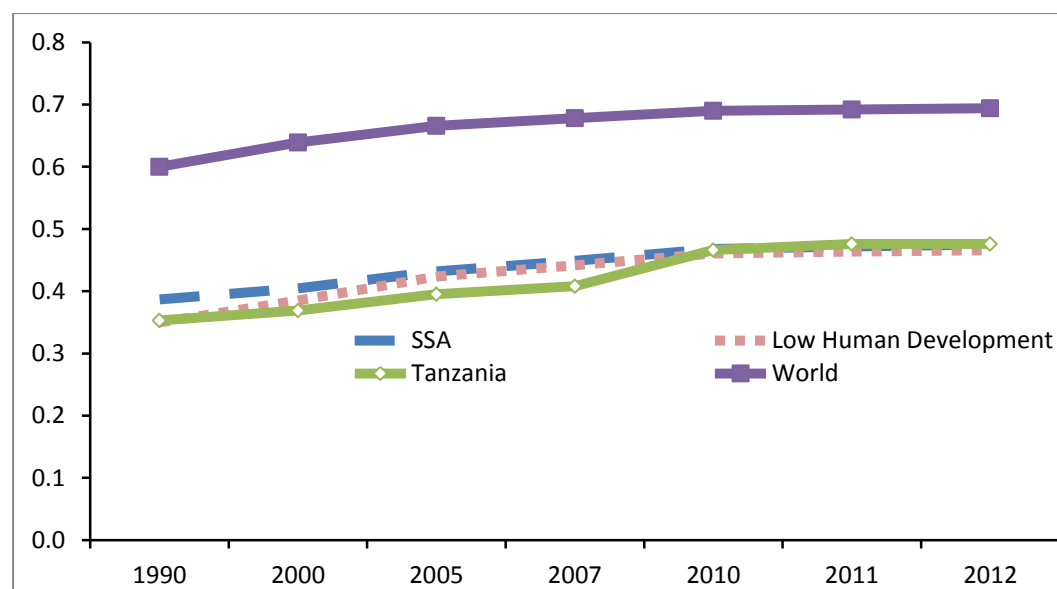
Human Development Index

The United Nations uses the Human Development Index (HDI) to measure and rank levels of social and economic development of countries based on four criteria: life expectancy at birth, mean years of schooling, expected years of schooling and gross national income per capita. The HDI makes it possible to track changes in development levels over time and to compare development levels in different countries (UNDP, 1990). In 2012, the HDI for Tanzania was 0.476, ranked 152 out of 187 countries, up from 0.350 in 1990, an increase of 35% or an average annual increase of about 1.4% (Figure 6). Life expectancy at birth was 58 years (2011); when disaggregated, HDI was 0.614 for health, 0.454 for education and 0.388 for income (Figure 7). In the same year Niger had the lowest HDI (0.304) and Norway had the highest HDI (0.955) among 144 countries. The life expectancy of 58 years means that a Tanzanian citizen will be able to provide 40 years of productive life compared to many more years for citizens of Norway and other developed countries.

Health

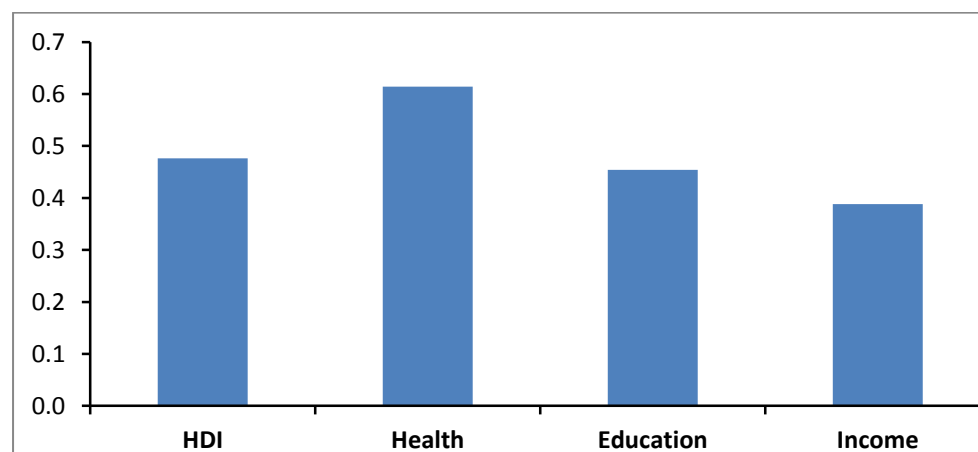
Life expectancy at birth is a proxy for the capability to live a long and healthy life (UNDP, 1990). Child health is a very important parameter for growth and development. Health and dietary practices necessary for the prevention of childhood diseases include vaccination and breastfeeding. Other essential elements for prevention of diseases include maintaining adequate hygiene, sanitary practices, provision of adequate care and psycho-social support. In addition, it is crucial to ensure that children receive prompt and appropriate treatment when they become ill so as to improve their health.

Figure 6: Human Development Index Trends



Source: UNDP, 2012

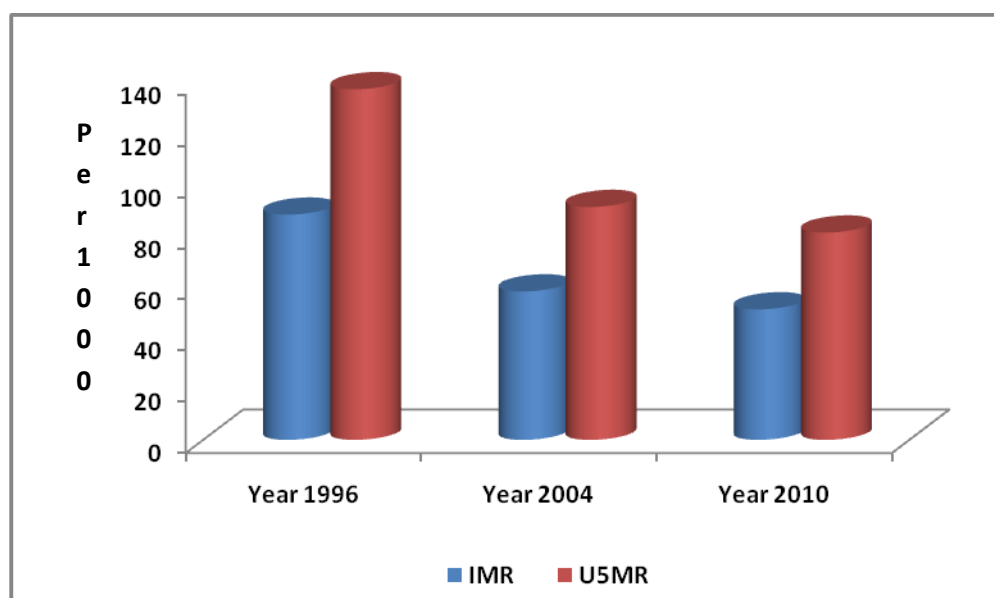
Figure 7: HDI Components for Tanzania - 2012



Source: UNDP, 2012

Diseases such as malaria, diarrhoea and pneumonia are very common among children below five years of age and are the leading causes of death in Tanzania. The demographic and health survey carried out in 2010 indicated that the under-five mortality rate (U5MR) declined from 137 per 1000 in 1996 to 81 per 1000 in 2010 (TDHS, 2010). The infant mortality rate also showed a significant decline from 88 per 1000 in 1996 to 51 per 1000 in 2010, a drop of 42% over a period of 14 years (Figure 8), but an extremely slow progress of 3% per year. The underlying cause of diseases and death in children is undernutrition. Undernutrition weakens the body's immune system and predisposes the body to infections.

Figure 8: Infant and under-five mortality rate in Tanzania 1996-2010



Source: Tanzania Demographic and Health Survey, 1996, 2004 & 2010

Education

The adult literacy rate was estimated to be 73% (2005-2010) (UN Statistics Division 2012), a drop from the 90% rate that was recorded in the late 1980s and 1990s, which was supported by adult learning programmes instituted by the government. These programmes are no longer being implemented with the same vigour and rigour (personal observation). Education is compulsory for the first seven years. The enrolment at primary level is the same for both girls and boys. However, at secondary level the proportion of girls is significantly lower than that of boys and decreases further at higher level. This is attributed to drop-outs (pregnancy, family workload, marriages) and poor academic performance of girls due to workload. The level of education has been shown to have significant influence on a number of aspects related to child nutrition. For example, the proportion of breastfeeding children age 6-23 months who are given a variety of foods at least three times daily increases with the mother's education, as does the likelihood that a child is breastfed in the first hour after birth (NBS 2011). The mother's level of education generally has an inverse relationship with stunting levels. For example, children of mothers with at least some secondary education have the lowest stunting levels (22%), while children whose mothers have no education or only an incomplete primary education have the highest levels of stunting (40 to 49%) (ibid). However, the father's level of education has rarely been analysed or assessed and it would be useful to determine the influence of the father's education on the nutritional status of children.

Household consumption

The level of household consumption indicates the ability of households to access both food and non-food items from the market. In a period of six years (2001 – 2007) the level of household consumption has increased slightly (5%). In 2001, 98% of Tanzanians had a consumption level of 58,000/= TZS per month. However, in the same year the consumption level of about 80% of the poor population was less than 38,600/= TZS per month (about 1280/= TZS per day; i.e. about 1.4 US dollar (1USD = 884 TZS). Food expenditure declined from 62% of the total expenditure in 2001 to 59% in 2007; the downward trend was observed in all income and residence strata.

Analysis of items consumed shows a trend of acquisition of durable items such as cars, television sets and mobile phones (Table 2). In 2012, 55% of the households owned a radio, 16% a television and 57% a mobile phone (NBS 2013). Ownership of assets did not change significantly during the period 2001 – 2007. It should be noted that household consumption is determined by the level of household income. Important sources of household income include paid salary/wages (4%), agriculture (75%) and self-employment (21%). Increasingly, households are diversifying sources of income to be able to improve their household wellbeing. Despite high diversification, levels of income in rural areas are still low compared to those in urban areas. This could also be an incentive that draws the youth to migrate to urban areas. However, it is not very clear if the generated income is actually used to improve household diets and therefore the nutritional situation at household as well as at national level.

Table 2: Household expenditure on durable items by quintile in Tanzania (2001-2007)

Wealth quintile	Radio		Phone		TV		Cars		Bicycle	
	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007
Poorest	35.7	47.9	0.1	6.5	0.2	0.7	0.2	0.0	29.8	34.6
2nd	43.1	60.8	0.1	11.3	0.3	1.5	0.2	0.3	37.0	43.2
3rd	53.4	68.9	0.4	28.8	1.4	4.9	0.5	0.2	41.0	42.5
4th	57.3	72.4	0.8	34.5	2.0	9.7	1.6	0.8	34.1	44.7
Richest	70.7	79.8	4.7	50.5	8.9	24.4	3.8	4.2	39	37

Source: National Bureau of Statistics, 2013; 2011/12 Household Budget Survey - Key Findings

1.8 Natural resource base

The country is endowed with significant natural resources, which include forests and woodlands, wild animals, rivers, lakes, wetlands, and land, of which 12.3% is arable and 1.8% has permanent crops. Tanzania is also very rich in minerals such as gold, diamonds, iron, coal, nickel, tanzanite, uranium and natural gas. Recently offshore gas deposits have been discovered. Utilisation of the natural resources has remained the prerogative of the government. Reserved parks and game sanctuaries account for about 26% of the land area of Tanzania, and the use of the wildlife resources by the community has always been restricted. This land is not accessible to local communities for production or gathering of forestry food resources. Natural resources generate a significant income for the country. For example, the wildlife resources in Tanzania provide on average an annual income of US\$ 30 million to the government, and an additional income of US\$9 million as revenue from the leasing companies.

1.9 Summary

In recent years Tanzania has achieved significant results in terms of economic growth, with growth rates of 6-8% per annum. Agriculture contributes about 25% of GDP (and 75% of the workforce is still engaged in agriculture) and agricultural growth in 2013 was about 5%. Income poverty levels have declined, from 34% in 2007 to 28% in 2012, and extreme food poverty fell from 17% to 9.7% in the same period. Tanzania's score on the human development index is also gradually improving, from 0.35 in 1990 to 0.476 in 2012. Child and infant mortality rates have also declined. However, adult literacy rates are now lower (73% in 2005-10) than the 90% levels achieved in the 1980s and 1990s.

Despite these mostly positive trends, stunting rates have stayed stubbornly high, indicating little relationship between economic growth rates and trends in early childhood under-nutrition. This finding is in line with recent cross-country analysis by Vollmer et al (2014).

2 Situation and Trends in Agriculture

2.1 Staple Crop Production

Agriculture remains the most important sector in Tanzania's economy. Smallholder farmers (average size 0.9 to 3 ha) dominate the sector, carrying out mainly rain-fed agriculture, producing food crops such as maize, sorghum, millet, cassava, sweet potatoes, pulses, paddy rice, wheat and fruit and vegetables mainly on a subsistence basis. Large scale farms mainly produce cash crops such as cotton, coffee, tobacco, tea, pyrethrum, sugarcane and cashew nuts on a commercial basis. Agriculture is contributing about 25% of GDP and providing employment to about 75% of the population. Women constitute the main part of the agricultural labour force. However, they face a number of challenges including heavy workload, unequal ownership of wealth and low status in decision making processes at all levels. The agricultural sector has been growing at an average annual rate of about 4% in recent years, but the contribution of agriculture to national income has fluctuated depending on the level of production and crop prices, and the growth of other sectors of the economy.

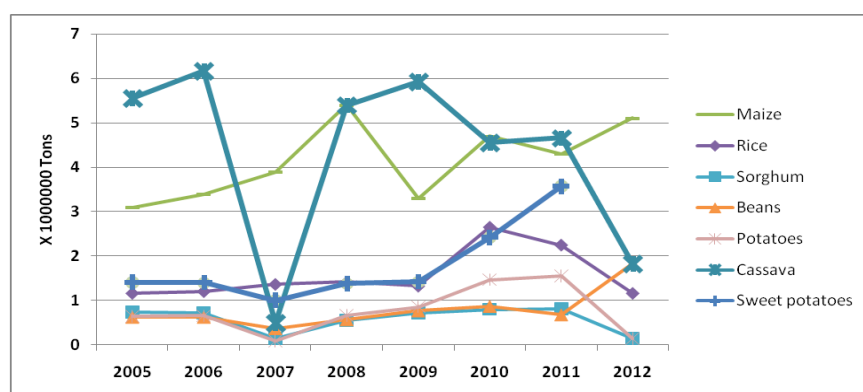
Although by many standards Tanzania can be argued to be self-sufficient in food, and manages to export maize and rice (milled and paddy) to neighbouring countries, there are seasonal and regional variations in the level of food production (Figure 9). For the 2011/12 food production season and 2012/13 food requirements, Tanzania was able to attain food sufficiency for maize, pulses, bananas and potatoes, but not for wheat, sorghum, millets and cassava (Figure 10). Overall, Tanzania had a deficit of cereals to the tune of 0.92 million tonnes and a surplus of non-cereal crops of 1.4 million tonnes.

During the same season there were about forty-five districts that had a local food deficit. Basically, these districts suffered food deficiency because of the low rainfall availability, which reduced food production coupled with the inability of the country to transport the available food from surplus areas to low production areas due to poor infrastructure; even when the food was able to reach the deficit areas, the high food prices restricted access due to lack of adequate income. Food self-sufficiency has been fluctuating between surplus in good seasons and deficit in poor rainfall seasons. Some regions and districts have had food surpluses of varying magnitude on an annual basis, but there have been some pockets of persistent food shortage. For example, for three consecutive seasons 2009/10, 2010/11 and 2011/12, a food surplus

was recorded in the regions of Iringa, Kagera, Kigoma, Mbeya, Mtwara, Rukwa and Ruvuma. Food deficits during the same period were recorded in the regions of Arusha, Coast, Dar es Salaam, Dodoma, Kilimanjaro, Manyara, Mara, Mwanza, Shinyanga, Singida and Tanga.

Regions that have a food surplus have a good agro-ecological predisposition and receive good rains in every season compared to regions that have a food deficit. The food surplus regions have been selected for the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) project. SAGCOT's objective is to foster inclusive, commercially successful agribusinesses that will benefit the region's small-scale farmers, and in so doing, improve food security, reduce rural poverty and ensure environmental sustainability. In addition, Northern, Western and Southern highlands have highly intensive agriculture and land use practices, volcanic soils with high fertility, a good rainfall pattern and farming activities throughout the year. Hence, these areas display low food insecurity and highly diversified agricultural practices. This is very different from the semi-arid areas, which show declining soil fertility, have poor rainfall patterns and depend on one rainy season of short duration followed by a long dry season.

Figure 9: Trends of food crop production 2005-2012



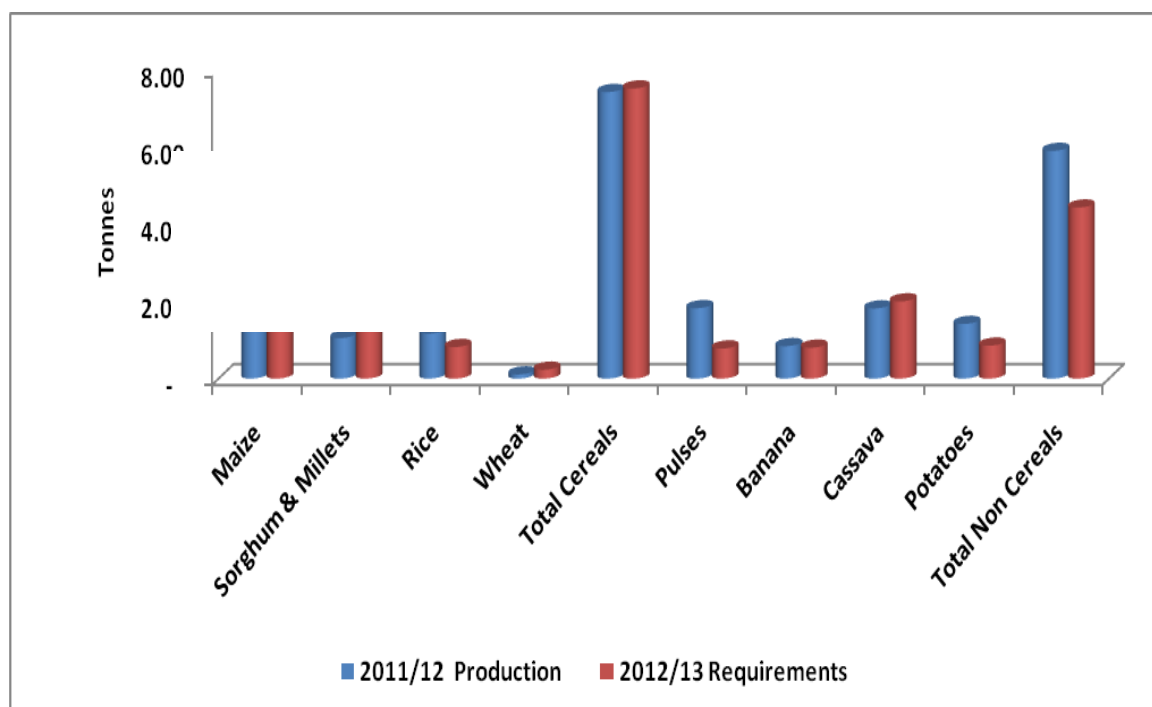
Source: FAOSTAT, 2012

Table 3: Agricultural Production (million tonnes)

Commodity	2005	2006	2007	2008	2009	2010	2011	2012
Maize	3.1	3.4	3.9	5.4	3.3	4.7	4.3	5.1
Rice	1.17	1.21	1.37	1.42	1.33	2.65	2.25	1.17
Sorghum	0.73	0.71	0.15	0.55	0.71	0.80	0.81	0.15
Legumes	0.63	0.63	0.37	0.57	0.77	0.87	0.68	1.83
Cassava	5.54	6.16	0.49	5.39	5.92	4.55	4.65	1.82
Potatoes	0.65	0.66	0.09	0.67	0.86	1.47	1.56	0.15
Sweet potatoes	1.41	1.40	1.00	1.38	1.42	2.42	3.57	NA
Banana	2.01	3.51	0.87	2.45	3.01	3.16	3.14	NA
Total production	15.24	17.68	8.24	17.83	17.32	20.62	20.96	10.22

Source: FAOSTAT, 2012

Figure 10: Production and requirement levels of various crops 2010/11 and 2012/13



Source: FAOSTAT, 2011

2.2 Vegetable and fruit production

Information about fruit and vegetable production is limited. It is only recently that production statistics of fruits and vegetables have been compiled and documented. The data in Table 4 indicate that fruit and vegetable production has recently been increasing due to more land under production and greater availability of planting materials. Total production (including home consumption) of fruits is estimated to have reached 4.1 million tonnes and that of vegetables 0.94 million tonnes. Only 6% of the production is processed, and 80% is consumed raw, with an estimated 14% lost or damaged due to inadequate agro-processing capacity and an inefficient market infrastructure to transport fruits and vegetables from centres of production to consumption areas. If this is translated into nutrients, it means a great amount of nutrients are lost, which could have been used to improve the micronutrient status of the population.

Table 4: Vegetable and Fruit Production Trend (tonnes)

Commodity	2009/10	2010/11	2011/12	2012/13
Fruits	3,297,810	3,751,170	3,938,730	4,096,280

Vegetables	766,570	858,740	901,080	937,750
Flowers	8,610	9,100	9,850	10,200
Spices	-	7,150	7,370	8,125

Source Ministry Agriculture Food and Cooperatives, 2013

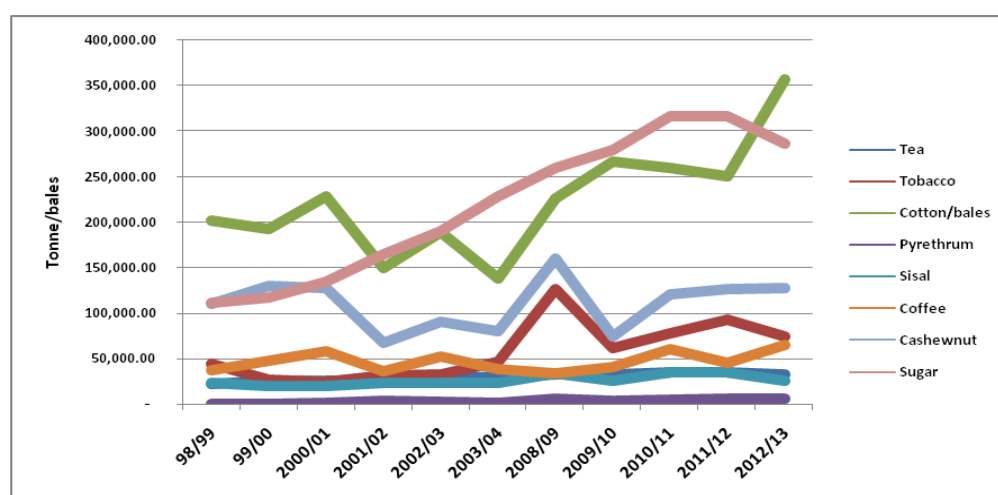
It is likely that the data presented here do not reflect actual production, because fruits and vegetables are also produced at a micro level and this level of production is not easy to capture. For example, households may have a few fruit trees or tiny plots of vegetables for homeconsumption and such information may never find its way into national statistics, which tend to mainly reflect marketed produce rather than overall production.

2.3 Cash crop production

The main cash crops that are produced in Tanzania include tea, pyrethrum, coffee, sugarcane, tobacco, cotton, cashew nuts and sisal. The level of production of these crops is partly determined by commodity prices on the world market (figure 11).

There has been a general increase in the production of cash crops in the country from 1999 to 2013. Cotton production rose due to the increased price of cotton on the world market. Coffee production was favoured by the high international prices in the 2010-2012 period as well as good weather in coffee producing regions. Pyrethrum production increased as a response to higher prices offered in both the larger flower market and the demand for pyrethrum flowers. Increased sugar production was associated with increased land under production especially by outgrowers, as well as expanded capacity at one of the factories.

Figure 11: Trends of cash crop production



Source MAFC, 2013

There are quite a number of factors responsible for the increased production of various crops; these range from prices on the world and local markets, to land size and weather conditions. Nevertheless, it is

not apparent as to how this increase in cash crop production influences food production, intake and hence nutritional status. Many of the reviews conducted between the 1980s and 2000s have indicated no linkage between cash crop production or agricultural interventions and improved nutritional situation (Ruel 2001, Berti et al 2004, Leroy and Frongillo 2007). This could be attributed to limitations in study designs, evaluation and analysis of data in relation to nutrition outcomes, considering that there are limited indicators for assessing the link between agricultural interventions, including cash crop production, and nutrition outcomes. Therefore, there is a need for more studies in this area to elucidate the relationship between agriculture, cash crop production and nutrition outcomes.

It has, however, been observed that the rates of malnutrition in areas with both a cash crop and a staple food crop are generally lower. For example, in the coffee-banana crop systems of Kilimanjaro, Kagera and Mbeya, the staple food crop is mainly bananas and is almost entirely produced and controlled by women. Men control the income mainly from the sale of coffee under small scale production; however, women's labour is crucial to its production. In the few areas where men have infiltrated the banana economy, most of the cash income is used for non-nutrition related expenditures (personal observation in Kilimanjaro). Malnutrition rates are higher in areas where the food crop is also the cash crop (basically maize), such as Ruvuma, Iringa, Mbeya and Rukwa. Nevertheless, studies in other countries show that the commercialization of agriculture has a great nutritional impact if a cash crop is also a food crop (von Braun and Kennedy 1986). The danger, however, is that most of the food may end up being sold without leaving enough stocks to last until the next harvest and the income may not be used to access food.

Obviously, agriculture and nutrition are linked because agriculture provides the food and nutrients needed by human beings for growth and development. Nevertheless, provision of food is one thing and utilisation is another; utilisation is affected by various factors outside the production spectrum. Factors such as education, water availability, level of sanitation and the provision of health services, affect utilisation of food and nutrients in the body. Therefore, improving agriculture productivity should go hand in hand with improving diversity in production, consumption and an improved environment for utilisation (health, water, education, etc).

2.4 Livestock production and consumption

Livestock production is a significant livelihood activity in Tanzania. In areas where livestock production is dominant, herd size is linked to social status because it is a measure of wealth and savings. It provides a variety of benefits including risk mitigation, food security and improved nutrition through consumption of meat, milk and eggs. It is also a source of income, employment, manure and draught power. The livestock population is estimated to be 22.8 million cattle, 15.6 million goats, 7 million sheep, 2 million pigs, 35.5 million indigenous chickens and 24.5 million improved chickens (Ministry of Agriculture, Food and Cooperatives 2012). Only 10% of the species is made up of exotic or improved types of livestock. The indigenous types are characterised by low production and productivity, but highly adapted to the local environment and resistant to disease. In comparison, in Kenya the livestock resource base comprises 29 million indigenous and exotic chicken, 10 million beef cattle, 3 million dairy and dairy crosses, 9 million goats, 7 million sheep and 0.3 million pigs (Africa.procasur.org 2012). In Uganda, the poultry population is 37.4 million, cattle population 11.4 million, goats 12.5 million, sheep 3.4 million and pigs 3.2 million (Uganda Bureau of Statistics 2009).

The livestock population has implications for per capita availability as well as consumption of meat and meat products. Comparison of consumption among east African nations shows much variation in terms of per capita consumption. Despite the low size of stock in Kenya, the level of consumption is much higher compared to that of other East African countries (Table 5). In fact the trend is declining or stagnant in Tanzania, Uganda and Ethiopia and increasing in Kenya, Burundi and Rwanda. No studies have been carried out to elucidate or assess adequate intake of livestock products for human health under different living conditions in Tanzania.

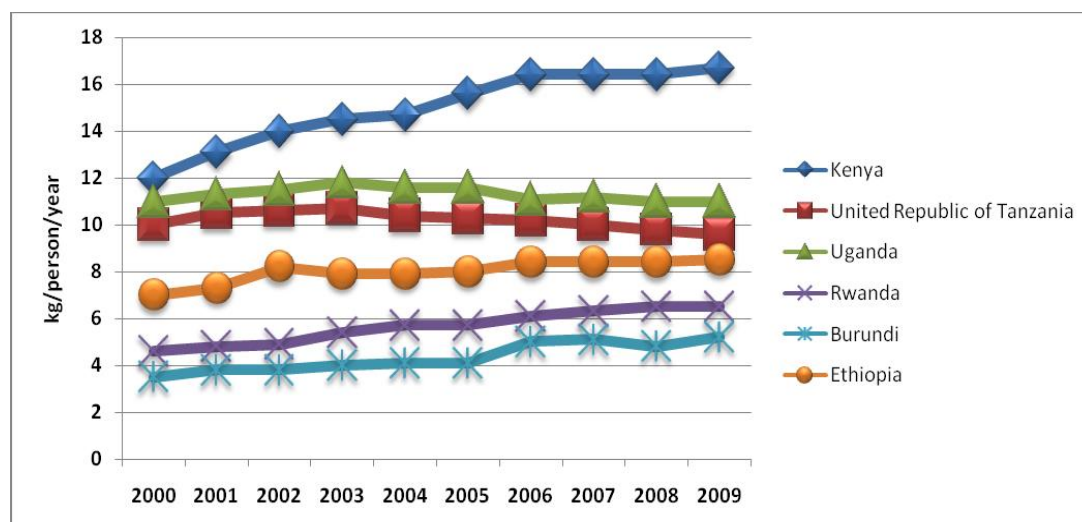
Table 5: Per capita meat consumption: comparison between sources in East African countries

Country	Beef		Pork		Poultry		Total	
Kg/capita/year	1990	2008	1990	2008	1990	2008	1990	2008
Tanzania	7.3	6.1	0.3	0.4	1.0	1.3	10.3	9.3
Uganda	4.7	3.5	3.3	2.8	1.7	1.6	12.0	9.6
Ethiopia	4.9	4.5	0.0	0.0	0.8	0.7	9.5	8.4
Africa	6.5	6.6	1.0	1.0	3.3	4.9	13.8	15.6

Source: FAO, 2013

Figure 12 shows the contribution of animal products to various macronutrients in the average diet. Animal products contribute about 30% of fat intake. This raises the issue of whether we should continue to advise people to consume animal products in the absence of proper recommendations considering that there is currently a high increased risk of prevalence of overweight and obesity and associated morbidities? There is a need to develop recommendations for consumption of animal/livestock products especially in nutritionally challenged communities.

Figure 12: Contribution of animal products to energy, protein and fats intake



2.5 Fisheries production and consumption

The fisheries resource base includes inland water (fresh water), which covers an area of about 62,000 km², a territorial sea area of about 64,000 km² and a coastline of 1,424 km. The Exclusive Economic Zone (EEZ) is up to 200 nautical miles covering an area of 223,000 km². This provides the country with an additional marine area and potential fisheries resource base. The fish industry has been contributing between 1.6 and 3.1% to GDP between 2008 to 2013. The present annual fish catch is about 350,000 metric tons (FAO 2005); fresh water bodies contribute about 85% of the total annual fish landings while marine waters contribute about 15%. Fish and fishery products provide fundamental nutrients to diversified and healthy diets. In general, fish is usually low in saturated fats, carbohydrates and cholesterol. Therefore, fish not only provide high-value protein, but also a wide range of essential micronutrients, including vitamins D, A and B, minerals including calcium, iodine, zinc, iron and selenium and polyunsaturated omega-3, 6 and 9 fatty acids (docosahexaenoic acid and eicosapentaenoic acid). This is a very important resource for nutrition.

2.6 Land use

Tanzania has abundant land suitable for various economic activities and human settlement. Arable land accounts for 12.3% of the total land area in Tanzania and about 1.8% is under permanent crops and 86% is for other uses. The land tenure systems are based on multiple land regimes (customary & formal or state) all existing side by side and having equal security of tenure under the law. However, in both rural and urban areas, most of the occupancy rights have not been registered. Formal laws provide equal rights for women with regards to access to land and secure tenure (through mechanisms such as registration of joint rights and marital property laws). Nevertheless, in many areas of Tanzania customary law and traditional practice prevent women from acquiring, inheriting and owning land. It is recognized that women account for up to 90% of the workforce in farming and trading. However, their access to property rights, including land rights and the other services such as access to bank loan facilities and participation in associations is limited. This could be accounted for by inadequate knowledge of the laws among women, men, local leaders and local authorities as well as structural inequalities, hence creating a significant barrier to equal access to land resources. Limited access and rights to land by women is a significant barrier to increasing agricultural growth and expanding the staple food supply in Tanzania.

Demand for land for crop farming, livestock keeping and for settlements has been increasing. At the same time urbanization is increasing, at about 8% per annum. Most of the land is un-surveyed and undeveloped, invariably leading to conflicts over land use. Recently this has been causing a lot of unrest in several areas of Tanzania and sometimes leading to serious conflicts and deaths. What is most worrying is the allocation of land which is suitable for agriculture production to non-agricultural uses such as human settlements, construction of roads, airports and mining. A recently released map showing the location of minerals in the country will alter the utilisation of land and we may see a big shift from agricultural production to mining; hence the mining industry might become another important sector in the economy of the country. It may also draw a large proportion of the population from agriculture production, potentially leading to food shortages and high food prices.

Currently, it is not clear as to what proportion of land is used for the production of various crops. There is a need to establish a land utilisation map to indicate food crops that are grown in various places of Tanzania. It will then be possible to calculate the amounts of nutrients that are produced or that the country is capable of producing to feed the population. Assessment of food adequacy should introduce a component of nutrient adequacy so that it is clear as to what types of nutrients are not produced in adequate amounts and what should be done to increase their production.

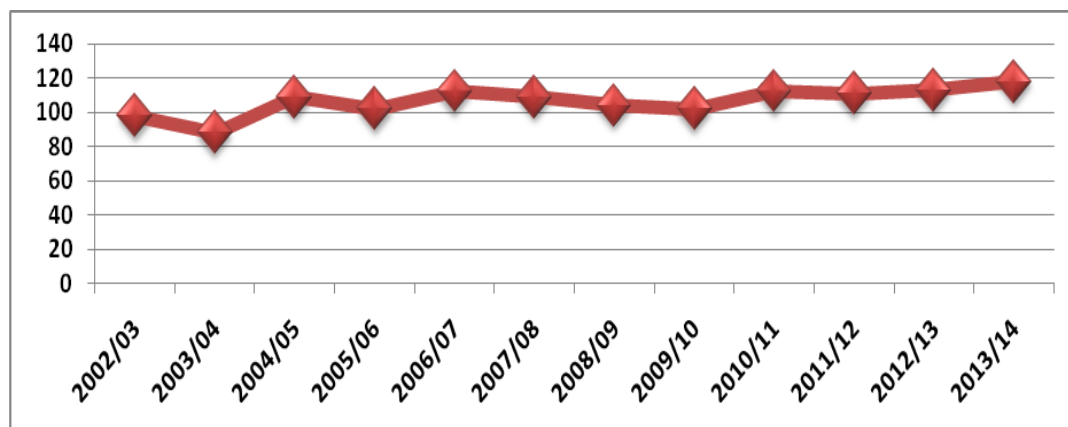
2.7 Food Security Situation in Tanzania

In seasons when there is adequate rainfall, especially in the six regions of Rukwa, Mbeya, Kigoma, Ruvuma, Iringa and Katavi, Tanzania is able to produce enough food to meet its requirements and export excess food to neighbouring countries. For example, in the 2012 season Tanzania exported 151,291 tons of maize, 38,222 tons of beans and 3,354 tons of rice. However, some exports are made not necessarily out of excess, but rather out of necessity when households are forced to sell part of their harvest to generate income to meet some other household needs. This happens quite often in regions bordering neighbouring countries, which also are major cereal producing regions. Therefore, in such good years, household food insecurity in Tanzania is mainly caused by poor distribution of the available food nationally (from surplus regions to deficit ones) as well as access at household level. The food supply situation is largely considered satisfactory when there is adequate household maize stock retained at the household level and not sold to generate income.

During the period ending 2012/13 (agricultural season), the national food production levels were normal to above normal in most parts of the country, with the exception of localised areas that experienced below normal harvest levels. Poor rainfall performance has been the main factor for reduced production. The government estimated that domestic food production will meet the national food requirement for the 2013/14 consumption year, with a self-sufficiency ratio of 118%. The preliminary forecast indicated that out of the total 150 districts, nearly 60 districts in 16 regions of mainland Tanzania will likely have pockets of food insecurity during the lean season of October 2013–April 2014. This is usually the period of high labour demand for agricultural activities when farmers require sufficient amounts of nutrients to enable them to perform their work efficiently. Hence, the food and nutrient deficit period creates a huge challenge for labour productivity. Currently, there are no safety nets targeting farmers to ensure that they access sufficient food during the peak production period. In addition, this is the peak period for malaria. Farmers are not covered by the National Health Insurance Fund and therefore it is usually very difficult for them to access the health service. In a way this could be contributing to low labour productivity in the agricultural sector. There are limited studies that have systematically elucidated the effect of food insecurity on production.

Food availability is determined by production, purchases and the extent of waste. The aggregate national food availability is a balance between production and requirements. Total food production in 2012 was 13.34 million tonnes; this included 7.44 million tonnes of cereal crops and 5.90 million tonnes of non-cereal crops. During the same period the level of food requirement was 11.97 million tonnes (Ministry of Agriculture, Food and Co-operatives 2013). Figure 13 illustrates Tanzania's food self-sufficiency ratio (SSR) over the past twelve years. The food SSR expresses the magnitude of production in relation to domestic utilization. Figure 11 shows that Tanzania has been maintaining a high food SSR above 100% for the past nine years, indicating that the country is highly dependent on its own production resources.

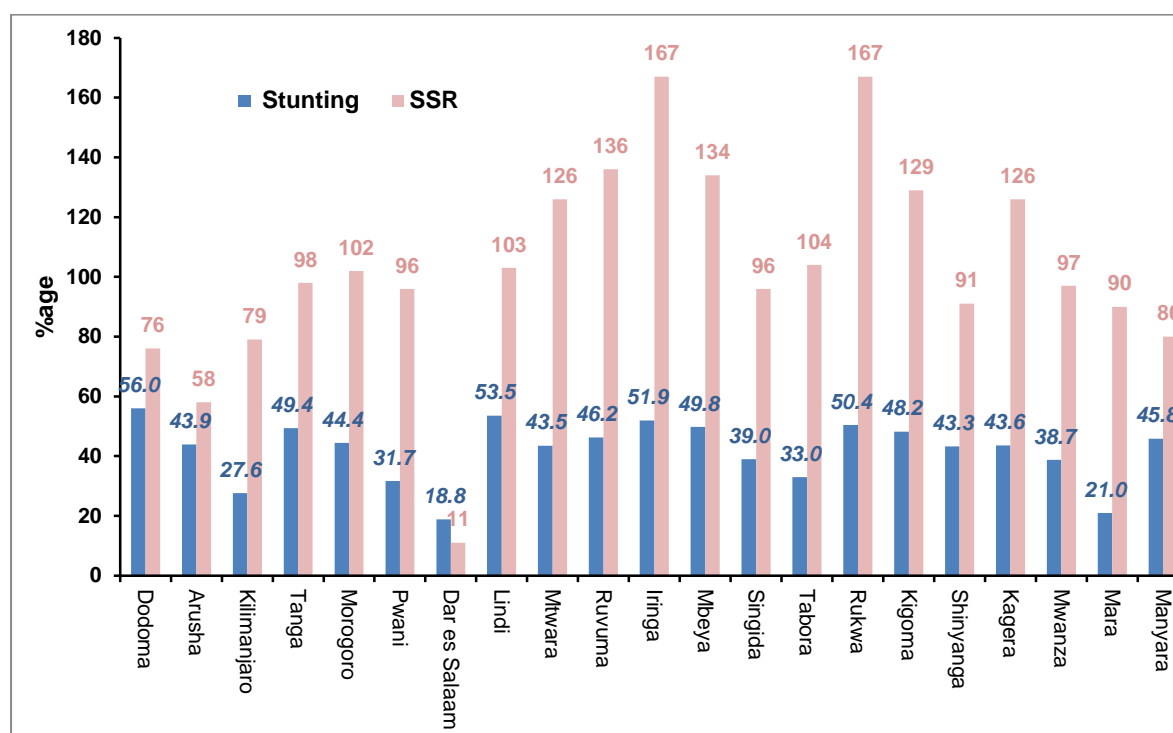
Figure 13: Food self-sufficiency ratio trend



Source: Ministry of Agriculture Food and Cooperatives, 2013

When the food self-sufficiency ratio (SSR) was compared with stunting rates, it showed that regions that have high SSR also have high stunting rates (correlation coefficient of 0.5), as shown in Figure 14. It is often thought that as long as the nation has adequate aggregate food supply at the national level, the nutritional well-being of the population at household level would be attained. In this context, food availability is clearly not a sufficient condition for good nutrition, health and wellbeing. For example, surveys conducted in Tanzania (United Republic of Tanzania and UNICEF 1990) showed that there was a negative correlation between the level of food self-sufficiency and level of malnutrition as food surplus-producing regions had high incidences of malnutrition. This has been attributed mainly to inadequate care and support to children and infants due to the heavy workload of women in the fields; consequently, they lack sufficient time to prepare adequate diets and feed infants and children. Therefore, to ensure nutrition security it is important that there is also adequate care in the households and communities. Adequate care is provision of time, attention and support in the household and community to meet the physical, mental and social needs of growing children and other family members (FAO 1997). Care comprises a number of components such as promotion of health, provision of clean water, sufficient knowledge and time, cultural beliefs and practices and food preparation. In this regard it tends to influence the way women implement their multi-tasks at household and community level.

Figure 14: Prevalence of stunting and food self-sufficiency (maize) by regions



Source: TDHS, 2011 (stunting) and MAFC 2010 based on 2009/10 Self-Sufficiency Ratio (SSR) data

Despite the overall high level of food production in 2011/12 there were 47 districts that experienced food deficits due to drought and had to be provided with food aid from the National Food Reserve Agency (NFRA) (Figure 15). Over the years, food production in the country has sometimes failed to meet demand and the country has been buying food up to the tune of 7% of cereal requirements and receiving food aid to meet its production shortfalls.

Smallholder farmers dominate, with average farm sizes 0.9 – 3 ha (depending on the Region), although there is also a large-farm sub-sector mostly producing cash crops. Livestock production is also important, but consumption of livestock and livestock products remains low. At national level Tanzania achieves self-sufficiency in maize production in good rainfall seasons, and in some years exports to neighbouring countries such as Kenya ; however, there are areas of persistent food shortage as well as areas of regular food surplus.

However, Regions with high self-sufficiency ratios in food production and utilisation also in general have the highest stunting rates (correlation coefficient of 0.5). This indicates that food availability by itself does not translate into adequate household-level nutrition. This finding appears largely attributable to inadequate levels of care and support to children and infants due to the heavy workload of women in the fields. Other factors may also be involved, including seasonal variations in food and income availability, where households may be forced to sell food to meet other income needs during the lean season (which also includes the peak agricultural labour demand season, when nutritional needs are highest). There are no safety nets in Tanzania which might help to fill this seasonal gap.

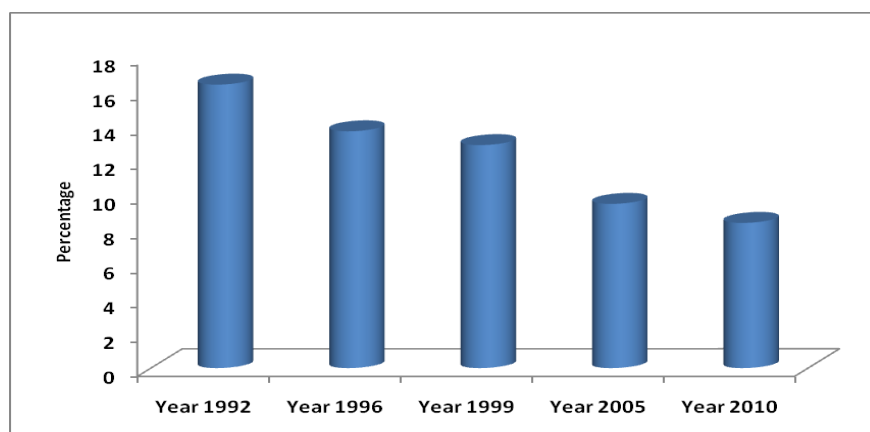
3 Nutrition Situation

3.1 Current Status and Recent Trends

Undernutrition due to inadequate protein and energy intake (protein-energy undernutrition, or PEU) is the most widespread nutritional disorder in Tanzania affecting nearly 40% of children. Other disorders include those related to micronutrient deficiencies such as vitamin A, iron deficiency anaemia, zinc, selenium, vitamin C and B and iodine deficiency disorders. Undernutrition usually results from inadequate intake of food and/or frequent infections. Nutritional status of pre-school 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 care and nutritional status. During the last decade, three national surveys documented the prevalence of malnutrition among children under five years of age (NBS and ICF Macro 2011; NBS and ORC Macro 2005; NBS and Macro International 2000; NBS, Planning Commission and Macro International 1996). The trend has shown that malnutrition has not been declining significantly. For example, the prevalence of stunting in 1999 was 44% and in 2010 it was 42%; implying that the underlying causes of this situation have not been addressed adequately.

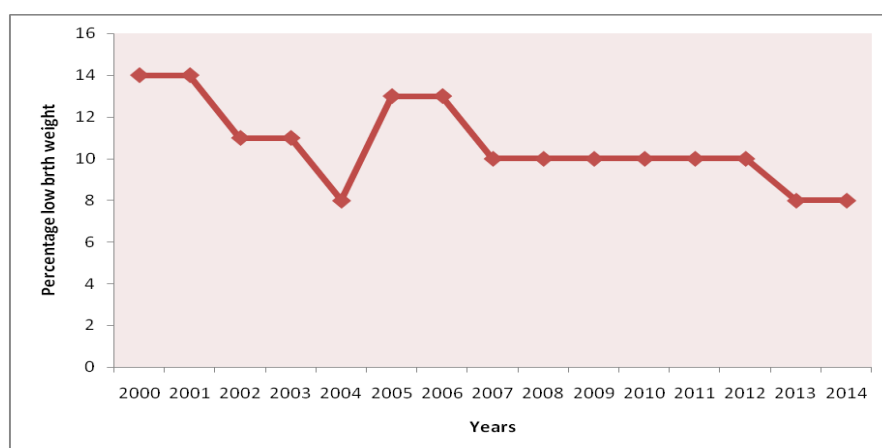
A child's birth weight is an important determinant of infant and child health, mortality and survival. Low birth weight (LBW) is a weight at term of less than 2.5 kg (NBS and ICF Macro 2011). The incidence of LBW is an indication of poor nutritional status of women during pregnancy, which could be due to low dietary intake and infections. Figures 16 and 17 show that the incidence of LBW has declined by 50% since 1992 from 16% to 8% in 2010.

Figure 16: Prevalence of low birth weight in Tanzania 1992-2010



Source: TDHS reports

Figure 17: Prevalence of low birth weight in Tanzania 2000-2014



Source: UNICEF reports

The prevalence of malnutrition among children below five years of age is determined by assessing the relationship between weight, height and age. The indicators “weight for height”, “height for age” and “weight for age” provide useful information as to the nutritional status of children and the magnitude of wasting, stunting and underweight, respectively. Each indicator tells a different story, for example height for age is a measure of long term impact of undernutrition (chronic) resulting in limited elongation of bones. Weight for height is a measure of acute undernutrition resulting in emaciation of body tissues.

In 2010 (NBS, 2011), the prevalence of stunting (low height for age) among children below five years of age was 42%, and about 17% of them were severely stunted. The prevalence was highest in children between 18–23 months and lowest (18%) among children of age below 6 months. Similarly, the prevalence of severe stunting showed the same pattern: it was highest in the age category 18-23 months and lowest in the age category 0–6 months. Male children were more affected (46%) than female children (39%). Children residing in rural areas are more likely to be stunted (45%) than those residing in urban areas (32%). Regional variations also exist (NBS and ICF Macro 2011); for example, four regions (Rukwa, Lindi, Dodoma and Iringa) had stunting levels exceeding 50%. Factors influencing stunting included the level of

education of mothers and wealth quintile. Children from mothers who have at least secondary education and from the highest wealth quintile were less likely to be stunted.

According to the national survey conducted in 2010, the proportion of children under five years of age who were underweight (low weight for age) was 16% and severe underweight was 4% (ibid). Children in the age category 18 – 23 months had the highest prevalence of underweight (21%) and lowest (9%) among infants who were below six months of age. Again, area of residence had an influence on prevalence of underweight: children residing in rural areas were more likely to be underweight (17%) than those residing in urban areas (11%) (ibid).

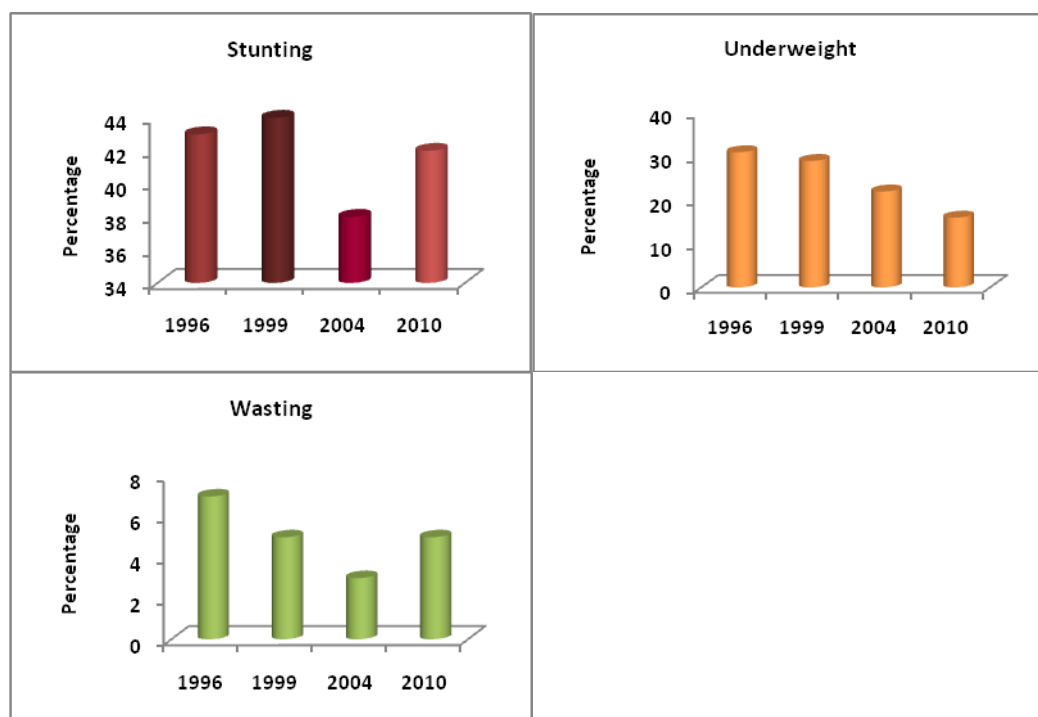
Nutritional status as assessed by weight for height indicated that 5% of the children below five years of age were wasted (low weight for height) and 1% were severely wasted. Wasting was highest (11%) among infants of age below 6 months and lowest among children between 36–47 months. Wide differences in levels of wasting exist by region. Arusha had the highest prevalence of wasting (10%) and Mbeya the lowest (1%) (ibid). The nutritional status of children shows a downward trend for underweight, but an increased trend for stunting and wasting between the period 2004-05 and 2010 (Figure 18).

The high prevalence of stunting and underweight among children of age between 18–23 months suggests that there may be challenges related to infant and child feeding practices. The study carried out in Zanzibar in 2012 (Kinabo et al, 2013 unpublished) indicated that responsive feeding is not practiced adequately, especially for children of this age category, since children are given food and left to feed on their own and, consequently, they do not get the required nutrients.

Apart from these PEU conditions, micronutrient deficiencies also affect a significant proportion of the population. About 33% of children of age 6–59 months had low serum retinol levels below 0.825µmol/L and 37% of women of age 15–49 years had low serum retinol levels below 1.24µmol/L, which is indicative of vitamin A deficiency (TDHS, 2010). Rural areas are more affected than urban areas. The high prevalence is partly attributed to their inadequate intake of vitamin A rich foods and the seasonality of production of these foods.

Anaemia affects 59% of children of age 6 – 59 months and 41% of women of reproductive age (ibid). Because of the high prevalence (more than 60%) of anaemia among pregnant women, the problem of anaemia in children starts during pregnancy and therefore infants are born with low iron stores. Inadequate intake of iron and protein-rich foods, coupled with the heavy workload among pregnant women, are some of the factors contributing to anaemia among pregnant women. Others factors include the high prevalence of malaria and intestinal infestations. Iodine deficiency disorders are also prevalent in Tanzania. In a survey conducted in 2004 (Tanzania Food Nutrition Centre 2004), 7% of school children had goitre; in Rukwa and Iringa regions the prevalence exceeded 20%.

Figure 18: Trends in nutritional status of children



Source: NBS and ORC Macro, 1996, 1999, 2004/05, 2011

The prevalence of stunting of 42% means that it is most likely that most of the affected children might not be able to attain their full potential academically and economically. There is evidence to suggest an association between height and outcomes in the labour market in developing countries (Thomas and Strauss 1997). In addition, attained height might be a proxy measure of social skills attained in adolescence, cognitive ability, social class or general healthiness. Chronic undernutrition leads to cognitive impairments, reduces dendrite density, damages the chemical processes associated with spatial navigation, memory formation and memory consolidation and may be a risk factor for obesity as well as some types of chronic diseases in adulthood (Hoddinott et al 2013).

3.2 Gender and nutrition

Globally, and particularly in many rural areas of Tanzania, customs advocate a gender division of labour: where women and girls do the household chores, take care of small children and livestock, and also plant and weed the agricultural fields, whilst men prepare land for cultivation, care for large livestock, market produce and make financial, social and political decisions for the family (McIntyre and Edwards 2009). Generally, women allocate time to food preparation, child care and household chores in addition to agriculture and therefore work for more hours in a day compared to men. Gender roles are influenced by household structure, size, norms, culture and other dimensions that define the role of men and women in society and household levels. For example, in the matrilineal societies of Mtwara and Morogoro, there is a flexibility in sharing roles but this flexibility is limited in the patrilineal societies of Kilimanjaro, Dodoma, the Maasai and other regions where a high proportion of households do production activities jointly and domestic activities are solely done by women.

Women are in a unique position to reduce malnutrition, which is one of the largest threats to public health in the world. Empirical evidence shows that increasing women's control over land, physical assets

and financial assets serves to raise agricultural productivity, improve child health and nutrition and increase expenditures on education, as women are more likely than men to spend income on food, healthcare and the education of their children (Meinzen-Dick et al 2012). Substantial evidence demonstrates that more equal access to and control over assets raises household food security and accelerates child growth and development. It also offers important economic payoffs for the entire society. Women's contribution to food production, food preparation and child care are critical underpinnings for the social and economic development of communities.

It must be recognised that Africa in general and Tanzania in particular will continue to rely on human capital, especially that of women, in agriculture production in all agro-ecosystems for the foreseeable future. Therefore, the nutritional status of producers is crucial for agricultural productivity in Tanzania. A significant proportion of women are undernourished in energy and micronutrients. This is mainly attributed to high physical work intensity, inadequate dietary intake and a negative attitude towards consumption of micronutrient rich foods, such as vegetables and fruits, as well as poor gender relations. Therefore, improvement of human nutrition can be seen as a key component of raising agricultural productivity in Tanzania and other countries in Africa where labour, especially that of women, is still a major input into crop and livestock production.

3.3 Summary

Trends in under-nutrition in Tanzania show a mixed picture, with improvements in some indicators. However, stunting rates have barely changed: stunting prevalence was 44% in 1999 and 42% in 2010. This implies that the underlying causes of stunting have not been adequately addressed. There are demographic and geographical variations in stunting rates: prevalence is lowest amongst infants 0-6 months, and highest at ages 18-23 months. Rates are higher amongst male children (46%) than female children (39%), and higher in rural areas (45%) than urban areas (32%). Four Regions (Rukwa, Lindi, Dodoma and Iringa) had stunting rates above 50% (data from the 2010 Tanzania Demographic and Health Survey).

Other nutritional indicators show lower rates of under-nutrition: underweight rates for children under age 5 were 16% (falling compared to 2004), and wasting rates were 5% (increasing compared to 2004). Incidence of low birth-weight babies has steadily declined, from 16% in 1992 to 8% in 2010.

There are significant micro-nutrient deficiencies: vitamin A deficiency amongst children under age 5 is 33%, and amongst women age 15-49 it is 37%. Anaemia affects 59% of children under age 5 and 41% of women of reproductive age.

Although the trends are somewhat mixed, it is clear that under-nutrition remains a major problem, and that overall economic growth, as well as growth in the agricultural sector, have not resulted in clear improvements, particularly in relation to stunting and micro-nutrient deficiencies. It is also clear that the burden on women both of agricultural work and of care is a major factor influencing both their own, and children's, nutritional status, and policies addressing under-nutrition need to address this situation.

Part II - Review of National Policies and Programmes

This part of the paper is a review of relevant national policies, programmes and strategies with a particular focus on the extent to which they address nutrition as well as agriculture-nutrition linkages.

4 Key National Policies

4.1 National Goals and Targets for Agriculture

The National Strategy for Economic Growth and Reduction of Poverty (NSGRP) II or MKUKUTA II (2011 - 2015) is a framework for accelerating poverty reduction and enhancing economic growth through pursuing pro-poor interventions. It is also a mechanism to achieve the aspirations of development as envisioned in the Tanzania Development Vision (TDV, 2025) and the Millennium Development Goals 2015. The framework and its implementation strategies aim to transform Tanzania into a middle income country with the following characteristics: high quality livelihoods, peace, stability and unity, good governance, a well educated society, and a strong and competitive economy. Renewed commitment to agriculture under MKUKUTA II is thus intended to achieve the twin objectives of increased agricultural production and reduction in hunger/food poverty. The MDG target for Tanzania is to reduce the level of food poverty to 10.8 % of the population. Agricultural growth is targeted to increase from an annual growth rate of 3.2% in 2009 to 6.0% by 2015. In addition to agricultural growth, other sectors that are considered crucial for poverty reduction and enhancing economic growth are water, land, infrastructure, industry and governance.

Goals for the agricultural sector under MKUKUTA II (2011 - 2015) are: (i) an increase in agricultural growth from 5 to 10%: with an increase in growth of the livestock sub sector, from 2.7 to 9.0%; (iii) an increase in cereal production from 9 million tonnes (2012) to 12 million tonnes (2015); (iv) a reduction in the rural population living below the basic needs poverty line from 39 to 24%; (v) a reduction in the proportion of the rural people experiencing food poverty from 27 to 14%; and (vi) a 15% and 5% reduction in the prevalence of stunting and underweight respectively among children below five years of age.

In general, NSGRP/MKUKUTA II addresses linkages between food and nutrition security and poverty reduction in terms of food production (productivity increase), food access (strengthening of incomes of the food insecure and poor through creation of both social and productive safety nets) as well as food utilisation (promoting nutritional status of individuals, especially most vulnerable groups). The proposed steps within NSGRP II are very much in line with the Comprehensive African Agriculture Development Programme (CAADP) principles for Pillar III which advocate food access to all and particular attention to the nutritional needs of vulnerable groups (United Republic of Tanzania 2011) (see section 6.3).

The NSGRP II target for agricultural growth is 6.0% by 2015, with maize output to rise by 1% (100,000 tonnes) and rice by 10% (290,000 tonnes) by the 2015/16 production season (MAFC, 2013). The targets for agricultural production are not based on dietary requirements but rather on energy requirements as calculated using the energy requirements of the present population and one type of crop (i.e. maize). It is crucial that planning for agricultural production is guided by the nutrient requirements of the population

whereby all nutrients are considered and not just energy requirements only as has been the practice hitherto.

4.2 National Goals and Targets for Nutrition

The National Nutrition Strategy provides an overview of the priority interventions and strategic directions for nutrition for the period July 2009 to June 2015. The strategy aims to provide a framework for sustainable improvements in nutrition that are based on scientific evidence and input obtained from the community to the national levels (United Republic of Tanzania 2013).

The national nutrition goal, as stipulated in the National Nutrition Strategy (2011 – 2015), is that all Tanzanians attain adequate nutritional status, which is an essential requirement for a healthy, productive and reproductive population. The nutrition goal under the National Strategy for Economic Growth and Reduction of Poverty (NSGRP II) is to ensure food and nutrition security, environmental sustainability and climate change adaptation and mitigation. Specific nutrition targets to be achieved by 2015 as stipulated in the two strategies are shown in Table 6.

The two documents show some differences but this could be attributed partly to the baseline data used to set up the targets and the time when targets were formulated. Obviously, harmonisation is needed so that the indicators for implementation and measurement of success can be set.

The nutrition targets set out under the National Strategy for Growth and Reduction of Poverty (NSGRP II) are envisaged to be achieved through the following interventions:

- Improving quality of facility and community-based Integrated Management of Childhood Illnesses (IMCI);
- Strengthening health promotion and engagement with communities on proper management of childhood illnesses;
- Ensuring universal vitamin A coverage of under-five children and post-partum women;
- Scaling up implementation of public health and primary preventive strategies such as:
 - o Use of safe and clean water
 - o Promoting personal hygiene and sanitary measures
 - o Implementation of environmental health programs
 - o Increasing immunisation coverage and introducing new options for Expanded Program in Immunisation (EPI) vaccines and
 - o Promoting optimal breastfeeding and complementary feeding practices
- Combating malaria through strategies such as:
 - o Universal distribution of long-lasting nets
 - o Implementation of rapid malaria test for malaria country-wide and
 - o Introducing additional malaria control strategies including indoor residual spraying
- Regulate and promote food fortification with vitamins and minerals;
- Responding rapidly to health and nutritional challenges that affect children due to adverse conditions such as climate change;
- Engaging in partnerships with organisations and sectors outside the health sector at national, regional and international levels in order to adapt and mitigate impacts of adverse weather conditions.

There is no mention of agriculture as one of the interventions.

Table 6: Nutrition targets for NNS and NSRPG (2010-2015)

Characteristic	NNS		NSGRP	
	2010	2015	2004/05	2015
Underweight %	16	11	22	14
Stunting %	42	27	38	22
Wasting %	5	<5		
Exclusive breastfeeding %	50	60	41	60
LBMI < 18.5 kg/m ²		<10		
Vitamin A %	24	15		
Anaemia (Pregnancy) %	48	35	48	35
Anaemia (children) %	72	55	72	55
UIC (Children 6-12 years) %		>50		

Source: National Nutrition Strategy 2011 - 2016; National Strategy for Growth and Reduction of Poverty 2011 - 2015

4.3 National Nutrition Strategy (2011 – 2015/16)

The National Nutrition Strategy recognises the importance of improving nutrition for the economic and social development of the Tanzanian community. It aims at enhancing capacity to improve the nutritional status of the general population, especially that of vulnerable groups such as women, children and people challenged with various disabilities. The goal of the strategy is to ensure that all Tanzanians attain adequate nutritional status essential for a healthy productive and reproductive life. It is envisaged that this could be achieved through the implementation of policies, programmes and interventions that are evidence based and cost effective for improving nutrition. The following principles will guide the implementation of this strategy: community participation, integrated delivery of services, universal coverage, working in partnership and inter-sectoral collaboration. Eight priority areas have been identified to improve the nutritional status of the Tanzanian population: these are presented in appendix 3. None of the areas focuses on agriculture. However, agricultural aspects in the NNS have been included in the implementation plan, but so far not many of the activities in the plan have been implemented.

Based on the priority areas listed above, eight strategies (appendix 4) have been identified to achieve the goal of the National Nutrition Strategy. These are mainly focusing on nutrition services accessibility and mainstreaming nutrition in sectoral plans and programmes. However, in order to be able to achieve these strategies, there is a need for strong institutions and human resource capacity to spearhead nutrition service delivery and advocacy for mainstreaming nutrition into sectoral plans and programmes. Currently, the human resource capacity for nutrition is limited (Appendix 6) due to lack of employment opportunities for nutrition graduates as well as limited training at middle cadre level to get extension workers who could work in communities to spearhead nutrition activities at community levels. In addition, the implementation of nutrition activities has been hampered due to limited resources allocated for nutrition activities. This could be related to the limited evidence on the role of nutrition in development and limited understanding by the general public and among decision makers about nutrition and its role in achieving significant results in all economic activities.

4.4 Tanzania Five Year Development Programme (FYDP) (2012 – 2017)

The goal stated in the FYDP is to build capacity for nutrition interventions at district and community levels by deploying, recruiting and training nutrition focal persons in the coordination and management of nutrition interventions at district and community levels in all Councils. Currently, about 210 nutrition officers and focal persons have been deployed in regions and districts. Training materials are being developed for training nutrition officers in coordination and management of nutrition activities. This programme aims at ensuring food and nutrition security, environmental sustainability and climate change adaptation and mitigation at district and community levels. This will be achieved by implementing strategies that will ensure increased availability of food. Nevertheless, the strategies are limited in scope because they touch only on a narrow band of issues - basically on food availability - and not on global or holistic aspects such as consumption and access to ensure nutritional well-being of the population. It is, however, the only document that has explicitly included the private sector as one of the key players investing in agriculture and nutrition.

4.5 Comprehensive African Agriculture Development Programme

The CAADP is an initiative of the African Union's New Partnership for Africa's Development (NEPAD). It was adopted by the Heads of State and Government in Maputo, Mozambique in 2003 to promote agricultural growth, rural development, food and nutrition security and poverty reduction. Each AU member country including Tanzania is required to prepare and sign the CAADP Compact as a way of strengthening partnership and obtaining commitment from stakeholders. CAADP is based on pillars and principles. The objectives of CAADP are to:

- (i) Achieve an average annual sectoral growth rate of 6%;
- (ii) Attain food and nutrition security;
- (iii) Develop regional and sub-regional agricultural markets;
- (iv) Integrate farmers and pastoralists into the market economy; and
- (v) Achieve a more equitable distribution of wealth.

Objectives ii and v are crucial for improving nutrition as they tend to address nutrition aspects directly. Again these aspects are captured comprehensively in the CAADP principles pillar III *"Increasing food sup-*

ply and reducing poverty and improving responses to food emergency crises". In general, all pillars are geared towards improving nutrition in one way or the other. For example pillar I is about water management systems, basically for improving production, and, hence, food availability; also pillar II and IV are for infrastructure and markets as well as technology, which also enhance income generation and ensure quality of food through processing and preservation.

The CAADP framework is intended to be complementary to existing national agriculture strategies and frameworks and to focus on the overall development of the sector by providing complementary and supplementary inputs to bridge gaps identified in the sector policies, as well as supporting scaling-up successful initiatives in the sector (Cooksey 2013). Although CAADP is basically agricultural, it is one of the programmes that has included nutrition in its principles. It is therefore one of the important programmes for linking agriculture and nutrition.

4.6 Tanzania Agriculture Food Security Investment Plan (TAFSIP)

This is a framework for the prioritisation, planning, coordination and harmonisation of investments that will drive Tanzania's agricultural development over the next decade. The TAFSIP is a 10-year road map for agricultural and rural development that identifies priority areas for investment and estimates the financing needs to be provided by Government, the private sector and its development partners to support the on-going implementation of the main long-term agricultural sector development programmes (ASDP/ASP). It has also incorporated a whole section on nutrition and proposes the link between the two sectors in achieving its goal. TAFSIP is aligned with Tanzania's social and economic development aspirations as expressed in Vision 2025 (for the mainland) and Vision 2020 (for Zanzibar) together with a number of key policy and strategic statements including:

- The National Strategy for Growth and Reduction of Poverty (NSGRP/MKUKUTA) and the Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP/MKUZA);
- Agriculture First (*Kilimo Kwanza*) and the Agricultural Transformation Initiative (ATI) for Zanzibar;
- The Agricultural Sector Development Strategy (ASDS) for mainland Tanzania and the Agricultural Strategic Plan (ASP) for Zanzibar;
- Tanzania's agenda to meet the Millennium Development Goals (MDGs);
- The Tanzania CAADP Compact; and
- Various sub-sector policies, strategies and programmes/projects.

4.7 Summary

The Government of Tanzania has developed a range of strategies and policies in relation to overall economic growth (the National Strategy for Economic Growth and Reduction of Poverty (NGSRP)), to agricultural development, and to nutrition. All of these should be relevant to the challenging of reducing levels of under-nutrition. Although the overall growth and agricultural strategies acknowledge the importance of nutrition, the specific targets are more narrowly focused on enhanced food availability through increased agricultural production, particularly of maize. Conversely, in the National Nutrition Strategy (NNS) (2011 – 2015/16), eight priority areas are identified, none of which directly focusses on

agriculture (although one priority area is household food and nutrition security). Agricultural aspects are included in the implementation plan of the NNS, but to date few of these actions have been implemented. In general, the resources allocated for nutrition activities under the NNS have been limited.

5 Institutional Arrangements and Key Actors Addressing Nutrition

Key actors for nutrition outcomes are individuals, groups, organisations or institutions who have direct or immediate responsibility for implementing nutrition activities at different levels. In Tanzania key actors for nutrition outcomes include the Prime Minister's Office, Ministries of Health, Agriculture, Water, Community Development, Livestock, Finance, Education and Local Government. Other institutions include the Tanzania Food and Nutrition Centre, higher learning and research institutions under the Ministries of Health and Agriculture as well as non-governmental, civil society and international organisations. Other actors who are important are individuals, households, groups, communities and the media. This section provides an overview of institutional arrangements and some of the key actors.

5.1 Prime Minister's Office

The High Level National Steering Committee on Nutrition (HLNSCN) is located in the Prime Minister's office. It comprises senior representatives from the government (Permanent Secretaries from 9 lead ministries), Development Partners, private sector, civil societies, faith-based organisations, academia and business. The objective of the HLNSCN is to ensure comprehensive and coordinated understanding and action in responding to nutrition challenges in Tanzania. The committee serves as the inter-ministerial monitoring body of the national nutrition strategy and TAFSIP. Similar multi-sectoral coordination committees for nutrition at sub national level have been established. The principal functions of the Committee include:

- Advise the Government on appropriate response and action to address nutrition challenges,
- Develop consensus with Ministries and key external actors on a Framework for Action for the NNS, TAFSIP and related activities,
- Promote the coordinated implementation of the NNS, TAFSIP and related activities across all relevant line ministries and external partners,
- Monitor the implementation of key milestones for the NNS, TAFSIP and related activities,
- Provide advice on the choice of strategies, policies or interventions that need to be taken to eliminate or reduce the impact of the underlying causes on food insecurity and malnutrition, and
- Monitor public expenditure on nutrition to ensure that it impacts on National Development Plan, NSGRP/ZSGRP (MKUKUTA/MKUZA)¹, NNS and TAFSIP objectives.

¹ NSGRP (Mainland) and ZSGRP (Zanzibar) - normally known by their Swahili acronyms: MKUKUTA (Mainland) and MKUZA (Zanzibar)

5.2 National Multi-Sectoral Nutrition Technical Working Group

The overall aim of the Nutrition TWG is to provide advisory support on nutrition to key sectors, and to monitor performance with respect to nutrition goals, objectives and targets in sector strategies, policies and the NSGRP. Specifically, the TWG is expected to provide technical advice and support to key sectors, to monitor the implementation of national and sectoral policies, strategies, plans and activities, with special attention to scaling up nutrition interventions and addressing gaps in service delivery; to advocate on behalf of nutrition with appropriate government, line ministries and partners to increase awareness, understanding and prioritisation of nutrition issues, to substantiate investment for specific nutrition interventions and ensure that nutrition concerns are kept high on the political agenda; to mobilise increased funding support for nutrition in Tanzania by leveraging resources from sector Mid Term Expenditure Framework (MTEF) allocations, district budgets, development partners, international funding agencies, NGOs and other stakeholders; as well as to facilitate sharing of information.

Other tasks include: keeping stakeholders abreast of new research findings and their implications; determining how best to improve integration, convergence and effectiveness of nutrition interventions; identifying system bottlenecks in need of redress and determine appropriate solutions; ensuring rationalisation and best use of financial and human resources; identifying knowledge gaps and research priorities to inform the design of more effective nutrition interventions; facilitating the strengthening for monitoring nutrition to ensure that nutrition indicators are integrated into national and sectoral monitoring, evaluation, and reporting frameworks and systems; and strengthening multi-sectoral coordination and promoting partnerships for nutrition.

Membership to the NMSNTWG includes:

- **Government ministries:** Health and Social Welfare, Agriculture Food Security and Cooperatives , Livestock and Fisheries, Prime Minister’s Office –Regional Administration and Local Government, Education and Vocational Training, Community Development Gender and Children;
- **Institutions:** Tanzania Commission for AIDS and Sokoine University of Agriculture;
- **Development partners:** UNICEF, World Bank, USAID, WHO, WFP and Irish Aid; and
- **NGOs and civil society:** Helen Keller International, Save the Children (PANITA) and Centre for Counselling Nutrition and Health Care (COUNSENUTH).

However, because of the cross cutting nature of the nutrition issues, it is pertinent that other institutions and ministries be included in the working group.

5.3 Ministries and Stakeholders

Efforts to address nutrition challenges require involvement of multiple public and private actors at all levels. Ministries are responsible for designing and implementing nutrition interventions that are relevant in their respective jurisdiction. All ministries as well as other stakeholders have a role to contribute towards improving nutrition of all Tanzanians. A few examples are highlighted in this section and in appendix 2.

Ministry/Institution	Description of responsibilities and contribution to nutrition
Water	<p>Key roles</p> <p>Ministry of Water aims at increasing equitable and sustainable access to, and use of, safe water and basic sanitation services, and promotes improved hygiene. Water is a crucial commodity for production of crops and for human survival. Shortage of water leads to inequitable access to water and draws much of the human labour from production and providing care to fetching of water.</p> <p>Constraints and limitations for better nutrition</p> <p>Owing to inadequate supply of water, issues of hygiene and sanitation are never attained and tend to contribute to high prevalence of diarrheal diseases.</p> <p>What the ministry should do with regards to nutrition,</p> <p>Make sure that adequate and safe water supplies for drinking, washing and cooking are accessible by all communities within the minimum distance.</p>
Agriculture, Livestock and fisheries	<p>Key roles</p> <p>Crops provide all the essential nutrients required for growth and development of human beings. In this regards the agricultural sector has an important contribution to the general wellbeing of the Tanzanian population. The key role of the ministry is to coordinate all activities related to production and supply of food to the entire population of Tanzania. These activities include Extension services: technical and advisory. The ministry has strategies and programmes that aim at strengthening agricultural development, improving food availability and reduce rural poverty through empowering small scale farmers to lift families and communities out of poverty. It is responsible for training agricultural extension workers (Diploma and certificates).</p> <p>Constraints and limitations for better nutrition</p> <p>The existence of high prevalence of malnutrition is a reflection of agricultural planning without a nutrition lens. Despite the growing recognition of the link between nutrition and agriculture, the ministry is yet to fully establish a nutrition department to oversee and coordinate nutrition activities within the ministry. For many years the nutrition unit within the ministry has not been functional due to limited understanding of the contribution of this unit to the overall performance of the agriculture sector and limited resources to enable it to function adequately and therefore ensure nutrition considerations are incorporated in agricultural plans and programmes. Currently the ministry has a nutrition focal person who is responsible for ensuring that nutrition issues are properly handled by the ministry, but implementation of nutrition activities has been hampered by the limited understanding of the planners on the importance of nutrition; and limited resources allocated for implementation of nutrition activities.</p>

	<p>What the ministry should do with regard to nutrition</p> <p>For agriculture to address nutrition challenges there is a need to plan crop production in relation to population nutrient requirements. In this way appropriate crops will be produced and consumed that will result in improvement of nutrition status. Population requirements for nutrients should provide guidance on agricultural planning and production at both national and household levels. Agriculture extension officers could also play a role of advising and encouraging farmers to produce diversified and nutrient dense crops for greater dietary and nutrient diversity.</p>
Community Development, Gender and Children	<p>Key Roles</p> <p>The ministry is responsible for facilitating community development in Tanzania. The major functions include coordination of community development policies, programmes and training. The ministry works in partnership with community members, community groups, CSOs and other players to assist the community in addressing identified needs and provides strong support for community work, which includes work to prevent malnutrition.</p> <p>Constraints and limitations for better nutrition</p> <p>Nutrition does not feature much in its programmes and plans despite the fact that they deal with women and children. However, it has a nutrition focal person who is responsible for ensuring nutrition activities are included in ministry plans and programmes, but it has been a challenge because of the limited support from supervisors and colleagues within the ministry, basically due to limited understanding of the role of nutrition by other ministry staff. Consequently, resource allocation has not been forthcoming to enable the nutrition focal person to function adequately. This has been a challenge for many nutrition focal persons in various ministries.</p> <p>What the ministry should do with regard to nutrition</p> <p>The ministry could have been instrumental in ensuring that the nutrition situation of women and children is improved by incorporating nutrition considerations into their programmes and activities. The Tanzania Food and Nutrition Centre and UNICEF are developing an advocacy strategy for supervisors of nutrition focal persons and nutrition officers to create awareness on what they could do for nutrition within their respective ministries.</p>
Education and Vocational Training	<p>Key Roles</p> <p>The responsibility of the Ministry of Education and Vocational Training is to plan, promote, supervise and co-ordinate all educational programmes in the country.</p> <p>Constraints and limitations for better nutrition</p> <p>One of the challenges to incorporating nutrition subjects in the curriculum is lack of nutrition teachers in schools. Graduates from Sokoine could be employed to teach nutrition in schools, but they will need to undergo additional</p>

	<p>teachers training courses. This may not be attractive to them whose expectations are to join the labour market immediately after graduation.</p> <p>What the ministry should do with regard to nutrition</p> <p>The young population growing up in schools need adequate exposure to nutrition issues. This could be achieved by incorporating nutrition courses in the training curriculum. Currently, this is not the case and nutrition aspects are mentioned in passing when teaching biology-related subjects. If nutrition is taught in schools then children will be able to pass on information to their parents. This will ensure scale and effectiveness so long as the knowledge provided is appropriate. There will be a need to include nutrition courses in the teachers training programmes so that they are all able to teach nutrition courses when they graduate. In addition, it can play a role of ensuring that it has policies that promote strong linkages between nutrition and education to advance overall efforts to improve nutrition outcomes.</p>
Finance and Economic Affairs	<p>Key Roles</p> <p>Provides overall management on revenue, expenditure and financing of government activities. In addition it advises the government on broad financial and economic affairs and supports the economic and social objectives. The ministry guides other ministries on how to budget and provides the budget ceilings through the Mid Term Expenditure framework (MTEF).</p> <p>Constraints and limitations for better nutrition</p> <p>The ministry established a budget code for nutrition in 2011 to facilitate budgeting for nutrition at all levels. This is a significant achievement; however, up to 2013/14 this has not been implemented. It is envisaged to be included in the current budget cycle.</p> <p>What the ministry should do with regard to nutrition</p> <p>In this regard the ministry has a significant contribution to ensuring that nutrition aspects are implemented by allocating adequate resources.</p>
Local Government Authority	<p>Key Roles</p> <p>Maintenance of law, order and good governance, promote economic and social welfare of the people within their areas of jurisdiction and ensure effective and equitable delivery of qualitative and quantitative services to the people within their areas of jurisdiction. In addition, LGAs are responsible for integrating National Nutrition Strategy components/activities into their Comprehensive Council Development Plans; ensuring the implementation of policies, strategies and guidelines within their respective districts; mobilising resources for implementation of nutrition activities; and sensitising and supporting wards and communities to initiate, implement and monitor nutrition activities at ward and community levels.</p> <p>Constraints and limitations for better nutrition</p>

	<p>However, there is limited capacity within districts to adequately implement this activity. Consequently, there is paucity of information to guide nutrition action at district level. In addition, the LGA has a pool of professionals/experts including community development, agriculture, health, forestry, water, etc</p> <p>What the ministry should do with regard to nutrition</p> <p>Implementation of nutrition activities is the responsibility of the Local Government Authorities. Nutrition officers in Districts and Regions are responsible for assisting District Councils to identify specific nutritional problems in their respective districts and to prioritise nutrition activities in the Council's annual plans. The LGA is responsible for allocating resources for nutrition activities. In addition, LGAs are responsible for generating nutrition data to facilitate planning and implementation of nutrition activities. If nutrition officers and focal persons in LGAs are properly oriented, they could play an important role in ensuring nutrition outcomes are achieved. It is the responsibility of the nutrition officer to orient other workers within districts and regions to have a nutrition focus in their responsibilities. Therefore the LGA level is the centre of operation for most nutrition related activities; they will need greater support from institutions and the central government to enable them to function adequately to bring about positive nutrition outcomes.</p>
President's Office Public Service Management	<p>Key Roles</p> <p>PO-PSM's role is to assist the Head of the Public Service (the Chief Secretary) in matters of personnel and administration pertaining to Public Service in the entire government system. The specific functions of PO-PSM are: a) Administrative & Personnel Policy b) Administration of Public Service c) Co-ordination of Training and Recruitment and d) Improvement of efficiency and effectiveness of delivery of public service. It is also responsible for hiring of staff and determining wage structure and terms of service for various cadres including nutrition officers.</p> <p>Constraints and limitations for better nutrition</p> <p>Since the nutrition cadre is new, the working arrangement in the government structure is not clear.</p> <p>What the ministry should do with regard to nutrition</p> <p>There is a need for frequent reviews of terms of service to ensure that responsibilities of nutrition officers do not overlap with other terms within the areas of functions.</p>
Health and Social Welfare	<p>Key Roles</p> <p>Facilitate the provision of basic health services that are of good quality, equitable, accessible, affordable, sustainable and gender sensitive. In addition, the ministry is responsible for preparation of job description for various cadres in the ministry, including nutrition. It was also responsible for recruitment of nu-</p>

	<p>trition officers for the districts and regions in 2011 - 2014. Traditionally in Tanzania, Nutrition is well rooted within the Ministry of Health and Social Welfare. The ministry of health has a mandate to coordinate policy formulation, guidelines, standards through its designated specialised agencies and identification of priorities for nutrition within the health sector.</p> <p>Constraints and limitations for better nutrition</p> <p>Delivery of nutrition services has been hampered by the nature of the set up and administration of the health sector, whereby nutrition services are health facility based with limited extension, outreach and community based services.</p> <p>What the ministry should do with regard to nutrition</p> <p>The ministry should mainstream nutrition in the health delivery system. One option could be to establish a semi-autonomous organization to spearhead nutrition activities in the country.</p>
<p>Private Sector including the media</p>	<p>Key Roles</p> <p>Food processors and manufacturers play a key role in ensuring that the food is safe and contains adequate amounts of nutrients, especially those that are considered limited in most diets (eg vitamins and minerals). The food fortification alliance comprises industries involved in the processing and manufacture of salt, oil, wheat flour and maize flour. The government has established legislation requiring manufacturers of these products to fortify them with all minerals and vitamins. Vegetable Oil manufacturers are required by law to fortify with vitamin A all oils produced in the country at large and are sold in bulk. Currently, two oil manufacturers are fortifying oil with vitamin A. Therefore, they are responsible for technical setup, procurement and product labelling and to sell fortified oil. Similarly, salt manufacturers are required by law to produce iodine fortified salt. In addition, six flour millers, producing between 100 and 1500 metric tonnes of wheat flour per day, have so far joined the national food fortification effort in Tanzania. It is estimated that the food fortified will be consumed by around 23 million Tanzanians each year. This will probably benefit urban dwellers and not so much rural populations considering that they still produce their own food and process at a local small scale level. Efforts are underway to include small scale fortification in the fortification programme.</p> <p>Constraints and limitations for better nutrition</p> <p>Inadequate local content in nutrition information and unsustainable availability of fortificants.</p> <p>What the Private Sector including the media should do with regard to nutrition</p> <p>Public Private Partnerships could be established in nutrition social marketing, including lobbying and advocacy. The media could have a significant role to play in providing information and creating awareness about nutrition in the</p>

	country. However, they too need to be empowered about nutrition by relevant nutrition organizations and institutions.
Civil Society Organisations	<p>Key Roles CSOs are involved in various ways in nutrition work in the country ranging from specific nutrient focus to integrated nutrition action both at community and national levels through advocacy and influencing national policies to improve nutrition situation of the population.</p> <p>Constraints and limitations for better nutrition Many of the CSOs have a narrow focus in terms of subject and population groups being targeted; basically women and children below five years and the rest of the population is not reached.</p> <p>What the CSOs should do with regard to nutrition CSOs could play a role in creating awareness of the key issues contained in sectoral policies, explain the content and context in which the policy operates and advocating for inclusion of nutrition in sectoral policies as well as allocation of resources for implementation of nutrition relevant interventions in all sectors. In addition, CSOs could start programmes and activities directed to understanding the nutrition situation of other groups in the population.</p>
International Organisations	IOs provide Technical Assistance, financial, material and guidance for nutrition activities. They also support the Government in the implementation of various activities at all levels through various NGOs and other professional bodies, for example, the vitamin A supplementation, malaria control and fortification programmes, etc.
Communities	Organisation of communities in rural (hamlets) and urban (Mtaa) areas provides a suitable environment for implementation of nutrition activities at community level. Community workers and leaders are better placed to assess nutrition needs and implement activities using available resources to address those needs. Therefore, they are critical in mobilising communities to act on the nutrition challenges facing communities. However, they need to be empowered and supported in order for them to be effective. The appointment of nutrition officers at various levels could facilitate this process.
Individuals	Individuals' actions, behaviour and practices have profound effects in nutrition outcomes at individual level. Therefore, they have a key role to play in ensuring improved nutrition situation.

5.4 Summary

The Government of Tanzania has recently established high-level institutional structures to address nutrition. The High Level National Steering Committee on Nutrition is located in the Prime Minister's office, and comprises representatives from a broad range of stakeholders, including Government, donor agencies, civil society, academia, and business sectors. A national multi-sectoral Nutrition Technical Working Group, with similar representation to the High Level Committee, has also been established to provide advisory support and to monitor performance on nutrition goals, objectives and targets both in specific sectors and in the NGSRP.

However, in reviewing individual sectors relevant to addressing nutrition it is clear that there are institutional and capacity limitations. In the Ministry of Agriculture, Livestock and Fisheries, there is a nutrition unit with a nutrition focal person, but implementation has been hampered by limited understanding by planners of the importance of nutrition, and limited resource allocation for nutrition-related activities. Some other Ministries, including the Ministry of Community Development, Gender and Children, also have a nutrition focal person, but again the role has been hampered by lack of understanding and support. The Ministry of Finance and Economic Affairs established a budget code for nutrition in 2011, but upto 2013/14 no resources were allocated to this budget line.

The Ministry of Health and Social Welfare was responsible during 2011-14 for recruitment of nutrition officers for the Districts and Regions; but delivery of actions has been hampered by being health facility-based, with limited outreach.

The Government has taken an important initiative in recent years with food processors and manufacturers in relation to food fortification, and helped establish a Food Fortification Alliance, comprising industries involved in processing and manufacture of salt, oil, wheat flour and maize flour. Legislation has been passed requiring manufacturers of these items to fortify them with vitamins and minerals. However the main benefits of this initiative are likely to go to urban consumers.

6 Overview of Key Sectoral Policies and the Extent of Nutrition Focus

Nutrition is considered to be a cross-cutting issue; therefore, it is important that every policy should address it in one way or another. Nutrition is about enhancing human capital. Without nutritionally sound and healthy personnel, people working in various sectors will not be able to perform their tasks well. However, the whole chain starts with agriculture; consequently, agriculture is the driver of other sectors.

6.1 Policy Analysis for Nutrition: Methodology

An analysis of national policies in Tanzania was carried out to obtain an overview and ascertain the extent to which nutrition issues have been addressed. The analysis was based on the UNICEF conceptual framework of the causes of malnutrition (UNICEF 1990) whereby the main levels of analysis are basic, underlying

ing, and immediate causes of malnutrition and death. Further analysis was done to examine how the policies have responded to key nutrition challenges such as undernutrition and overnutrition. Other issues such as health, care and hygiene that contribute indirectly to nutrition were also considered.

In addition, a series of face-to-face interviews were conducted with government officials responsible for policy formulation and coordination from ministries, using a specially designed semi-structured interview guide in the form of a checklist (Appendix 1). The information collected included nutrition issues addressed by the policy and issues to be included if the policy is revised. Other aspects were policy coordination mechanisms, monitoring and evaluation, strategies and programmes emanating from the policy, action plan and funding mechanisms.

A total of 33 policy documents and 12 strategies were collected from various ministries and reviewed (Appendix 2). Aspects related to nutrition addressed in the policy documents included malnutrition manifestations (for instance stunting, wasting and micronutrient deficiencies) and causes (immediate, underlying, and basic). Close to 43% of the policy documents did not include any explicit mention of nutrition, and 57% mentioned nutrition (health, food and nutrition, agriculture, child and community) and some have incorporated aspects related to nutrition varying from food and nutrition security to aspects of under- and over-nutrition. Other policy documents that have addressed nutrition by discussing some issues of food and nutrition security, malnutrition and nutritional status of children were those related to water, irrigation, livestock, fisheries, biotechnology, children, gender and youth development. Policy documents related to HIV/AIDS, transport, agricultural marketing, environment, land, and industry and enterprise development have not included any mention of nutrition. Specific topics included in the policy documents that had mentioned nutrition are those related to food insecurity and diseases as they apply to a wider population and under-nutrition. Over-nutrition or emerging diet-related chronic diseases have not been captured.

In most of the policies, nutrition was not considered during policy formulation. This could be due to limited understanding and appreciation of nutrition as a cross cutting issue and that each sector has a role to play on improving nutrition in the country. In addition, it was observed that policy formulation is usually done by each sector and one section of the sector (departments of planning in various ministries) separately without consideration of aspects that may be relevant to other sectors or from other sectors, usually not even involving other sections within ministries. Sectors or stakeholders are usually involved at the final stage of policy formulation, at which stage it may not be easy for them to make structural adjustments to policy drafts.

6.2 Identified Gaps in Policy Documents

The analysis identified several gaps in the policy documents. These included:

- Limited collaboration during formulation of policies.
- It is very difficult for one sector to know what other sectors are planning to implement. In some occasions this may lead to duplication of efforts among sectors and missing out some of the key aspects that need to be implemented.
- Policies that were found to have included nutrition words or aspects focus mainly on children below five years of age and women of childbearing age. Men, boys, girls and the elderly are not men-

tioned in most of the policies; this implies that coverage of nutrition aspects in the policy documents is also limited.

- Many policies were formulated about 20 years ago; therefore there are gaps in relation to the current nutrition situation affecting the country. For example, issues related to overweight, non-communicable diseases, climate change and HIV/AIDS are largely absent in the policies. Hence, there is a strong need for policy reviews to address many of the emerging or contemporary issues. In addition, there is a need to put in place mechanisms to capture emerging issues as they happen and prepare programmes or budgets to address them. This is one of the factors that leads to the initiation of scattered programmes that in the end do not address the goals and targets of the country.
- Lack of qualified nutritionists (see Appendix 6) in key ministries to provide leadership or guidance in aspects related to nutrition has contributed to inadequate integration and mainstreaming of nutrition issues in sectoral policies, strategies and programmes. It is envisaged that the newly recruited nutrition cadres in Local Government Authorities and nutrition focal persons in lead ministries would advocate and facilitate incorporation of the nutrition aspects that each ministry should contribute to. Since the nutrition cadre tends to communicate in the same language, inter-ministerial communication and collaboration could be promoted in order to minimise duplication of efforts and misallocation of resources.
- All policies lack a section on monitoring and evaluation including an evaluation plan. There are neither indicators for evaluating the implementation of the policy nor information on the type of data to be collected, mechanisms and techniques for data collection, processing and sharing (this also includes policies that have addressed nutrition aspects). This implies that there is no possibility of measuring impact at the end of the lifetime of the policy or programmes emanating from the policies.
- The analysis has also revealed that there is limited inter-sectoral collaboration during formulation and implementation of policies. Hence, there is a tendency for sector-specific policies with limited inter-linkages. This implies that sectors consider aspects that have a direct bearing on their own sector activities only. In this regard, it may limit the potential of sectors to contribute to the overall development of the economy and human well-being.

6.3 Contribution of sectoral policies to facilitating linkage between nutrition and agriculture

Malnutrition is a multifaceted issue that requires the integration of various sectors in addressing the problem. Traditionally, the agriculture and health sectors have been considered as the most important for addressing nutrition, due to their direct link to food and health outcomes. The agriculture sector (in its widest context) is important for production of food (crops and livestock), hence ensuring food availability. The health sector is important for addressing diseases, some of which may tend to affect food utilisation. In the context of food and nutrition security, many other sectors are important in addressing specific issues related to nutrition. For example, food availability is determined by production, nutritional adequacy, acceptability, safety and quality, storage, processing, governance and environmental sustainability. Food utilisation, on the other hand, is determined by health, cultural beliefs and practices, food preparation, availability of safe water, sanitation, availability of time and knowledge and skills for provision of

care and food preparation. Furthermore, food accessibility is determined by economic factors (income, employment opportunities, purchasing power, pricing mechanisms, private transfers and policies on income generation and distribution) as well as physical infrastructure (transport and markets).

The sectoral approach to addressing agriculture and nutrition issues has led to divisions and fragmentation in service provision and implementation of activities and possession of knowledge. Each of these sectors often times has its own agenda and activities and sometimes the activities may be conflicting. There is a need to rethink how the sectors can be better organized to serve the entire population and integrated in such a way that we have a better service delivery system to meet livelihood needs at community levels. A holistic approach, looking at people's overall requirements, should be the way to go. Nevertheless, the holistic approach to community problems should take into consideration the potential of the people in communities to improve their own lives. They are the key partners in this endeavour and if empowered with appropriate tools and skills they would be able to bring about the link between agriculture and nutrition more appropriately.

Based on the aforementioned determinants, sectors that are considered to be most pertinent in improving nutrition include agriculture, health, water and sanitation, livestock and fisheries, community development, finance and education. Other sectors that may make a contribution are energy, transport, infrastructure, trade and marketing, communication and the media. All these sectors should be interlinked to ensure adequate nutrition outcomes. However, these sectors need to be coordinated; currently the Nutrition Officers at district and regional levels as well as Nutrition focal persons are responsible for ensuring that sectors are coordinated in providing nutrition services. The main challenges that Nutrition Officers face in attempting to integrate nutrition issues in district development plans and coordinate among sectors include low willingness of technical personnel in some sectors to integrate nutrition issues and low recognition of the position of the Nutrition Officer and the contribution the Nutrition Officers could make in district plans and activities. Other challenges are limited community involvement, low knowledge or awareness of nutrition linkages among actors and lack of funds and facilities for undertaking nutrition actions and providing nutrition services. In addition, there are inherent challenges related to Nutrition Officers' background, in terms of training, which limit their effectiveness in persuading colleagues and supervisors to allocate adequate resources for nutrition and decision making. Many of the Nutrition Officers are not involved in decision making and lack awareness on how to influence decision making processes. Therefore, Nutrition Officers need training on designing and carrying out advocacy strategies so as to enable them to influence policy and decision making.

Training programmes for extension workers should strive to link up various sectors, considering that the goal of each of the sectors is to improve human well-being. Therefore, training programmes should produce graduates/professionals who can effectively translate the linkages between agriculture, health and nutrition in the field, in their capacity as extension workers or health care providers or nutrition counselors. It should be noted that most of the health problems experienced by people in Africa are related to food-body interactions (inadequate food/nutrient intake). We need to get to a point whereby doctors would be able to prescribe food as part of a treatment regime. During dietary surveys in communities people usually indicate that they would only eat fruits if the doctor prescribes. This brings up a very important issue with regards to food prescription, which is gaining importance among people living with HIV/AIDS. In this regards, health personnel would be very instrumental in linking agriculture to health and it will help to stimulate agriculture production and consequently improve nutritional status of the people.

Traditionally, policymakers have viewed issues concerning nutrition as a separate discipline. However, it is increasingly becoming clearer that nutrition is an interdisciplinary science, which needs to incorporate issues related to health, nutrition, sustainable food production, diversity, inter and intra household and geographic food distribution, safety, processing, accessibility and affordability as well as environment. In this regards capacity strengthening at all levels is needed to empower actors to implement nutrition actions more specifically on the link between agriculture and nutrition. There are still many challenges on how the linkages among sectors could be established for a common goal of ensuring healthy populations. A specific guidance could be developed to enable actors at all levels to incorporate sectoral issues for improving nutrition. Some of the sectoral issues which need to be addressed for improving nutrition are presented in Appendix 3 and an example is provided in box 1.

Box 1: An example of sectoral interlinkages in addressing nutrition problems

Anaemia is a decrease in number of red blood cells (RBCs) or less than the normal quantity of hemoglobin in the blood. Causes of anaemia may be classified as impaired red blood cell (RBC) production, increased RBC destruction (as in malaria), blood loss (helminths infestation). Basically the main cause of anaemia is deficiency of iron required for haemoglobin formation in the red blood cell. Iron can be obtained from plant and animal sources. Inadequate production of livestock and plants rich in iron leads to inadequate iron in the diet, hence inadequate consumption and deficiency in the body. Iron rich foods may be available, but if there is low education/awareness of the importance of iron, then not much of these foods will be incorporated in the diet. Similarly, if there is poor prevention and treatment of diseases such as malaria and helmonths, more destruction of red blood cells would occur. Therefore, there is a need for linking the various sectors to fight malnutrition in communities, in this case agriculture, education and health.

6.4 Agricultural planning “with a nutrition lens”

The goal of agriculture should be to grow food for health and nutrition. Planning for food production should have a strong focus on the nutrient requirements of the population (nutrient balance sheets). Currently, only minimum nutritional consideration is included in planning for agriculture (crop/livestock) production at all levels. For example, how many vitamins are needed? What crops or animals would provide these vitamins, and how should they be produced? So far the practice has been to look at the energy levels only. Efforts to improve agriculture have basically focused on yield or other characteristics such as efficiency of crop production, but very little on nutritional quality of crops. There is a need to factor in other nutrients, especially micronutrient levels, in determining nutrient production levels in a given country (per capita levels of production of micronutrients). Similarly, health planning should indicate the effective demand for nutrients for treatment and prevention of malnutrition. In addition, there is a need to develop nutritional indicators which can be included in the measurement of agricultural sector performance. This could include assessment of nutrition attainment, whereby yield per hectare is translated in terms of nutrition. For example, how much nutrition is or will be derived from a one hectare yield of a given crop? This would be one way of heightening awareness of the nutritional benefits from particular crops and would thereby promote more nutritionally focused agricultural production. In this regard, there is a need to consider nutrition during agricultural production by all producers at all levels to ensure that adequate nutrients are produced for all people.

6.5 Summary

This study reviewed 33 policy documents and 12 strategies of potential relevance to nutrition, and found that about 43% of them had no explicit mention of nutrition, including policy documents on HIV/AIDS, transport, agricultural marketing, environment, land, and industry and enterprise development. In most of the policies, nutrition was not considered during policy formulation.

A number of gaps were identified in the policy documents, including limited collaboration during formulation; focus on sub-groups of the population, omitting others; outdated policy frameworks; lack of qualified nutritionists; limited inter-sectoral collaboration; and lack of monitoring and evaluation plans.

Specifically with regard to the agriculture-nutrition linkage, sectoral approaches have been followed which has limited the extent to which agriculture has developed nutrition-sensitive approaches. Nutrition is currently only considered to a minimum extent in agricultural planning. Capacity strengthening at all levels is needed to empower key actors to implement nutrition-focussed agricultural activities. Some specific actions include providing more support to the Nutrition Officers now placed at District and Regional levels; and including agriculture-nutrition actions in the training programmes of extension workers.

7 Conclusions

Agriculture has the potential to provide solutions to solving nutrition problems related to inadequate intake of nutrients. Several initiatives and projects are being implemented in Tanzania to try to unleash the potential of agriculture to address nutrition challenges existing in the country. Given the climatic conditions in Tanzania there is potential to produce adequate amounts of a variety of foods to meet the nutrient requirements of all population groups. However, agricultural production planning must be guided by a nutrition lens. Indicators to link the two sectors are not well understood by many implementers in all sectors. Therefore, there is a need to establish indicators that will be used to assess nutritional attainment from agricultural production. Agriculture and nutrition are critical for the economic development of Tanzania and tend to involve a wide spectrum of partners, government, public, private and commercial operators who should be linked and coordinated to enable them to move forward with this agenda. Nevertheless, the most crucial partners are the communities, where action ought to take place. There is a need for strong coordination and collaboration among sectors, which is currently very limited.

Information on agriculture and nutrition has often been presented separately without making reference to the other sectors. There is limited information linking the two areas. There is a need for more information (education/knowledge) about the linkage between agriculture and nutrition, and improved skills towards sustainable agriculture for improved nutrition and health. What information should we send out to the general public and farmers in particular, on the linkage between the two sectors? How can we raise awareness among farmers to consider health and nutrition when engaging in agriculture production? How can we facilitate new production practices and skills to ensure improved nutrition? We also

need to provide appropriate and adequate information and communication along the whole spectrum of the agricultural value chain for enhanced nutrition and health. Print materials are still very useful in rural areas, but with advancement in information and communication technology, other innovative ways, such as mobile phones can be used to communicate messages to the general public about the role of agriculture in improving nutrition and of improved nutrition and health on agricultural productivity.

In Tanzania, nutrition and agriculture problems are huge and require multiple ways of solving them. Therefore, a holistic and integrated approach to research, involving interdisciplinary, trans-disciplinary and multidisciplinary research agenda or protocols is needed.

The policy environment to unleash the benefits of nutrition is limited, although the institutional arrangements to promote a focus on nutrition are more comprehensive and cross-sectoral than in the past. Most of the existing policies still have minimal incorporation of nutrition issues. Only a few policies (health, food and nutrition, agriculture, child and community development) - basically those related to food insecurity and diseases - have incorporated nutrition issues. There is a need to incorporate issues of nutrition and their importance in all policies in relation to the core nature of the policy and how it affects availability, accessibility and utilisation of food and therefore influence nutrition outcomes of the entire population. Also, there remain major capacity constraints in terms of delivering nutrition-sensitive actions at community level. Therefore, much remains to be done in terms of both policy formulation and implementation to bring about substantially improved nutrition outcomes.

Appendix 1: Semi-structured interview guide

SN	Name of the policy: The national land policy	
A	Background to the policy	
A.1	Year approved	
A.2	Approving authority	
A.3	State if in the process of review	
A.4	State if there is any mention of evidence based research for the policy formulation	
B	Design and content of the policy	
	Does the policy adequately respond to the current nutrition challenges?	
	Point out key issues raised by the policy that are relevant to nutrition	
	Give details on type of the policy	
	Does the policy consider other sectors for its targeted goals?	
	Are the cross cutting issues such as gender groups and vulnerable groups considered in the policy?	
C	Policy coordination mechanisms	
	State the policy coordination mechanisms that exist (Task forces, work group, committees, councils, UN agencies, NGOs, Social welfare, education sector, trade sector, finance, health, agriculture etc)	
D	Policy implementation	
	Are there strategies emanating from the policy? Please mention them	
	Are there any interventions to address key nutrition challenges? Please	

	mention them	
	Are the interventions implemented at the national level? Please clarify	
	Are the financial resources adequate for nutrition interventions implementation?	
	Are the staffs well trained and adequate for delivering nutrition programmes?	
E	Monitoring and evaluation	
	Is there any mention of monitoring and evaluation?	
	Is the mentioned monitoring and evaluation cover key nutrition indicators?	
	Are there surveys related to nutrition?	
	Are the surveys related to nutrition routinely conducted? Please mention them and specify time	
	Is there any sufficient flow of routine data been reported that are related to nutrition?	
F	Suggestion/comments	
	What issues have been suggested by the responding officer for inclusion to the policy to address nutrition?	
G	Reported challenges for the policy implementation	
	What are the main reported challenges in the implementation of the policy?	
H	Reviewers opinions from the reviewed policies	
	From the reviewed policies is there any indication of the progress made in the inclusion of nutrition since 1990's to date?	
	From the policies that you reviewed, are the officials seems interesting with nutrition issues?	

	Is there any person located as a ministerial nutrition focal person?	
	Are there established files specially designed to capture nutrition related information?	
	Were the policy makers seemingly interested to include nutrition issues in their sector policies when an opportunity for a review happens?	
	Please add in any other relevant information which you were able to capture during the process of document review and interviews	

Appendix 2: List of policies, strategies and programmes reviewed

SN	Name of policy	Ministry/Source	Year
1	Child Development Policy	Community Development, Gender and Children	1996
2	Community Development Policy	Community Development, Gender and Children	1996
3	Education and Training Policy	Education and Vocational Training	2010 Draft
4	National Fisheries Sector Policy and Strategy Statement	Livestock Development and Fishery	1997
5	Food and Nutrition Policy for Tanzania	Health and Social Welfare/TFNC	1992
6	Information and Broadcasting	Information, Culture and Sports	1993
7	Irrigation Policy	Agriculture, Food Security and Cooperatives	2009
8	Livestock Development Policy	Livestock Development and Fishery	2006
9	Agricultural Marketing Policy	Industries, Trade and Marketing	2008
10	National Agriculture Policy	Agriculture, Food Security and Cooperatives	2007 Draft
12	National Biotechnology Policy	Communication, Science and Technology	2010
13	National Disaster Management	Prime Ministers Office	2004

14	National Environment Policy	Vice Presidents Office	1997
15	National Health Policy	Health and Social Welfare	2007
16	National Higher Education Policy	Education and Vocational Training	1999
17	National Policy for Elderly People	Health and Social Welfare	2003
18	National Population Policy	Presidents Office	2006
19	National Research and Development Policy	Communication, Science and Technology	2010
20	National Science and Technology Policy	Communication, Science and Technology	1996
21	National Trade Policy	Industries, Trade and Marketing	2003
22	National Youth Development Policy	Labour, Employment and Youth Development	2007
23	Small And Medium Enterprise Development Policy	Industries, Trade and Marketing	2003
24	Sustainable Industrial Development Policy	Industries, Trade and Marketing	1996
25	The National Energy Policy	Energy and Minerals	1992/2003
26	The National HIV and AIDS Policy	Prime Minister's Office	2001
27	The National Land Policy	Lands, Housing and Human Settlement	1995
28	The National Mineral Policy	Energy and Minerals	1997
29	Transport Policy	Transport	2003
30	Vocational Training Policy	Education and Vocational	2001

		Training	
31	Water Policy	Water	2002
32	Women and Gender Development Policy	Community Development, Gender and Children	2000
33	Sera JumuiyaMalezi, MakuziNaMaendele- oyaAwaliyaMtoto Tanzania (IntegratedEarly Childhood and Development Policy)	Community Development, Gender and Children	2012
34	CAADP POST COMPACT ROAD MAP	Agriculture, Food Security and Cooperatives	2010
35	TAFSIP	Agriculture, Food Security and Cooperatives	2011
36	ASDP	Agriculture, Food Security and Cooperatives	2003
37	ASDS	Agriculture, Food Security and Cooperatives	2001
38	TNSIYCN	Health and Social Welfare	2004
39	National Health Strategic Plan III	Health and Social Welfare	2008
40	National Nutrition Strategy	Health and Social Welfare	2011
41	MKUKUTA II	Presidents Office	2010
42	MKUZA II	State, Presidents Office	2010
43	Tanzania Development Vision 2025	Presidents Office	2000
44	Five Year development Plan	Presidents Office	2011
45	National Constitution	Justice and Constitutional Affairs	1977

Appendix 3: Sector specific issues for improving nutrition

Sector	Issues
Agriculture	<p>Nutrition focused/guided crop Production</p> <p>Diversification</p> <p>Nutrient improvement through science and technology</p>
Health	<p>Prevention of dietary and non-dietary related diseases including public health measures</p> <p>Management of dietary and non-dietary related diseases</p> <p>Improve services related to reproductive health especially during the first 1000 days (window of opportunity for child growth).</p>
Water and sanitation	<p>Availability of portable, adequate, clean and safe water.</p> <p>Sanitation and hygiene education</p> <p>Water pricing mechanisms</p>
Livestock and Fisheries	<p>Nutrition focused/guided livestock Production.</p> <p>Nutrient Quality and safety of meat and meat products.</p> <p>Consequences of over consumption of certain meat products.</p> <p>Supply of essential nutrients from fish and fish products.</p>
Community Development	<p>Sensitize males about nutrition</p> <p>Empowerment of male population with nutrition information, knowledge and skills</p> <p>Promotion of nutrition supportive social behaviours</p> <p>Discourage adverse social behaviour characteristics.</p>
Education	<p>Nutrition knowledge in the entire education system</p> <p>Creates opportunities for employment, income generation and poverty reduction.</p> <p>Discourage unfavourable traditions, cultural beliefs and practices</p>

Finance	<p>Realistic salaries and wages to reflect food and nutrition requirements.</p> <p>National Budgeting with a nutrition lens.</p> <p>Mobilisation of resources for nutrition.</p> <p>Good Governance at all government administrative levels</p>
Energy and Minerals	<p>Affordable, appropriate and gender sensitive energy saving technologies.</p> <p>Realistic royalties for government revenue</p> <p>Community sensitive corporate responsibilities.</p> <p>Pro poor fuel price regulation</p>
Transport and infrastructure	<p>Good and all weather roads for transportation of food stuffs.</p> <p>Diversification of means of transportation to minimise costs.</p> <p>Appropriate and suitable transport facilities for perishable foods</p>
Industry, Trade and Marketing	<p>Consumer protective measures</p> <p>Tax waiver on essential food and nutrition related products</p> <p>Value addition for extension of shelf life and sustainable food availability</p> <p>Nutrient enrichment (e.g. fortification, blending)</p>
Communication	<p>Reliable and timely communication of food prices</p> <p>Awareness creation</p> <p>Knowledge dissemination</p>
Information and broadcasting	<p>Nutrition information dissemination</p> <p>Community mobilisation for nutrition</p> <p>Mobilisation of resources to advocate for nutrition and related issues</p>

Appendix 4: Eight priorities for improving the nutrition situation of Tanzanians contained in The National Nutrition strategy

1. Infant and young child feeding
2. Vitamin and mineral intake
3. Maternal and child nutrition
4. Nutrition and HIV and AIDS
5. People in challenged situations
6. Diet related non-communicable diseases
7. Household food and nutrition security
8. Surveillance and information management

Appendix 5: Strategies for achieving the goal of the national nutrition strategy

Accessing quality nutrition services

Advocacy and behaviour change communication

Legislation for a supportive environment

Mainstreaming nutrition into national and sectoral policies, plans and programs

Enhancing institutional and technical capacity for nutrition

Mobilising resource

Monitoring and evaluation

Building capacity for evidence-based research,

Promoting inter-sectoral coordination and partnerships

Appendix 6: Graduates from Sokoine University since 2006

Undergraduates

B.Sc. Home Economics and Human Nutrition (Undergraduates)

B.Sc. Home Economics	Male	Female	Total
2005/06	14	41	55
2006/07	13	31	44
2007/08	12	42	54
2008/09	9	33	42
2009/10	3	23	26
Total	51	170	221

B.Sc. Food Science and Technology (Undergraduates)

B.Sc. FST	Male	Female	Total
2005/06	28	13	41
2006/07	45	21	66
2007/08	25	27	52
2008/09	16	19	35
2009/10	12	10	22
Total	123	93	216

Postgraduates - 43 M.Sc. (Human Nutrition) since the programme started in 2000. The main challenge has been limited funding for postgraduate studies from the government.

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This Working Paper has been produced as part of the AgriDiet project, funded and facilitated by Irish Aid and the Higher Education Authority of Ireland under the programme of Strategic cooperation. However, the ideas, opinions and comments therein are entirely the responsibility of the author and do not necessarily represent Irish Aid or HEA Policy.



The Policy Environment for Linking Agriculture and Nutrition in Tanzania

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An AgriDiet Working Paper. This paper has been produced by the Lead Author with inputs from the AgriDiet team.

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AgriDiet is a 3 –year joint research project between University College Cork, University College Dublin, the Ethiopian Development Research Institute, Haramaya and Mekelle Universities in Ethiopia, Sokoine and St Augustine’s Universities in Tanzania and the Institute of Development Studies in the UK, aimed at improving the understanding of linkages between agriculture and nutrition in Ethiopia and Tanzania

