

REVOLUTIONARY GOVERNMENT OF ZANZIBAR



MINISTRY OF AGRICULTURE, LIVESTOCK AND ENVIRONMENT
MINISTRY OF HEALTH AND SOCIAL WELFARE



ZANZIBAR FOOD SECURITY & NUTRITION SITUATIONAL ANALYSIS

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ARI	Acute Respiratory Infections
ASDS	Agricultural Sector Development Strategy
ASP	Agricultural Sector Policy
AU	African Union
BMI	Body Mass Index
CAADP	Comprehensive Africa Agricultural Development Programme
CMO	Chief Minister's Office
CPI	Consumer Price Index
CRC	Convention on the Rights of the Child
CSOs	Civil Society Organizations
DES	Daily Energy Supply
DGAs	District Government Authorities
DHS	Demographic and Health Survey
ERP	Economic Recovery Programme
FAO	Food and Agriculture Organization
FEV	Food Energy Value
FEWS	Famine Early Warning System
FFS	Farmer Field School
FIVIMS	Food Insecurity and Vulnerability Information and Mapping System
FNPP	FAO Netherlands Partnership Programme
GIEWS	Global Information and Early warning System
HBS	Household Budget Survey
HEA	Household Economic Assessment
HIV	Human Immunodeficiency Virus
ICESCR	International Covenant on Economic, Social and Cultural Rights
IFAD	International Fund for Agricultural Development
IMCI	Integrated Management of Childhood Illnesses
JKU	Jeshi la Kujenga Uchumi (Economic Brigades)
Kcal	Kilocalories
MACEMP	Marine and Coastal Environment Protection Project
MALE	Ministry of Agriculture, Livestock and Environment
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MKUZA	Mkakati wa Kuondoa Umasikini Zanzibar
MMR	Maternal Mortality Ratio
MoFEA	Ministry of Finance and Economic Affairs
MoHSW	Ministry of Health and Social Welfare
MoLWH	Ministry of Land, Water and Housing
MoYEWOC	Ministry of Youth, Employment and Women and Children
MSMEs	Micro, Small and Medium Enterprises
MT	Metric Tonnes
MTTI	Ministry of Tourism, Trade and Industry
NEPAD	New Partnership for Africa's Development

NGO	Non Governmental Organization
NSGRP	National Strategy for Growth and Reduction of Poverty
OCGS	Office of the Chief Government Statistician
PADEP	Participatory Agricultural Development and Empowerment Programme
PEM	Protein Energy Malnutrition
RGoZ	Revolutionary Government of Zanzibar
SAP	Structural Adjustment Programmes
SPFS	Special Programme for Food Security
TFR	Total Fertility Rate
TSH	Tanzanian Shillings
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
URT	United Republic of Tanzania
USD	United States Dollars
VAD	Vitamin A Deficiency
VAM	Vulnerability Analysis and Mapping
WB	World Bank
WFP	World Food Programme
WHO	World Health Organization
WSSD	World Summit on Sustainable Development
ZAC	Zanzibar Aids Commission
ZPRP	Zanzibar Poverty Reduction Plan
ZRVA	Zanzibar Rapid Vulnerability Assessment
ZSGRP	Zanzibar Strategy for Growth and Reduction of Poverty

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This report presents an analysis of existing food insecurity and nutrition problems in Zanzibar in support of improving the understanding of food insecurity, malnutrition and vulnerability as important dimensions of poverty. As such, the document serves as an important input for the formulation of the Zanzibar Strategy for Growth and Reduction of Poverty, but is also believed to be a useful source of information for future policy and strategy developments in relation to food security, nutrition and poverty reduction.

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INTRODUCTION

Background

Over the last few years, the Revolutionary Government of Zanzibar (RGoZ) has been placing an increased emphasis on poverty reduction and the improvement of daily life conditions of the Zanzibar population (see annex I for a general background to Zanzibar). Some key and overarching policy frameworks have been developed, including the Zanzibar Development Vision 2020 and the Zanzibar Poverty Reduction Plan (ZPRP, 2002-2005), which guide the development agenda and initiatives of the Government. Vision 2020 articulates, among others, a long term focus in terms of poverty reduction, the major aim being the eradication of absolute poverty by 2020. Similarly, the ZPRP was adopted as the main policy tool for tackling the poverty situation over a three year period, from a priority sector perspective.

Zanzibar's commitment to fight food insecurity is reflected in these efforts, as well as in its commitment to implement the World Food Summit Plan of Action contained in the 1996 Rome Declaration on World Food Security and the Millennium Development Goals (MDGs), as internationally agreed targets for halving poverty, malnutrition and hunger by the year 2015. Similarly, Zanzibar is committed to implement the African Union's (AU) Comprehensive Africa Agricultural Development Programme (CAADP) under the New Partnership for Africa's Development (NEPAD) initiative of 2002. The CAADP has five pillars, one of which is increasing food supply and reducing hunger.

In accordance with Vision 2020 and the ZPRP, the Government adopted the Agricultural Sector Policy (ASP) in 2003 and is developing the Agricultural Sector Development Strategy (ASDS). The objective of the ASDS is to boost the productivity of small holder farmers and to increase private sector participation in order for the sector to become modernised, commercialised and highly productive.

However, whilst the ASP and ASDS identify interventions for the improvement of agricultural productivity in Zanzibar - a key aspect of food security - a clear government policy framework for achieving food security is lacking. The objectives of the overarching policy frameworks of the Vision 2020 and the ZPRP in relation to food security can however not be achieved in the absence of a clear understanding of the food security situation in Zanzibar and a framework to address it. Some critical shortcomings of the ZPRP have for example resulted in limited integration of food security in the poverty reduction framework. These include:

- Non integration of food security and nutrition concerns as key and cross cutting poverty issues;
- Lack of identification and characterization of food insecure and vulnerable population groups, in order to target poverty and food insecurity reduction measures;
- A monitoring and evaluation system that focused on inputs and outputs, rather than on outcomes and impacts of poverty reduction measures in line with national targets and goals.

The relationship between poverty and food security is bidirectional. Food security cannot be addressed in isolation from poverty nor from the process of economic growth, and poverty reduction is in turn unachievable if hunger and food insecurity are present. Policy processes and strategies for the reduction of poverty are essentially incomplete when this element of reciprocity is not considered. It is therefore of great importance that the Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP, the second generation of the ZPRP) that is currently being developed by the RGoZ, as well as other relevant policies, adequately understand and address the complex and interrelated issues of poverty and food insecurity. Annex VI presents some definitions of key terms and concepts in addition to a conceptual framework to food security.

Purpose and Scope

Recognizing the need to strengthen the food security perspective within the ZSGRP, the Ministry of Agriculture, Livestock and Environment (MALE) in Zanzibar organized a stakeholder sensitization workshop for Mainstreaming Food Security, Environment and Land Management issues into the ZSGRP in February 2006. One of the main outcomes of the workshop was an overall consensus on the need to undertake an analysis of national food security and nutrition issues in Zanzibar. In particular, household level perspectives of food insecurity and vulnerability were emphasised as being needed in order to identify food insecure and vulnerable groups, and to improve the understanding of underlying causes of the situation.

This paper is an outcome of this consensus, examining the food security and nutrition situation of Zanzibar with the aim of strengthening the understanding and focus on the existing food insecurity and nutrition problems. The paper identifies some of the key policy areas that need to be addressed, both from a sectoral and inter-sectoral perspective. Whilst the main purpose of this analysis is to serve as an input for the formulation of the ZSGRP (2006-2010), it may also be a useful source of information for future policy and strategy developments in relation to food security and nutrition.

The analysis covers a range of agricultural, environmental, socio-economic, and health related issues, as they have a mutually interactive relationship with food security. Farmers who face food insecurity may put more pressure on land for food supply, thereby using environmentally unsound practices which may result in soil erosion, water logging, deforestation, desertification etceteras. In addition, they are likely to be more vulnerable to epidemics or other health risks (for example to HIV/AIDS, malaria, tuberculosis), economically less productive, and, as a community, less caring for the welfare of fellow human beings. In turn, a less productive economy, a more damaged environment and an unhealthy community are bound to make achievement of food security more difficult. Persistent food shortages contribute to for example disease outbreaks, such as cholera and tuberculosis, and competition for food sources might enhance conflict. It is essential to take these issues into account in order to reflect the complexity of food insecurity, its problem elements, its causes and its solutions in terms of policy-making.

Methodology

A small multidisciplinary team of members from the MALE and the Department of Nutrition of the Ministry of Health and Social Welfare (MoHSW) was formed to carry out this analysis with technical support from FAO through the FAO - Netherlands Partnership Programme (FNPP). The work is based mostly on secondary data sources, due to time constraints that were determined by the schedule of the ZSGRP formulation process, therefore focusing on drawing broad policy conclusions for the strategy.¹

Key sources of information for conducting the analysis are listed in Annex VII, and include the draft Zanzibar Household Budget Survey (HBS), Tanzania Demographic and Health Survey (DHS), the Zanzibar Household Economy Assessment (HEA), the Zanzibar Agricultural Census and routine surveys and data of the MALE. In addition, the specific knowledge and expertise of the staff of the MALE and MoHSW as well as other people contributing to the work of the team were critical and of added value to the discussions in the report. Furthermore, the detailed consultations that took place as part of the ZPRP review process through MALE and other key ministries enriched the understanding of the main obstacles in the Zanzibar food and agriculture context. However, due to the lack of relevant information, this report does not address the issues relating to intra-household level allocations of resources.

¹ At the time of the preparation of this report, several of the key data sources (HBS, WFP Comprehensive Food Security and Vulnerability Assessment) were unavailable but due in the short term. This situation analysis will therefore be an ongoing process, first making use of existing information, enriching the analysis as additional information becomes available.

The food security and nutrition situation in Zanzibar is analysed using the usual distinction between food availability, food access and food utilization. In chapter one, food availability is assessed mainly on a national level, but includes some discussion of bottlenecks on the sub-national level. Chapter two deals with issues related to access to food, and looks at the sources of vulnerability and shocks to access to food from a more disaggregated household (or livelihood) level perspective. The third chapter reviews the nutritional and general health situation in Zanzibar, with a focus on children and women. Chapter four discusses food security issues from an institutional perspective, including the role of a rights based approach and issues of institutional coordination. Lastly, chapter five presents the summary of the analysis and broad recommendations for the way forward.

1 NATIONAL FOOD AVAILABILITY

National food availability means ensuring that sufficient quantities of food are consistently available to all individuals within a country. This includes in general food supplied through domestic output, commercial imports, existing stocks or food assistance. In Zanzibar, overall food supplies are determined by the production of small holder farmers living on Unguja and Pemba islands, and to a large extent by the importation of foods. The country does not have a Strategic Grain Reserve, nor does it rely on food assistance on a structural basis. The next sections will provide an overview of the current food availability status on a national level.

1.1 Domestic Production

Zanzibar is densely populated, with an estimated 400 persons per square kilometre. Of the total area available, about 49 percent is suitable for agriculture.² For the majority of rural households in Zanzibar, farming for food production is a major activity; agriculture provides a livelihood for 70 percent of the Zanzibar people; and 99.7 percent of all agriculture households in Zanzibar are involved in either sole crop production or in mixed crop and livestock production.³

Land use and land tenure

Broadly speaking Zanzibar comprises two major agro-ecological zones namely the plantation zone and the coral rag zone. These zones have different characteristics in terms of soils, resources and social economic patterns (as will be shown in more detail in chapter two, livelihoods in Zanzibar are composed of different production systems including farming and off farming activities, fishing systems, etc.). The pattern of land-use in Zanzibar generally follows the distribution of different soil classes; the permanent, settled agricultural activities are concentrated on the deep soil areas, while the coral rag is popular for root and other drought tolerant or seasonal crops, and activities such as tree felling, shifting cultivation and grazing.

According to two studies conducted between 1982⁴ and 1997⁵ there are different categories of land-use in Zanzibar. In Unguja, the largest land category was defined "unimproved grazing land", covering 38 percent of the island. This category actually covers most of the coral rag bush. The second largest land-use category in Unguja is associated with coconut palms and clove trees (26 percent), representing a multi-storey agro forestry system for the deep soil areas.

In Pemba, the largest land-use category is represented by pure stand cloves (26 percent), followed by unimproved grazing land (16 percent) while intercropping of coconuts and cloves accounts for 15 percent of the land use. It is important to note that 64 percent of land is used mostly for agriculture in Pemba, as apposed to 40 percent of the area in Unguja. The Woody Biomass Inventory indicates that 53.9 percent of the total land area in Unguja and 12.7 percent in Pemba are occupied by coral rag forests, which include mainly grassland, bushes and thickets.

Current land-use has led to conflicts between livestock and crop production on the one hand and farming and conservation of forest lands on the other. In addition, urbanisation through horizontal

² See annex I for background information on Zanzibar agricultural conditions.

³ Agricultural Sample Census 2002/03; Revolutionary Government of Zanzibar, Office of Chief Government Statistician, September 2005

⁴ The Land-use study conducted by the National Coconut Development Project (NCDP) in 1982, based on the interpretation of aerial photographs taken in 1977 and a 1:25,000 land-use atlas was produced showing different land-use categories.

⁵ The study conducted by The Zanzibar Forestry Development Project based on photogrammetric interpretation and a "Woody Biomass Inventory of Zanzibar Islands" (at the scale of 1:10,000) was also prepared showing different land-use classes.

expansion of buildings has also taken up some of the fertile land which could have been used for agricultural production. In addition to the above, existing land tenure systems in Zanzibar are complex and do not clearly state the assurance of user rights, a situation which discourages long term investment in land improvements. As land is becoming a scarce resource, there is a critical need to formulate policy and strategies to motivate farmers in boosting agricultural development, to increase crop production and to minimise conflicts and ensure proper land-use patterns.

Production of staple crops

Most of the rural people in Zanzibar are small-scale farmers producing rice, cassava, sweet potatoes, bananas, plantains, and yams. Cereals such as sorghum, maize and millet are also grown although not widely (in the 2002/3 agricultural season sorghum, maize and millet together formed only 13 percent of the total cereal production in Zanzibar, with rice constituting 87 percent of total cereal production).

Table 1: Annual production of selected main food crops in tons between 1999 and 2004

Crop	1999	2000	2001	2002	2003	2004
Maize	311	616	1,559	1,584	1,605	2,515
Sorghum	18	259	112	91	158	145
Paddy	11,856	17,622	18,482	17,725	23,534	20,404
Cassava	112,746	122,746	128,488	162,006	158,898	166,266
Banana	24,746	28,866	47,331	32,814	35,250	37,998
Sweet potatoes	32,875	37,894	29,740	19,652	21,500	36,018
Yams	1,973	1,742	3,916	1,052	3,164	3,691
Groundnuts	51	101	90	295	255	105
Pigeon peas	28	34	116	90	117	266

Source: Dept. of Planning MALE 2005

Table 1 provides annual production figures of the major crops of Zanzibar over the past five years. It shows that domestic output of the main food crops in Zanzibar has been fluctuating throughout the years. Only cassava production has increased steadily, while production of other crops has remained at rather instable levels.

In Zanzibar rice is considered as a major staple diet. It is produced locally and occupies the largest area, as the objective is to increase production levels to meet domestic demand. However rice is yearly imported from both the mainland and abroad to meet the deficit (the estimated import in 2005 was 115,000 MT, see table 6 on import figures). Although rice is the preferred food in Zanzibar, for many people cassava is the real staple food. As not everybody can purchase rice cassava is more widely consumed (it is estimated by MALE that hardly a third of all meals consumed consists of rice in the rural areas). Cassava is grown by virtually every rural household. Ugali, made of cassava flour, is common among fishing communities of Northern Zanzibar and Southern Pemba. Cassava leaves are also chopped and used as a vegetable. Other foods available in Zanzibar include wheat, sugar, fish, beef, milk, eggs and poultry, legumes, fruits and vegetables.

Overall crop production per unit area in Zanzibar is low, with production levels far below potential yields, as reflected in table 2. According to 2003 statistics productivity of rain-fed rice is only 0.8 tons/ha, against a potential of 2.4 tons/ha, while productivity of paddy (irrigated rice) is 4.0 tons/ha, as compared to a potential of 4.8 tons/ha. Similarly the productivity of cassava, banana, sweet potato and other major food crops is below potential levels. This implies that for most of the crops, the volume of production can be increased without necessarily increasing area of land under cultivation.

Table 2: Average food crop yield compared to potential yields in 2003

Crop	Average yield (t/ha)	% average yield / potential	Potential yield
Rain-fed rice	0.8	33.3	2.4
Irrigated rice	4.0	83.3	4.8
Cassava	5.0	20.0	25.0
Banana	3.0	25.0	12.0
Sweet potato	6.0	60.0	10.0
Maize	2.5	41.7	6.0
Sorghum	2.0	40.0	5.0
Yams	12.0	40.0	30.0
Cowpeas	1.0	50.0	2.0
Soya beans	1.0	50.0	2.0
Pigeon peas	1.0	50.0	2.0
Groundnuts	2.0	66.7	3.0

Source: UNIDO study (Dept. of Planning MANREC 2003)

The ZPRP review consultation report cites lack of funds, low diversity, and poor standards of farming and management as among contributing factors to low productivity. This includes the continued use of traditional technologies (for example: heavy reliance on hand hoe as a main cultivating tool, unimproved seeds and planting materials), inadequate agricultural services support (extension, research, rural financing, marketing), and subsequent low incentives to farmers. A number of participatory extension methodologies with a demand driven services approach have been used in Zanzibar aimed at empowering farmers and ensuring that the extension advice delivered responds to priority needs. However, these efforts have been constrained by limited resources, due to which extension workers failed to serve all farmers (lack of transport and material). As a result services in the remote areas are virtually nonexistent. Considerable success could be achieved by maximizing the use of farmers themselves in the transfer of technology (empowering farmers to take greater control of extension supply) and by promoting private sector involvement in extension services provision.

Livestock production

Although supporting data are currently not available (results of the 2002/03 Livestock Survey are still in the pipeline), it is reported that the production of livestock products to feed the local markets in both Unguja and Pemba is increasingly gaining importance.⁶ Both in urban and peri-urban areas livestock keeping is among popular income generating activities. There is a growing number of households that keep poultry under intensive system, with some having started intensive dairy farming. In the 2002/3 agricultural year an estimated 34 percent of all agricultural households in Zanzibar were rearing a total of 162,643 cattle, including indigenous cattle, improved dairy and improved beef.⁷ Animal production in Zanzibar is traditional and characterized by low productivity and low quality resultant from poor germplasm of local breeds, use of low levels of inputs, inadequate nutrition and prevalence of diseases. Consequently, the country is far from self-sufficient in milk and animal products. The contribution of livestock products to the food basket of the Zanzibar population is however not significant. Meat consumption in overall Tanzania is not common. An estimated 65 percent of the population of Zanzibar does not eat meat on a regular basis.⁸ This may be partly the result of cultural preference, but it is also in line with the pattern of poverty incidence. High cost food items such as meat, eggs and milk are consumed on a more regular basis in urban areas than in rural ones. The relish supplementing protein parts of the meals of rural people are legumes like pigeon peas and beans, and mostly fish.

⁶ Zanzibar Country Analysis 2003; Revolutionary Government of Zanzibar, Ministry of Finance and Economic Affairs, 2003

⁷ Agricultural Sample Census 2002/03; Revolutionary Government of Zanzibar, Office of Chief Government Statistician, September 2005

⁸ Tanzania Demographic and Health Survey 2004-2005; National Bureau of Statistics, December 2005

Fisheries

Fisheries constitute an important productive sector in Zanzibar, with an estimated 20 percent of the total population being either directly or indirectly involved in fishing. As indicated above, fish is Zanzibar's most important source of animal protein. About 99 percent of the average annual fish catch of 20,000 tonnes is consumed locally. Table 3 below provides estimated quantities of fish catches in Pemba and Unguja islands over the period 1999-2004, showing a rather stable supply of fish catches for Unguja and an increasing supply for Pemba Island.

Table 3: Estimates of quantity of fish catches in tons between 1999 and 2004

	1999	2000	2001	2002	2003	2004
Unguja	14,337	11,055	11,386	11,298	11,674	12,394
Pemba	4,976	6,867	9,156	9,045	9,186	9,470
Zanzibar	19,313	17,922	20,542	20,343	20,860	21,864

Source: OCGS (MALE 2004, JKU Mafunzo)

Zanzibar fishery is predominantly artisanal, characterized by the high use of traditional fishing equipment. The sector is highly under-exploited and has high potential for contributing more to income and employment generation. Fishing activities concentrate mainly in the inshore waters. Lack of modern equipments and know-how are cited as among the limiting factors to the utilization of off-shore marine resources. Investment in the sector, especially with regards to fishing and processing techniques could increase domestic consumption as well as export revenues.

In sum, overall domestic production trends of staple foods, fruits, and vegetables as well as levels of fish catches have remained at rather low and unstable levels over the past years. While Zanzibar has sufficient marine resources and land with adequate potential that could provide a livelihood to farmers, fishers and livestock keepers, most of these resources are underutilized due to low exploitation capacity. Most of the land under cultivation is not intensively used, and the fishing sector shows a similar picture. This can be partly attributed to the scarcity of the various factors of production, including information and technology. The comparative advantage of Zanzibar in the production of food could also be an influencing factor, although this is an area that remains to be a knowledge gap. The Zanzibar population shows an annual growth rate of 3.1 percent, which is placing an increased demand for food, be it from domestic output and/or from imports, low agricultural productivity remains to be one of the major obstacles to ensuring national food availability. There is however good potential for increasing both crop yields and livestock output and also of diversifying production for local consumption and export.

1.2 National food requirements

In order to determine whether the national food supply meets the national demand, national nutritional requirements are estimated for Zanzibar making use of Food Energy Values (FEVs; table 4).⁹ Nutritional requirements of a country refer to the quantity of energy (Kcal), expressed on a daily basis that is necessary for people, when in good health, to develop and lead a normal life. Requirements vary according to age, sex, body weight, level of activity and physiological status (for example, pregnancy and lactation). Here they are expressed in the form of averages, taking into account individual variation. By converting national supply in Food Energy Values the amount available for human consumption can be calculated (in Kcal), both at an aggregate level, and at per capita level. This total can be compared with the estimates of national requirements based on the minimal daily per

⁹ This table provides a very rough estimate of the dimension of demand and supply of major staple foods in Zanzibar. Details of the calculation are given in annex II.

caput caloric intake of 2,100 Kcal (as advised by FAO), taking an average population size for Zanzibar of one million people.

Table 4: National food production and deficits in Kcal & MT (2004)

Product	National Production (MT)	** FEV in kcal	National Production (Kcal)	*** National Requirement (Kcal per year)	*** National Food Deficit / surplus (MT)	*** National Food Deficit / surplus (%)
Paddy	20,404	3,540	72,230	383,250	- 87,859	- 81
Cassava	166,266	1,530	254,387	191,625	41,021	33
Maize	2,515	3,650	9,180	38,325	- 7,985	- 76
Other Staples *	77,707	1,213	94,259	76,650	14,517	23
Fish	21,864	950	20,771	76,650	- 58,820	- 73
Total	288,756	10,883	450,826	766,500	-99,126	-41

* Banana, Sweet Potatoes, Yams - average FEV used

** Extracted from Tables of Representative Values of Foods Commonly used in Tropical Countries (Platt, 1985)

*** Based on the assumptions of the typical contribution of each food to total calorie intake: Paddy 50%. Cassava 25%, Maize 5%, Other staples 10%, Fish 10%.

When comparing the estimated national requirements of Zanzibar with Zanzibar's annual food production of a few main foods, it is clear that overall production for 2004 (450,826 Kcal), and in any particular year before, is below overall food requirements (766,500 Kcal). Based on the data available, Zanzibar is producing only an estimated 59 percent of its expected annual requirements. To fill this gap, Zanzibar depends heavily on imports from Tanzania mainland and abroad. Care must be taken however to base conclusions solely on this limited type of quick analysis, as it does not provide a complete picture of Zanzibar's food basket, of which there is limited information. Information on food items available other than the ones listed above is at present not available. In addition, the estimation does not take into account any losses of national output to the use of seeds for next planting seasons, use of produce for industrial production (particularly for animal feed) and post harvest losses due to waste and low storage capacities.

Another way of comparing production levels with overall national requirements is calculating the proportion of annual consumption of food products to annual production figures. Table 5 below shows that for all food crops, with the exception of cassava, the volume of consumption over production is over 100 percent, demonstrating a high reliance on food sources other than from domestic production.

Table 5: Proportion (%) of annual consumption of major staple foods to production

Crop	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cassava	37.2	45.2	41.3	50.7	55.0	59.8	80.7	71.4	67.5
Maize	1434.3	2829.0	2315.6	1771.3	3820.1	8972.1	3838.7	7615.4	3795.8
Rice (paddy)	862.8	642.2	882.0	905.9	587.7	432.6	802.0	1017.2	701.0
Banana/plantain	343.2	443.6	412.6	523.0	410.4	584.2	825.5	395.4	349.1
Sweet potato	118.9	124.0	167.0	347.9	298.5	683.7	304.5	153.1	136.8

Source: UNIDO (Zanzibar land husbandry improvement programme)

1.3 Food imports

Food imports from Tanzania mainland and abroad are always used to cover the gap between national demand and national production. Major food imports include rice, sugar, wheat, beans and other

pulses, maize flour, fruits and vegetables. Table 6 and 7 provide limited figures for food imports for Zanzibar over the past years.

Table 6: Food imports in Tons 1995-2001, excluding food imports from the mainland

Crop	1995	1996	1997	1998	1999	2000	2001	2005*
Rice (paddy)	439,799	934,093	41,887	42,383	84,985	102,759	69,055	115,000
Wheat	8,190	7,896	1,825	6,809	5,377	4,039	8,382	25,000
Sugar	7,577	42,998	15,758	17,528	60,993	52,061	21,733	5,000

Source: UNIDO (MALNR/FAO 1999 Agricultural Sector Policy Draft FAO TCP/URT/67/16) and (*) RVA, 2006

Table 7: Food imports from Tanzania mainland in Tons in 2003-2004

Crop	2003	2004
Rice	127.68	185.43
Beans	141.87	33.69
potato	454.6	565.7
Maize flour	1090.77	367.14

Source: TRA, 2006

While most of the rice, wheat flour and sugar are imported from East Asia and Europe, maize flour and pulses come mainly from Tanzania mainland, which also supplies limited volumes of high quality rice. Fruits such as mangoes, pineapples, oranges, doriens, jackfruits, and many more are available in Zanzibar. However, due to seasonal shortages and high demand they are also imported from the mainland. Vegetables are mostly imported from the mainland but a number of green leafy vegetables are produced locally. Internally, Unguja receives banana and mangoes from Pemba to supplement its own production of these commodities.

1.4 Overall vulnerability to unstable or insufficient national supplies

Although hunger and absolute unavailability of food do not tend to be major problems on the islands, overall food supply in the country seems hardly sufficient to meet national annual demand. As already briefly indicated in the respective sections, the major factors affecting Zanzibar's food availability are low and instable agricultural production on the one hand, and a high reliance on food imports on the other. In Zanzibar the types and diversity of foods produced by rural households varies heavily depending on their wealth status and livelihood. Chapter two of this paper on food access provides a more detailed picture of the food economy zones and vulnerabilities to food insecurity on the household level. Main factors contributing to vulnerability of instable or insufficient food supplies on an (sub) national level will be discussed below.

1.4.1 Low and instable levels of production

Environmental degradation and population size

Zanzibar is the most densely populated part of East Africa. Based on 2002 National Population Census, population stands at 984,531 people with an annual population growth rate of 3.1 percent (according to the DHS 2004/5 the total fertility rate (TFR, for ages 15-49 expressed for women) for Zanzibar is 5.3, which is very high compared to other African countries). Almost 50 percent of the total area of Zanzibar is suitable for agricultural production. Population pressure places an increasing demand on land for food crops. This often contributes to farming on marginal lands (steep lands, fragile soils) and to over utilization of natural resources. It also increases the demand for biomass as a source of fuel, causing deforestation and increased burning of dung and crop residues, thus increasing the problems of erosion and nutrient depletion. Unsuitable land uses in farming activities and inappropriate land management practises are the direct causes of environmental degradation.

Having few resources to fall back on, many of the poor in Zanzibar are forced to put immediate needs before the long-term health of the environment. This is the case for groups such as firewood collectors who contribute to deforestation and fishers that use destructive fishing techniques in coral reefs.¹⁰ According to the agricultural census (2002/03) not even one percent of the households have erosion control or water harvesting facilities on their land. Whilst in the short term, such livelihood activities seem feasible within the concerned communities; in the long-term this situation might be unsustainable and likely to pose a food security risk in the future.

Soil Fertility

The plantation zone of Zanzibar is intensively cultivated with both food and cash crops. Much of the domestic output is produced in this zone. Principal food crops include cassava, rice, sweet potato, banana, maize, yams, cocoyam and cowpeas. Main cash crops available are fruits, cloves, coconut, spices etc. The zone has potential for intensive food and cash crops production. However, the cultivable area of the zone has been severely reduced due to the expansion of human settlement. Zanzibar experiences high land pressure caused by rapid population growth. This condition is alarming and requires serious efforts in strengthening land use planning, tackling the implications of population growth and urbanisation pressures in agricultural productive areas. As land matters are not a responsibility of the Ministry of Agriculture, there is a need for a multi-sectoral approach involving all stakeholders at different levels.

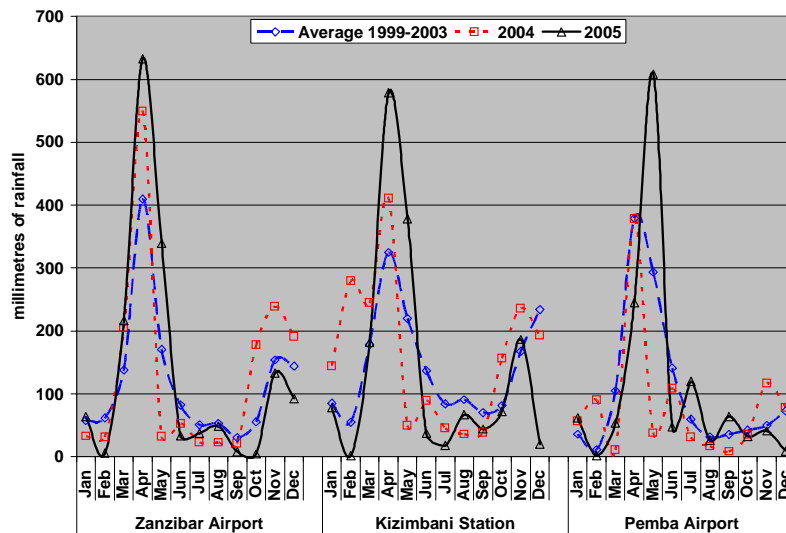
The coral rag zone covers most of the southern part and a large area in the north for Unguja, while for Pemba it covers the north-eastern corner of Micheweni and Kojani Island. There are two types of coral soils distinguished in these areas, namely Maweni and Uwandani. The former characterised with a rough, extremely rocky and stony surface. The latter characterised by less coral rock outcrops and a smoother surface. Fertility in this part is less than Maweni and a higher percentage of the land surface is covered with a thin layer of soil, however deeper soil pockets are generally not found. Crop production is mainly for subsistence and agriculture has to compete for labour resources with a range of off farm activities, especially fishing and seaweed farming. The vuli rains are unreliable, increasing the risk of rain-fed crop production; farming activities are, therefore, conducted during the Masika season. The main cash crops within the coral rag are pulses (cowpeas, pigeon pea, green gram and lima beans); root crops (cassava, yams and sweet potatoes); cereals (sorghum, maize and bulrush millet); vegetables (tomatoes, pumpkins, chillies, limes, cucumber) tree crops papaya and citrus.

Climatic conditions

The Zanzibar cropping year runs from October through September the following calendar year. With the exception of few locations, Zanzibar receives two main rainy seasons per cropping year, including the long (masika) rains falling from March through June and the short (vuli) rains falling from October to December. The average annual rainfall is 1700 mm. While the vuli season that peak in November account for approximately 29 percent of the annual rainfall, masika rains peak in April and contribute nearly 52 percent of annual rainfall. Drizzles and rainfall traces, which are generally off-season, fall in the months of June to September and January-February (Figure 1).

¹⁰ State of the Environment report for Zanzibar, 2004/05

Figure 1: Rainfall at Selected Stations in Zanzibar



Source: Tanzania Meteorological Agency, Zanzibar Zonal Office

Spatially, both vuli and masika rains are reliable in areas characterized by the deep fertile soils (see also next chapter on access to food in various livelihood zones). For areas characterized by fishing and tourism the masika rains are reliable but vuli rains can be unreliable. Rainfall is unreliable in areas dominated by coral soils, where the short rains are sometimes missed.

In recent years, prolonged droughts and floods have occurred, causing a severe depression in the levels of domestic food production and undermining food security and livelihoods. In these instances, food availability is considerably reduced, and the lack of emergency food reserves creates difficulties for coping and for mitigating the situation.

Dependence on rain-fed agricultural system

Zanzibar agriculture relies highly on rains and this makes production vulnerable to adverse rainfall patterns as described above. Zanzibar as a whole receives abundant rainfall, but most of the rain water is not utilized for irrigation. The potential land available for rice irrigation is approximately 21,053 acres but so far the irrigated land is limited to 494 acres. Irrigation development is constrained by high cost pumped schemes and low efficiency due to improper canal construction and poor water management. According to the agricultural census 2002/03 only 7 percent of the agricultural households in Zanzibar practice irrigation (of which the majority live in Unguja). Paddy rice is the major irrigated crop. Few farmers grow vegetables and fruits under irrigation system. Improving rain water harvesting systems could be an ideal way of enhancing irrigation farming. There is also a high potential for surface irrigation using existing rivers, streams and water catchments sources particularly for vegetable and rice production.

Post harvest losses

The substantial post harvest losses contribute significantly to low domestic production in Zanzibar. These losses are caused by high incidences of crop and livestock pests and diseases, climatic conditions as described above and inadequate processing, storage and marketing infrastructure (inappropriate food management at household level diminishes food stocks available for consumption). Smallholder farmers have limited capacity to handle large volumes of perishable products, especially during the peak seasons. Moreover there are no investments made in fisheries and livestock sectors to expand cold storage facilities at community level. This imposes a major constraint upon the country's

agricultural and food sector. A significant amount of produce is wasted annually because of inadequate storage, preservation and processing facilities (it is estimated by MALE that post harvest handling practises results in 15-20 percent wastage of produced food). The promotion of private sector growth in the agricultural sector as well as strategic partnership initiatives with the public sector could enhance agro-processing through the establishment of small scale industries as well as laboratories for quality control. This would contribute not only to productivity levels, but also to employment opportunities and poverty reduction.

1.4.2 High import reliance

The high reliance on food imports is making food availability in Zanzibar to be highly determined by factors that can not be controlled locally, such as import rules and regulations, peace and security of overseas countries, price developments, exchange rates etc. Under the current situation, the occurrence of any situation that will affect Zanzibar's ability to import will leave a big segment of the population vulnerable to food shortages.

1.4.3 Factors influencing food production on the sub-national level

Infrastructure

Availability of food on a sub national level is determined by transport infrastructure and markets. In Zanzibar, several feeder roads are impassable due to weather conditions in certain seasons, affecting food transportation from the farm gate to the central wholesale markets where the produce is auctioned. Limited access to central markets implies high transportation costs, which exerts strong constraints in the marketing of surpluses and the supply of food commodities from town to rural areas.

Markets

District level marketing infrastructure in Zanzibar is either poor or does not exist. Whilst small selling areas exist in districts and villages, the marketing system for agricultural products in Zanzibar is largely centralised, whereby most products are brought to the central wholesale market. This impacts the availability of a variety of foods at the village level. This is the case especially in coastal areas, where localised production is not varied and where as a result of lower incomes and population density, overall demand tends to be lower.

1.5 Summary

In sum, the level of food availability in the country is determined by a variety of factors, including low productivity and underutilization of resources, high pre and post harvest losses and a high dependence on food imports. The low productivity rates of main staples in Zanzibar as shown in table 2 suggest that the prospect for future food availability from domestic production is not encouraging. Agricultural interventions should therefore tackle key issues such as land degradation, and land management, increasing yields etc. There is a great potential of increasing both crop yields and livestock output and of diversifying production for local consumption and export, so as to decrease vulnerability to food shortage resulting from crop losses due to climatic variations, post harvest losses, pest and diseases etc.

2 FOOD ACCESS

Access to food is ensured when households and all individuals within them have adequate resources to obtain appropriate foods for a nutritious diet. Access depends on the income (in cash or in kind) available to the household, which links up closely with the general economic situation (labour markets, supply and demand, prices, product markets, etc). Access is also influenced by household production, which relates to issues of agricultural technology, land distribution, education, access to capital markets, the availability of inputs, functioning of domestic and international markets etc.

Accessibility to food is at the heart of the food security situation in Zanzibar. Although there is much room for improving the general availability of food, the previous chapter clearly shows that hunger and absolute unavailability of food do not tend to be problems on the islands. The ability and flexibility of households to achieve an adequate level of consumption throughout the year is however a problem. Poverty is still a common phenomenon in both rural and urban areas, where low resources, inadequate employment and the lack of income generating activities lead to low purchasing power and hence affect access to food. The general levels of households own food production is also low, particularly since consumption preferences tend to favour a level of consumption of rice and wheat, which are not strong production points for the islands.

2.1 Household Food Sources: Own Production and Cash Purchases

2.1.1 Subsistence production profile

The majority of rural households in Zanzibar are engaged in subsistence farming (mostly growing cassava, rice, and bananas), livestock and some artisanal fishing. Wealthier households tend to own clove trees, cattle, coconut trees and more advanced fishing gear. Box 1 below gives more detail about the types of foods produced by households according to their specific food economy zone¹¹ whilst table 8 indicates the extent to which households are involved in the production of crops and rearing of livestock.

Box 1: Food production profiles of livelihood zone

Fertile Agricultural Zones

The mainstay of the households in the fertile agricultural zones is own crop production (crops grown include cassava, bananas, paddy and cloves) and clove related agricultural labour and trade. Some households have fishing as an additional activity.

In some areas, rainfall is unreliable, and sometimes the short (vuli) rains are missed. However, livestock are generally abundant and almost every household owns a cow. Main crops grown between coral areas include cassava, bananas and paddy while limited maize, sorghum and millets are also grown by many households. They also grow tomatoes commercially. Additionally, income is earned from selling fish, seaweed, other sea products, bricks, aggregates and lime.

The area on Unguja Island where cloves are produced is characterized by good quality soil and

¹¹ Information on food economy zones is based on the Household Economy Analysis for Zanzibar (HEA) 2003. The HEA is also the main source of information for the household food and livelihood profiles discussed in this section. Maps of the livelihood zones in Pemba and Unguja are provided in annex III and IV respectively.

high production of coconut and mango trees. It is also the main rice producing area in Unguja. Other crops grown in the zone include cassava, banana, paddy, yams, coco-yams, sweet potatoes and cowpeas. The area holds most of Unguja's livestock. In addition to clove related incomes, income sources include sales of livestock and livestock products, coconut leaves (makuti), petty trade and firewood collection.

Fishing Zones

These zones are located in coral areas with patchy arable land where the major crops grown include cassava, yams, pigeon peas and cow peas, coconut, banana, tomato and sweet potatoes. Households engage in fishing and seaweed farming. Despite the majority of Zanzibar's hotels being located in this zone, the local population earns limited income from tourism related activities.

Some of the fishing zones have diversity in terms of livelihood activities: some communities are predominantly fishing and/or seaweed farming, some produce mangoes and tomatoes commercially and others specialize in firewood collection and charcoal making for sale. Dominant crops include cassava and banana.

Urban and Peri-Urban

The peri-urban and urban based zones have limited agricultural activities due to lack of access to land for cultivation. The majority of persons in these areas depend on income earned from services and trade, petty trade and casual labour opportunities. The peri-urban zones of Pemba tend to have more rural characteristics than those of Unguja.

Source: ZRVA (2006) - Extracted from the Zanzibar HEA (2003)

Table 8: Household Production Indicators 2002/03

Production activity	Proportion (%)
Households growing crops - Short rains	31
Households growing crops - Long rains	74
Household with permanent crops / fruit trees	95
Households rearing cattle	34
Households rearing goats	10

Source: Agriculture sample census 2002/03

Vulnerability to food insecurity in the rural areas is more apparent when the food sources from production and purchases of the poorer groups are scrutinized. The poorer tend to grow a larger variety of crops for own consumption to lessen their dependence on food purchases and to reduce the risks of crop failure. Wealthier groups on the other hand focus less on diversified subsistence production and more on diversifying their income sources for lessening their vulnerability to food insecurity. However, despite their diversified own production, the poor still have to rely on purchases of rice, oils and animal protein such as fish and meat, because of their income and general level of poverty (including a low asset status e.g. ownership of trees, livestock and fishing equipment). It emerges that the poorest have a very low level of protein consumption, and many seem to hardly ever consume animal protein in their regular diet.¹²

¹² Household Economy Analysis for Zanzibar 2001/02; Revolutionary Government of Zanzibar, World Food Programme and Save the Children, 2003

2.1.2 Determinants of subsistence production

As shown by the HEA (2003), the variety and quantity of foods produced by the household are determined by their asset/ wealth profile as well as the ecological characteristics of their environment. However, another important factor which influences the level of household food production is the use of agricultural inputs that will boost their output and help them overcome the ecological obstacles to productivity. The table below shows some indicators of the level of use of key inputs to agricultural production:

Table 9: Selected Indicators of Household Use of Agricultural Inputs 2002/03

Percentage of households using non plough/ ox for soil preparation	6
Percentage of households using fertilizer	23
Percentage of households using improved seed varieties	24
Percentage of households growing irrigated crops	6
Percentage of households using herbicides	3
Percentage of households using pesticides	3
Percentage of households using fungicides	0.1
Percentage of households receiving credit	0.2

Source: Agriculture sample census 2002/03

It is apparent that the general level of input use is rather low. Hardly a quarter of all agricultural households applies fertilizers and improved seed varieties during production. The use of other inputs for pest and weed control and for soil cultivation is much scarcer across all the regions. It is interesting to note that the first production constraint indicated by households in the agricultural census (2002/03) is soil preparation, along with soil fertility, cost of inputs and access to land. These results show clear linkages to the ecological livelihood zones outcomes, which have emphasised the livelihood constraints that emerge from environments where fertile agricultural land is scarce. The census also shows that many of the agricultural households have very little access to credit that would enable to invest and improve their productivity.

Some of the other factors that influence household food production include access to land, limited access to extension services, low levels of education, health status and marketing infrastructures.

2.1.3 Food Purchase Profile/ Dependency

The HEA (2003) indicates that approximately 35 to 60 percent of household food consumption is satisfied by the household's own production in rural areas, with the remainder being purchased in local markets (table 10). The overall level of dependence on food purchases for fulfilling the basic food requirements of the household are high across all areas and wealth groups of Zanzibar. There is a notably heavy reliance on the purchase of rice. All wealth groups across all zones spend the highest proportion of their food expenditure on rice, ranging from 15 to 40 percent of annual food needs. Rice producing households tend to purchase less rice than others, giving them more flexibility to purchase other foods. Nevertheless, it is evident that all wealth groups are vulnerable to any shocks that may occur in the rice market.

Table 10: Sources of household food consumption

Poorest Groups by Livelihood Activity	Proportion of Food Purchased (%)	Proportion of Food from own Production (%)
Fishers with hooks	65	35
Firewood collectors	60	40
Clove labour, petty trade	60	40
Petty traders: street foods/ charcoal	80	20
Clove labour	50	50
Clove Labour, 0-5 trees	40	60
Clove labour, fishers with hooks	40	60
Clove labour	40	60

Source: HEA 2003

The highest level of dependency exists in the peri-urban area of Unguja, where almost 80 percent of the household food requirements are purchased. This situation reflects the characteristics of urban settings where land for agricultural production is typically scarce and where there is a stronger cash economy in place. This is strongly the case in Unguja, where a high level of population density has resulted in fast growth in the semi urban area surrounding the urban districts. In the peri-urban areas of Pemba, around 60 percent of food requirements are purchased, reflecting the more rural character of Pemba's urban zones, and the higher level of farming activity.

High dependency on food purchases also exists in the fishing zones of Unguja with around 65 percent of food requirements being purchased. These zones are situated in the coastal areas where the nature of the soil is coral based and is not conducive to varied agricultural productivity. Production is restricted to a few resilient crops such as cassava, banana and peas. The lowest income households in this area depend largely on the collection of firewood and on fishing with hooks and traps. They also have very little capital be it land, trees, tools or bicycles. It seems that this lack of access to agricultural productive assets causes them to rely heavily on purchasing food and adds pressure for them to generate sufficient cash income to complete such transactions.

The fertile clove dependent zones in both Unguja and Pemba are the ones with lowest proportion of food purchased, as own production fulfils 60 percent of food needs and 40 percent is purchased. These zones are located on agricultural land with good fertile soil and reliable rainfall, and many households own clove trees. The differentiating factor in these zones in terms of own production in the capacity to grow a wide range of staples including rice, cassava, sweet potatoes and fruits, as well as larger land holdings across all wealth groups.

In sum, whilst most rural households in Zanzibar grow a significant proportion of their annual food requirements, there is still a heavy dependence on food purchases. This pattern is an outcome of various factors, including low levels of access to some key factors of production such as fertile land, agricultural inputs and credit. Household consumption preferences also largely determine the share that own production contributes to total food consumption, since many of the preferred foods (rice, wheat flour, maize) are not sufficiently produced in Zanzibar. So, in terms of planning and policy making, the key issue to address are the drivers of household food production, in addition to the interventions that will both enhance the household's productive capacity as well as their access to cash for purchasing of food and other items.

2.2 Income

2.2.1 Overall poverty and inequality levels (static)¹³

We have seen that to a large extent, food security in Zanzibar is premised on the flow of incomes to the household for the purchase of food. However, monetary incomes are low in most areas of Zanzibar and the general level of poverty is high. The 2005 Household Budget Survey of Zanzibar indicates that the incidence of basic needs poverty¹⁴ in Zanzibar is 49 percent.

In general the incidence of poverty is higher in rural areas compared to urban areas with rates of 55 percent and 41 percent respectively and tends to be higher in Pemba, with the highest poverty head counts being recorded in the districts of Micheweni, Wete and Chake Chake.

The food poverty head count ratio also shows a similar picture. Overall, 13 percent of the Zanzibar populations are living below the food poverty line.¹⁵ This situation is also biased towards the urban population (9 percent) as compared with the rural population (16 percent). And, the incidence of food poverty is much more strongly felt in Pemba, where the districts of Micheweni, Wete, and Chake Chake show the highest levels of food poverty in Zanzibar.

The HBS data clearly demonstrates that in each of the ten districts in Zanzibar, both food and income poverty are strongly felt. Poverty is also strongly felt in the urban areas of the islands. The significant incidence of food and income poverty throughout the Isles shows that there are groups of people who are specifically vulnerable due a variety causes and circumstances. This is the topic that is discussed in the following section.

The main sources of cash income in Zanzibar include salaries and casual earning in cash (50.6 percent), fishing, crops and livestock (24.2 percent), cash remittances (11.7 percent) and business (9.3 percent).

2.2.2 Income flexibility - Vulnerability to prices changes (Dynamic)

A deeper look in to the concept of poverty reveals that it is not simply a static measure that defines some people below a set poverty line. It is rather a dynamic phenomenon whereby a large proportion of the poor flow in and out of poverty as a consequence of their vulnerability to periodic shocks to incomes and livelihoods: poverty mobility.

The poverty situation that is revealed by sample surveys such as the HBS give insights to levels of overall income poverty, but do not tend to reveal the livelihood profiles that underlie the poverty status of the population. Poverty and incomes are largely determined by the nature of rural and urban livelihoods and sources of income that households in Zanzibar rely on. Taking a perspective at the household level helps to reveal some of the vulnerabilities that households are subject to in being food secure and satisfying their other life requirements.

The concept of "maximum flexibility"¹⁶ is a notion that helps to identify the groups who are vulnerable to food insecurity and hunger as a result of shocks to their income and sources of livelihood. Maximum

¹³ Based on the draft of the Zanzibar Household Budget Survey 2005; Revolutionary Government of Zanzibar, Office of Chief Government Statistician, 2006

¹⁴ The basic needs poverty line measures the proportion of Zanzibar's population with a per capita income of less than TSH 20,891 per month.

¹⁵ The food poverty line measures the proportion of Zanzibar's population with a per capita income of less than TSH 12,988 per month.

¹⁶ Based on the Zanzibar HEA (2003)

flexibility represents the amount of income remaining to the household after purchasing its minimum food and non-food needs - expressed as a percentage of annual household food needs.

Table 11: Income Flexibility

Poorest Groups by Livelihood Activity	Income Flexibility ¹⁷
Fishers with hooks (Zone 6)	5%
Firewood collectors (Zone 7)	5%
Clove labour, petty trade (Zone 4)	20%
Petty traders: street foods/ charcoal (Zone 9)	30%
Clove labour (Zone 8)	50%
Clove Labour, 0-5 trees (Zone 2)	70%
Clove labour, fishers with hooks (Zone 3)	90%
Clove labour (Zone 1)	100%

Source: HEA 2003

Amongst all the livelihood groups in Zanzibar, two groups have emerged as extremely vulnerable to income shocks due to a very low level of maximum flexibility (table 11). These are the poorest of the fishers and firewood collectors in the semi coral fishing zones (6 & 7). Their situation is characterized by low asset ownership and high dependence on one or two cash generating activities. The average annual household income across the two fishing zones for a family of six was around TSH 800,000/- (the Zanzibar Government poverty eradication action plan, and the UN Millennium Development Goals both define a poverty line as less than a dollar a day per person; TSH 800,000/- for a household of six equates to less than half a dollar a day per person). People in this zone lived from fishing, seaweed production, firewood and charcoal, agriculture and from small-scale trade. However, these opportunities are not equally available to all, as the wealth breakdown of the population demonstrates. The fishers and firewood collectors in the semi coral areas of southern Unguja are amongst the poorest groups in Zanzibar and have a maximum flexibility of around only 5 percent. Their livelihoods are not only meagre, but also precarious, as people are vulnerable to many external threats outside their control, including:

- any rise in the price of (imported) foodstuffs;
- marketing difficulties for seaweed;
- marketing problems for fish;
- sea conditions - for both fishing and seaweed production;
- weather - for crop production, drying seaweed;
- any change in State implementation of policies protecting woodlands, if they are limited or forbidden altogether to cut trees. Equally, they are vulnerable to the disappearance of the trees if their cutting continues.

The group with the second lowest level of flexibility is the residents of the peri-urban areas of Unguja and Pemba, with 30 and 20 percent flexibility respectively. The level of flexibility in the peri-urban areas is low, especially considering the high level of dependence on food purchases and the higher costs associated with urban lifestyles. However it is important to note that although both zones are defined as peri-urban, there is a large difference in the degree of urbanization between both islands. Pemba has a much more rural and clove dependent peri-urban economy, whilst in Unguja the peri-urban zone is characterized by the diverse types of off farm income sources. It follows that the

¹⁷ These figures reflect the situation during the year 2001/02, at a time when the clove sector was benefiting from high clove prices and generally good conditions. The levels of income flexibility should therefore be regarded as specific to a good clove year, and may show considerable variations under different conditions.

determinants of the level of income flexibility are somewhat dissimilar, with the clove economy having a higher impact in Pemba, and the variety of petty trade and labour opportunities being more critical in Unguja.

The highest level of income flexibility is recorded by the groups that are based in the fertile agricultural zones and that are more directly dependent on clove production. The poorest people in these zones had a maximum income flexibility ranging from 50 to 100 percent of their total income. Whilst this level is not high in absolute terms, it is high in relation to other groups with lower levels of income flexibility.

The greater diversity in livelihoods in these zones also means that people are exposed to different vulnerabilities, and as a result the population as a whole is less exposed to any one risk. On the other hand, in a business-cash oriented economy, people's livelihoods are closely linked with changes in the overall macro-economy - anything which affects purchasing power (positively or negatively) will affect volumes of sales and prices (this makes almost everyone in Zanzibar vulnerable to low clove prices in one way or other). In particular, those who rely most on the market for food and cooking fuel (in Unguja) are most vulnerable to price rises. Increasing urbanisation is likely to bring increasing pressure for building on agricultural land in these areas. Uncertain security of tenure makes the farmers very vulnerable to a loss of livelihoods. Average income already showed that the average annual household income is well below \$1/day per person, and the dependence of the economy on cloves was also well recognised.

It is critical to note that these figures relate to a year in which the clove economy was booming, and that the incomes of all groups were higher than the average. Since the nature of the clove economy revolves around a boom and bust cycle, it is clear that this picture would significantly deteriorate in a bad or average year for the clove economy. The inflation of incomes is specifically visible in the livelihood profiles of the clove growing zones. At that time, the average annual household income was around 1.3 million shillings. This income is regarded as better compared to other zones. This is because clove prices were high (2001/02 the average clove price was 2500/= per Kg), leading to high wage rates for harvesters, and the crop yield was good, bringing a lot of work for pickers. There is a danger, therefore, of overstating differences between clove-growing and non-clove-growing areas, for all wealth groups.

The level of income flexibility has implications for the ability of the household to invest some of their disposable income. Whilst a full picture of household saving and investment behaviour is not available, the HEA (2003) indicated the better off tend to invest on clove harvest and/ or purchase and improvement of fishing equipment.

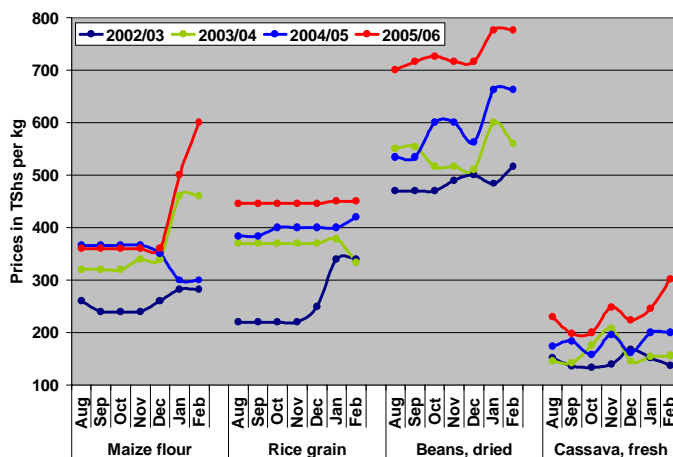
2.3 Sources of Vulnerability to Livelihood Shocks and Food Insecurity

Since one of the major obstacles to achieving food security in Zanzibar is ensuring household access to food, it is critical to discuss the types of shocks that have been taking place or that may occur to disturb household incomes and access to food. Here below is an (incomplete) description of the main sources of vulnerability to livelihood and food shocks.

2.3.1 Increasing national price: national and international

Almost all of the farming households in Zanzibar access a proportion of their food through own production and turn to markets when they deplete own produced supplies. Access to market supplies thus depends also on average retail prices for food crops.

Figure 2: Zanzibar's average retail prices for selected major staples



Source: OCGS - Zanzibar, March 2006

Over the last few years, the general prices of goods and services in Zanzibar have been growing and the access of households to food has been deteriorating with the increasing inflation levels and the growth in food prices (figure 2). Over the past five years (2000 - 2004), the rate of inflation has averaged 6.4 percent, with highs of 9.0 percent and 8.1 percent in 2003 and 2004 respectively. This trend has been showing a sharp divergence from the trend recorded in mainland Tanzania.

Upon deeper investigation of this trend, it appears that increases in food prices are driving the trend of high inflation, especially since food accounts for around 75 percent of the total consumption basket that is defined by the Zanzibar consumer price index (CPI).

If we look into the food consumption profile in the Zanzibar CPI, we find rice to be the major item. In fact, rice as a single item constitutes almost 20 percent of the entire consumption basket. It follows that price increases on the international market readily translate themselves into not only higher rice prices, but also higher overall prices in Zanzibar.

Given the existing income and poverty situation, rapidly growing food prices will result in increasing levels of vulnerability and food insecurity.

2.3.2 Regional droughts and production shocks

Tanzania and the East Africa zone as a whole tend to be prone to severe weather shocks and drought or prolonged dry spells. Recently, the years 1997, 2002 and 2006¹⁸ have all been times when prolonged dry spells or droughts have affected the region to various extents, including Zanzibar. Given the high level of dependence on rain-fed agriculture, in these instances the levels of food production in the region fall and prices tend to reflect the scarcity of food.

2.3.3 Macro policy and structural changes

Over the last two decades, Zanzibar underwent a range of macro economic and structural changes as has been the case in many African economies. These changes include trade liberalisation and exchange rate and banking reforms amongst other measures. More recently, a structural change occurred in 2001 when a tax loophole that maintained a lower rate of customs taxes in Zanzibar as compared to mainland Tanzania was closed. The volume of trade at the Zanzibar port fell quite

¹⁸ See Zanzibar Rapid Vulnerability Assessment 2006 & Tanzania Mainland Rapid Vulnerability Assessment 2006

drastically, and the flow of goods to the islands declined. The consequence has been that many imports are now re-directed to Zanzibar from the mainland (as opposed to vice versa), thus adding higher transport costs to an equation that already included lower supply of goods. Being one of the major import categories in Zanzibar, food substances have also been hit by this harmonisation of customs rates in Tanzania.

2.3.4 Marketing

The marketing system in Zanzibar tends to be tightly controlled by a network of intermediaries, resulting in a situation that does not give farmers an equitable benefit for their products, whilst allocating high margins to the middleman. Many intermediate middlemen buy products at the farm at low prices from producers and resell with a high margin. As a result, farmers earn less as the situation denies them to benefit from the good price of products at the central market. On the other hand, prices of food commodities rise to compensate for the transportation costs, imposing problems of food access to households.

This situation reflects the current institutional arrangement: marketing of agricultural produce falls under no specific institutions' responsibility, and consequently there is no institution that provides market information. Farmers' limited access to market information leads to lower producer price as in most cases they are unaware of fair prices of various crops and sell their products at lower price as a result they experience low rates of returns. This has been a big disincentive to farmers to adopt better farming practices and increase production.

One clear example of this situation is that of the seaweed farmers in the coastal communities. Farm gate seaweed prices are deemed to be far too low by the farmers, yet they are not sufficiently organised and empowered to challenge the marketing structures of the local seaweed industry.

Additionally, the level of knowledge of farmers of opportunities either in the internal or the external markets is low. Farmers, fishers and livestock keepers tend to be disconnected from the local tourism industry for instance, and are not aware of the changing nature of the food industry opportunities. The uptake of new crops that are more marketable or of a higher value is also slow. This is a situation that can be aided by better availability of information and extension services, as well as by stimulating levels of organization that may be better equipped to take advantage of market opportunities.

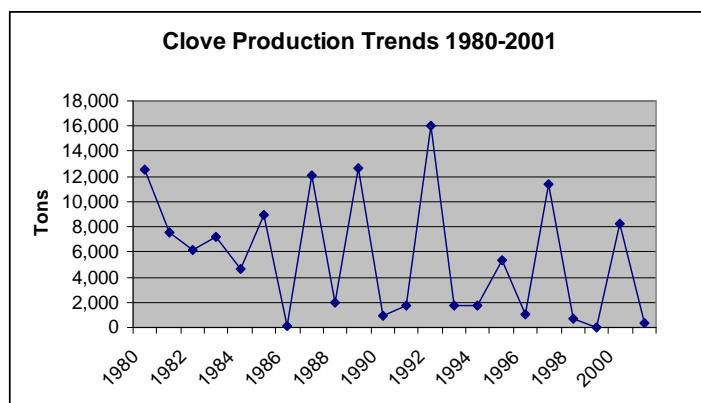
2.3.5 Seasonal factors

Tourism is affected by the periods known as "the low season" in the industry, when the climate and market factors cause a significant fall in the number of visitors. During this time, incomes from directly and indirectly tourism related activities tends to fall as demand for goods and services slows down. Considering the noteworthy role that tourism plays in the Zanzibar economy, it is predictable that incomes and food security of those involved in the industry are subject to seasonal vulnerability. The impact of this phenomenon is likely to be most strongly felt in the urban economy, where most tourism related activities and businesses are rooted.

Agricultural seasonality is also a phenomenon that impacts the access of households to food during certain times of the year. Production for own consumption as well as production for sale are determined by seasonal conditions, and the lack of storage and processing facilities hinder the capacity of the household to mitigate crop shortages. Fishers and seaweed farmers are also affected by seasonality during the periods when the sea is rough, making it difficult for small boats to go out to sea, and reducing the seaweed harvest. Furthermore, the clove harvest is subject to major seasonal fluctuations, as a boom crop is harvested roughly every three years whilst the other years are often

characterised by a low crop yields. According to the times of the clove crop cycle, the livelihoods of around 44 percent¹⁹ of the population are either enhanced or emaciated.

Figure 3: Clove production trends 1980-2001



Source: OCGS

Another season that has a direct impact on food security is the Ramadan season of the Islamic calendar. During the month of Ramadan, the demand patterns for food of the Islamic population of Zanzibar changes, and consumption preferences for some typically Ramadan related foods increases. During this time, the prices of many foods tend to also increase, along with the prices of clothing and luxury goods, reflecting the celebrations of the period.

2.3.6 Low livelihood diversification

Having a diversity of sources of income is a condition that helps to mitigate shocks to income sources (table 12). The level of diversification of household livelihoods in Zanzibar is largely determined by the ecological environment in which they are located such as coastal zones or fertile land, and their access to assets for production.

Table 12: Number of household cash generating income activities for poorest groups

Poorest Groups by Livelihood Activity	No. of cash generating income sources
Fishers with hooks (Zone 6)	3
Firewood collectors (Zone 7)	5
Clove labour, petty trade (Zone 4)	3
Petty traders: street foods/ charcoal (Zone 9)	4
Clove labour (Zone 8)	3
Clove Labour, 0-5 trees (Zone 2)	2
Clove labour, fishers with hooks (Zone 3)	3
Clove labour (Zone 1)	5

Source: HEA 2003

Clove Dependency

Some of the clove areas display low level of household income diversity (Zones 2, 3 and 8), particularly the fertile zones of Pemba where there is limited access to fishing zones. This lack of

¹⁹ According to the Zanzibar HEA (2003), zones 1, 2, 3, 4 and 8 with a total population of around 437,000 are significantly dependent on clove production, clove labour and clove business.

diversity is present across all the wealth groups, and is even more extreme with the higher income earners in the clove zones. The exception here occurs in zone 8, where access to both fertile land and sea helps to diversify household income generation opportunities.

Clove dependency is widespread in both Unguja and Pemba, with people depending on their own trees, clove labour and clove business for their sources of income. Migrating workers from non clove producing areas also come to depend on seasonal income at clove harvest times.

As a result, a large proportion of the population has come to depend on cloves as their main source of income, which goes hand in hand with vulnerability to the price and production shocks that are a characteristic of the clove market.

The wealthier groups tend to have a larger proportion of their total income sourced from the clove industry. But because of the low level of income flexibility within which the poorer groups operate, it is they that would suffer more from shocks as a result of the clove market fluctuations. The “wealthier” clove dependent farmers are also at risk to clove related income shocks. However, their wealth may place them in a position that allows them to hedge against risks and protect themselves against food insecurity.

Firewood and Fishing Dependency in Poor Soil Areas

In the southern areas of Unguja (Zones 6 and 7), the lack of income diversity manifests itself in the overdependency of the poorest groups on the collection of firewood and charcoal production, or fishing with hooks and traps and seaweed farming. In this instance, the source of vulnerability stems from possible changes to firewood collection regulations, lack of access to the sea or environmental shocks such as deforestation or rough seas.

It is interesting to note that in these zones, higher income groups tend to have their incomes more widely/evenly spread across a variety of income sources. In the zone where the poorest depend on the collection of firewood, the differentiating factor between the poorer and the wealthier groups is the income from own crops that are marketed, and the same applies for income differential between the poorer and wealthier fishermen. This suggests that the better off have more access to agricultural inputs, mainly ownership of fertile lands. In the areas where the main activity is fishing, access to fishing capital is also a strong determinant of income differentials, and the farmers with the most sophisticated equipment are the highest income earners amongst all the groups.

Seaweed farming is a community based activity that is mostly carried out by women. Entry costs in to seaweed farming are low since access to the sea is free, and inputs tend to be provided by the buyers. As a result of these factors, income gained from seaweed farming tends to be similar across all groups in nominal terms, but contributes a larger proportion to the income of the poorer groups.

2.4 Urban food insecurity

Food insecurity is also strongly present in the urban areas of Zanzibar. However, even though the HBS gives an overview of urban poverty, many of the more detailed existing surveys (Agricultural Census, HEA) fail to address the complex dimension of urban food insecurity.

The recent HBS indicates that 41.4 percent of the urban population live below the basic needs poverty line (Tsh 20,891 per month), and that of these, 9.2 percent fall below the modest food poverty line (Tsh 12,988 per month).

Food costs are one of the greatest concerns to urban households, who spend a large proportion of their incomes on the purchase of foods. Low income urban households are the worse hit by changes in

food prices, as they typically have little or no savings. Moreover, whilst general prices and especially food prices continue to rise, urban incomes strongly suffer from the “sticky wages” syndrome in that they remain constant or rise at a much slower rate than prices. As result of this, the purchasing power of consumers in Zanzibar is sharply deteriorating, leading to coping mechanisms that include less frequent meals and a less nutritious diet.

Urbanization is another factor that is straining the food security of urban households. Many urban households (especially peri-urban) used to rely on some level of food production in the vicinity of their habitats. However, the effect of urbanization has been a decrease in the amount of urban and peri-urban land dedicated to agriculture, and thus reducing access to food and extending transport time followed by the subsequent raise in transport costs.

The role of food vendors is also an important one when considering food issues in the urban settings, particularly in terms of supply and safety. Whilst there is no reliable information on the dynamics of the informal food markets in the urban areas of Zanzibar, any food security related interventions would have take these important players into account.

Finally, as already mentioned, seasonality also affects urban food security in Zanzibar, as the impact of the tourism seasons hits urban incomes the most.

2.5 Summary

Overall, access to food in Zanzibar is one of the major food security problems for many households, both rural and urban. Prices of food and non food items are rising rapidly, and at rate that is faster than the growth of the incomes of almost all of the poor and vulnerable. Rural households attempt to cope by increasing and diversifying their own production, however they remain to have a high level of reliance on household food purchases.

Livelihoods and access to food are also at risk of deterioration as an outcome of range of environmental pressures. One of the most prominent issues is the continued deforestation that is occurring as a result of the firewood collection and charcoal business. Demand for charcoal (used mostly for household cooking) is high, and many people rely on charcoal business. So, there is a large risk to the livelihoods of firewood collectors in that deforestation will reduce the supply of fuel wood and / or that environmental regulations would be better enforced. Urbanisation pressures are also hitting livelihoods as farmers and livestock keepers based around urban and peri-urban centres find themselves squeezed by the overspill of towns.

Some of the options for improving the household's access to food are discussed in the final chapter.

3 FOOD UTILIZATION

Nutritional considerations add another dimension to food security and reducing malnutrition is a cornerstone of poverty reduction. Food utilization can be seen as the capacity of people to achieve good nutritional status and functional performance. In achieving nutritional security the focus is on the consumption and utilization of sufficient and nutritionally adequate foods by the individual. Nutritional security relates to the human body actually making use of the nutrients in food that is consumed, properly digested, and absorbed. Inadequate dietary intake and infections/diseases, most often in combination are the immediate causes of malnutrition. Moreover, health and nutrition crises such as HIV/AIDS, malaria or tuberculosis compromise people's food and nutritional security, and impoverish an increasing number of people.

Household food insecurity, poor livelihoods, inadequate caring practices for women and children, poor nutrition education and lack of health services together with low sanitation and food safety, are some of the underlying causes of nutritional insecurity. These causes are themselves functions of the availability and control of resources, which are determined by economic, social, ecological, political and cultural factors.

Women and children are amongst the most vulnerable groups to nutritional insecurity, which is reflected by the strong focus of research and data on these groups. Hence, this section will focus on the nutritional and survival status of women and children, but also discusses the general health and sanitation situation of the overall population.

3.1 Food Consumption status: types and patterns of feeding

As previously mentioned, the main staple foods for Zanzibar are rice and cassava, with other foods such as maize, bananas, sweet potatoes, yams and wheat as contributing sources of energy. According to MoH experience, cereals, roots and tubers form over 80 percent of the average per person daily energy supply (DES), with fats and oils accounting for 10 percent of DES. Fish and legumes like beans, peas, pigeon peas and cowpeas are the relish supplementing protein part of the meals, accounting for over 90 percent of the daily protein supply. Green vegetables and fruits form 90 percent of the mineral intake and vitamin supply.

According to the Demographic and Health Survey 2004-05, nearly two-thirds of the Zanzibar population report usually having at least 3 meals per day, although a sizeable proportion (33 percent) has only 2 meals per day. Of the 252 households interviewed, 63 percent reported not to have had any problems in meeting food needs of the household. However, almost 10 percent of the households often face problems satisfying food needs. The DHS (2004/05) further revealed that 65 percent of the respondents in the survey had not consumed any meat at all in the week preceding the interview.

The challenge faced by the household is achieving adequate and balanced dietary energy and/or nutrient intake. Protein energy malnutrition (PEM) is the most widespread and leading nutritional disorder in Tanzania, often resulting from low protein diets and frequently being aggravated by infections. Children below the age of five years old are the most affected group. In addition, micronutrient malnutrition is forming a serious problem in Zanzibar, resulting from inadequate intake of micronutrient rich foods and/or inadequate utilization of available micronutrients because of infections, infestations etc.

3.2 Child nutrition and survival

The nutritional status of children is an outcome of many interrelated factors. These include cultural, economic, social, environmental, educational, biological and food security factors. Feeding practices and infections also affect nutritional status. The nutritional status of children can thus be considered to be a good indicator of the socioeconomic wellbeing of a community or group.

3.2.1 Overall Malnutrition

Measuring the height and weight of young children provides a fuller measure of children's nutritional status. Three nutritional status indices are: height for age (measuring stunting below -2 SD), weight for height (measuring wasting below -2 SD) and weight for age (underweight below -2 SD).

Table 13: Percentage of children (6-59 months) who are malnourished

	Zanzibar	Unguja	Pemba
Height-for-age	23.1	18	32.1
Weight-for-height	6.1	6.7	4.9
Weight-for-age	19.0	17.0	22.5

Source: DHS 2004/05

The results that are indicated in the table 13 show that child malnutrition (through height for age) is strongly present in Zanzibar with 23 percent of all children being malnourished (1 in 5) and 7 percent suffering from severe malnourishment. Investigation of the disaggregated data shows that child stunting is more prevalent in Pemba where 32 percent of children are malnourished and 11 percent is severely malnourished, compared to 18 percent and 5 percent in Unguja.²⁰ The survey further indicates that the level of malnutrition is higher in mainland Tanzania than in Zanzibar (38 percent malnourished and 12.9 percent severely malnourished) and that malnutrition tends to be deeper in rural areas in both Zanzibar and Mainland Tanzania.

3.2.2 Infant feeding practices

In general, young children are breastfed for 18-24 months, while weaning sometimes starts early within 3 months of age and complementary foods continue up to 2 years. The child begins to join the family pot at the age of two years. Data from the DHS indicate that the percentage of children ever breast fed in Zanzibar is 98.4 percent (with Unguja 98.1 percent and Pemba 98.9 percent). The practice of giving pre-lacteal feeds is discouraged because it limits the frequency of suckling by the infant and exposes the baby to the risk of infection. The percentage of children receiving pre-lacteal feeding in 2004-05 was 33.1 percent (Unguja 31.5 percent and Pemba 35.6 percent) (source: DHS 2004/05). A survey undertaken by the MoH IMCI unit (Integrated Management of Childhood Illnesses) in 2002 reveals that 21 percent children of 0-3 months old are exclusively breastfed (MOH&SW - IMCI survey 2002). While not an astonishing figure it shows an important increase as compared to 1999, when the TCRH survey (Tanzania Reproductive Child Health) indicated this figure to be only 8 percent. Efforts by MoHSW programmes (including IMCI²¹, MCH and the Department of Nutrition) in educating parents on the importance of (exclusive) breastfeeding are perceived to have been effectively contributing to this increase.

3.2.3 Micronutrient deficiencies

Micronutrient deficiencies are a major contributor to childhood morbidity and mortality. It lowers body immunity and increases susceptibility to malaria and other childhood diseases. The three common

²⁰ The level of wasting is lower in Pemba than in Unguja; the reason for this is the fact that children in Pemba are both smaller and slimmer, resulting in a positive ratio.

²¹ One of the programmes included lactation management training to health workers in 130 MCH clinics in 2000.

micronutrient deficiencies - iron, vitamin A and iodine deficiencies - do exist in Zanzibar. Iodine deficiency will be discussed on household level in paragraph 3.4.

Vitamin A deficiency (VAD)

Vitamin A is an essential micronutrient for the immune system. Severe Vitamin A deficiency (VAD) can cause eye damage and is the leading cause of childhood blindness. VAD also increases severity of infections such as measles and diarrhoeal diseases in children and slows recovery from illness. Vitamin A is found in (breast) milk, liver, eggs, butter, fish, red palm oil, mangoes, papayas, carrots, pumpkins, and dark green leafy vegetables.

The available data on VAD status in Zanzibar is limited. However a survey conducted in 2005 on VAD of less than five years old children in Unguja shows that deficiency rates range from 28 percent in the central district to 58.6 percent in the south district.

Anaemia

Anaemia, characterised by a low haemoglobin level in the blood, is a major health problem in Tanzania, especially among young children. It may be the underlying cause of maternal mortality, spontaneous abortions, premature birth and low birth weight. The most common cause of anaemia is nutritional anaemia resulting from inadequate dietary intake of nutrients.

Table 14: Prevalence of anaemia for children under five years old (6-59 months)

	Zanzibar	Unguja	Pemba
Prevalence of anaemia in children 6-59 months	75.1	74.6	75.9

Source: DHS 2004/05

Table 14 shows that the prevalence of anaemia in children under five years old is 75 percent in Zanzibar. This is marginally higher than the rate for mainland Tanzania which stands at 72 percent. Regional and district level variations are rather slim, with most areas recording a prevalence rate of around 75 percent, but with the highest rate being in the Pemba north region (77 percent) and the lowest being in the Unguja south region (71 percent).

3.2.4 Early childhood mortality rates

Table 15: Childhood mortality rates (per 1,000 live births)²²

	Neonatal mortality	Post neonatal mortality	infant mortality	child mortality	Under-five mortality
Zanzibar	29	33	61	42	101

Source: DHS 2004-05

Table 15 indicates that one out of every ten children born in Zanzibar is likely to die before the age of five. This shows that the child survival situation in Zanzibar is grim, as in many other least developed countries. Whilst the data available does not allow for regional or gender comparisons of this

²² Neonatal mortality (probability of dying within 1st month of life; per 1000 live births)

Post neonatal mortality (difference between IM and N; per 1000 live births)

Infant mortality (probability of dying before age 1; per 1000 live births)

Child mortality (probability of dying between age 1-5; per 1000 live births surviving to 12 months of age)

Under five mortality rates (probability of dying between age 0-5; per 1000 live births)

phenomenon, child mortality is affected by a variety of factors, including the mother's health, poor nutrition and feeding habits as well as susceptibility to disease.

3.3 Women's Nutrition and Survival

3.3.1 Overall Nutritional Status

The nutritional status of adults can be assessed using several measurements such as mid upper arm circumference, body fat, height, weight and the body mass index (BMI; kg/m²). Maternal height is associated with socio economic and nutritional status during childhood and adolescence. Short stature is associated with small pelvis size, which increases the likelihood of difficulty during delivery and the risk of bearing low birth weight babies. The cut of point below which a woman can be identified as at risk is 145 centimetres.

Table 16: Nutritional status of women age 15-49 in 2004/05

	Zanzibar	Unguja	Pemba
Height (% < 145 cm)	3.4	2.9	4.7
BMI: Thin <18.5	17.1	16.2	19.1
BMI: Overweight > 25.0	26.9	32.3	14.4

Source: DHS 2004/05

The indicators of the DHS (2004/05) show that there is a tendency for women to be under-height and underweight, especially in Pemba, where the incidence of over-weightiness is also less frequent. Regional level data indicates that nutritional status of women, as measured by the indicators above, is lowest in the north Pemba region (Under-Height: 5.1 percent, BMI - Thin: 20.5 percent) and is highest in the Unguja West region (Under-Height: 1.9 percent, BMI - Thin: 14.4 percent). Factors contributing to this regional difference are the relative lower purchasing power of people living in Pemba, as well as the area in which they live. As seen earlier the coral rag is popular for production of roots and tubers, having relative low nutritional values as compared to grains.

3.3.2 Adult and Maternal mortality

Maternal mortality continues to be a serious problem in Zanzibar, as it is characterised by relatively high fertility, high incidence of infectious diseases, poverty, and poor health services, all of which have led to high maternal mortality rates in general. UNICEF undertook a study in 1998 indicating the Maternal Mortality Ratio (MMR) to be 377/100.000. More recent data for Zanzibar are unfortunately currently not available.

3.3.3 Anaemia

Table 17: Prevalence of anaemia in women age 15-49 in 2004/5

	Zanzibar	Unguja	Pemba
Prevalence of anaemia in women	62.8	62.8	62.9

Source: DHS 2004/05

Anaemia is a major health problem for women in Zanzibar, of which 63 percent were reported to be anaemic in 2004/05. Similarly to the anaemia situation of children, the highest prevalence rates are recorded in the Pemba north region (65 percent) and the lowest rates are recorded in the Unguja south

region. In this case, the overall disparity between women in the Mainland and Zanzibar is quite significant with rates of 48 and 63 percent respectively.

3.4 Household Iodine deficiency

As discussed above, iodine deficiency is one of the most common forms of micronutrient deficiencies. It results from consumption of low iodine content foods, and has serious effects on normal body growth and intellectual development. Disorders arising from iodine deficiency range from simple goitre to mental and neurological disorders. Deficiency of iodine also causes abortions, stillbirths, low birth weight infants, and premature births.

Table 18: Iodine deficiency indicators

	Zanzibar	Pemba	Unguja
Household utilization of iodated salt*	48	35	55
Goitre Prevalence (G1 + G2)**	26	32	21

Sources: * DHS 2004/05. ** Department of Nutrition, Zanzibar, 2001

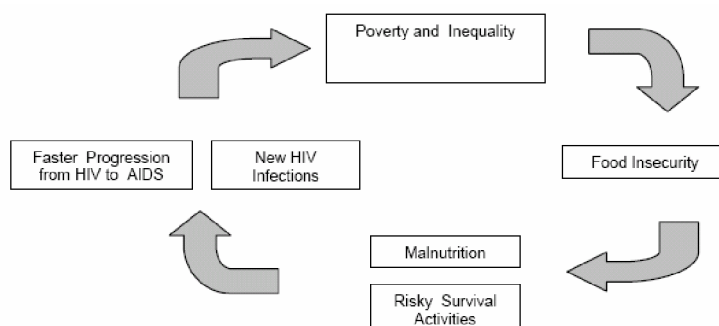
Table 18 above shows two of the key iodine deficiency indicators in Zanzibar. Overall utilization of iodine in households stands at 48 percent, with situation being worse in Pemba (35 percent) than in Unguja (55 percent). Regional level variations on iodine utilization are also significant. Data show that in northern Pemba, the rate of iodine utilization is only 20 percent whilst the utilization rates in all the other regions are around 50 percent. The prevalence of goitre also reflects the level and distribution of iodine consumption on the isles.

3.5 Health and Disease Burden

3.5.1 HIV/AIDS

HIV/AIDS is one of the major health concerns of the government of Zanzibar. Since the first diagnosis of HIV/AIDS in Zanzibar in 1986, the number of people affected by the epidemic in the country has been increasing, highlighting the need to address the situation immediately. There is a clear and critical relationship between HIV/AIDS, poverty and food insecurity. For example, as more adults are affected with HIV/AIDS, food production and income drop dramatically. Moreover, malnutrition increases the risk of prevalence of, or physiological susceptibility to infections and consequently worsens the severity of HIV/AIDS disease. Figure 4 outlines the interplay between HIV/AIDS, food security and poverty.

Figure 4: The interplay between food security, poverty and HIV/AIDS



Source: Mbaya, S., 'The Southern African Food Security Crisis: causes and responses' (Pretoria, 2003)

HIV/AIDS is a security threat, and food insecurity cannot be properly understood if HIV/AIDS is not factored into the analysis. The different ways HIV/AIDS impacts on food security at the household level are manifold and interrelated. In the most immediate and obvious sense, it depletes human capital. Prevalence of the HIV/AIDS in Zanzibar is estimated at below 6 percent, but the infection rate has been rapidly increasing over time. Data indicates that urban district in Unguja is mostly affected with HIV/AIDS infections at 44 people per 10,000.²³ About 87 percent of new HIV/AIDS cases occur in the 20-45 age groups, i.e. people in their most economically productive age. This has profound implications for the quantity and quality of the household labour force and thus for incomes and food production, undermining the balance between the production and consumption units within the household.

An extra element contributing to household food security is the fact that the disease has distinct gender impacts. This is partly due to women being more prone to infection than men.

Another negative outcome of the HIV/AIDS pandemic is the loss of life and the resulting impact on the household. Loss of a productive adult member reduces the usual income generation from casual labour. Thereby, the increasing number of HIV/AIDS orphans is putting an extra burden on foster households, further undermining their food security situation.

For those already infected with the virus, malnutrition exhausts the immune system, which makes people more susceptible to malaria, tuberculosis, and other diseases, and leads to faster progression from HIV to AIDS. HIV/AIDS thus increases expenditure requirements on health care and funerals, forcing households to withdraw financial resources from other areas, like school fees and agricultural inputs, or the sale of household assets. This often brings the household in a downward spiral of impoverishment, decreasing the household's future viability and food security situation.

Reciprocally of course, one could describe how food insecurity impacts on an increased exposure to HIV/AIDS. Increased impoverishment pressures people to adopt high-risk coping strategies in order to survive. Such strategies include reduction in consumption and switching strategies as a first line of defence against a food shortage. Households most likely to reduce consumption and switch to less preferred foods and wild foods are households with adult mortality and morbidity.

Migration in search of food, engaging in hazardous work, and most lethally, women being forced into prostitution can also be part of coping strategies. These actions make people extremely vulnerable to infection and thus facilitate the spread of HIV/AIDS.

In conclusion, HIV/AIDS increases food insecurity and food insecurity increases the likelihood of HIV infection and speeds the transition from HIV to AIDS. This section has clearly shown the need to address the situation immediately, in order to put a halt to the devastation being created by HIV/AIDS in Zanzibar in the years ahead. The government of Zanzibar is fully aware of the problem, and as part of measures to fight HIV/AIDS a national AIDS Commission has been established and charged with the responsibility of advocating, managing, coordinating, monitoring and evaluating multi-sectoral response to HIV/AIDS as well as mobilizing resources for interventions.²⁴

3.5.2 Acute Respiratory Infections (ARI), Fever & Diarrhoea

ARI are among the leading causes of morbidity and mortality in Tanzania. Of acute respiratory diseases, pneumonia is the most serious for young children. Early diagnosis and treatment with antibiotics can prevent a large proportion of deaths resulting from pneumonia.

²³ Zanzibar Country Analysis, 2003

²⁴ Zanzibar Country Analysis, 2003

Dehydration caused by severe diarrhoea is also a major cause of morbidity and mortality among young children in Tanzania. Exposure to diarrhoeal disease-causing agents is frequently a result of the use of contaminated water and unhygienic practices related to food preparation and excreta disposal.

Table 19: Prevalence of ARI, Fever and Diarrhoea (for under fives)

	Zanzibar	Pemba	Unguja
% of children with symptoms of ARI	8.4	6.6	9.6
% of children with fever	32.7	38.1	29.4
% of children with diarrhoea	13.6	13.6	13.7

Source: DHS 2004/05

It is apparent that in Zanzibar, children under the age of five suffer frequently from symptoms and illnesses that have an impact on their long term wellbeing and food security. Overall, only 66.2 percent of children who display any of these symptoms seek treatment from a health facility or health provider.²⁵

3.5.3 Malaria

Malaria continues to pose a high burden both in societal and economic terms in Tanzania, ranging from school absenteeism to low productivity at workplaces. The impact of malaria on food and nutrition security is also significant through its impact on the absorption of food nutrients and general health, in addition to the reduced agricultural productivity of sufferers.

Malaria is by far the most common diagnosis and cause of morbidity and mortality in Zanzibar. Malaria accounts for about 40 percent of all outpatients and 33 percent of all admissions in health care facilities. It also accounts for about 28 percent of the hospital deaths among children less than five years of age.²⁶

Table 20: Malaria related indicators

	Zanzibar	Unguja	Pemba
% of households with at least one mosquito net	64.9	71.1	52.8
% use of nets by children	54.7	61.6	43.6
% use of nets by women	46.9	51.6	36.3
% use of nets by pregnant women	46.1	49.9	38.9
% of women who took any anti-malarial drug during pregnancy	28.9	38.1	14.4
% of children with fever who received anti-malarial drugs	60.8	62.3	58.8

Source: DHS 2004/05

The table above highlights some of the underlying causes of the malaria burden in Zanzibar. It shows that the general level of use of mosquito nets is quite low, with only 65 percent of households in possession of one. The DHS (2004/05) also reports that the average number of nets per household is only 1.6, meaning that most members of the family sleep unprotected. Furthermore, the use of treated mosquito nets is even lower, especially in the Pemba north and south regions.²⁷ The use of anti-malarial drugs is also limited, particularly amongst pregnant women.

²⁵ See DHS (2004/05).

²⁶ Zanzibar country analysis (2003)

²⁷ See DHS (2004/05).

3.5.4 Water and Sanitation

Water is a major factor for meeting many of the other international development goals as well, including eradicating extreme poverty and hunger, reducing child mortality, combating the incidence of malaria, and ensuring environmental sustainability. Clean, safe and adequate water supply is thus essential to economic development and poverty reduction. The UN Millennium Summit in 2000 set a target to halve by 2015 the proportion of people without access to safe drinking water. The World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 added an additional target of halving by 2015 the proportion of people who lack access to basic sanitation.

To date water quality and availability are highly variable around the world. Global demand for fresh water is growing at unsustainable rates. By 2025, four billion people (one half of the world's projected population) will live in areas where there is insufficient water. More than 1 billion people lack access to safe drinking water, with the poorest suffering most. Many people are forced to drink contaminated well water because their surface water is polluted with sewerage and agricultural wastes. As a result, thousands of people die each day from avoidable water-related diseases.

In determining the population's health status, and thus their capacity to use food and to achieve good nutritional status and functional performance, sufficient drinking water and adequate sanitation services are therefore important additional elements.

Although improvements have been achieved over the past decade, the coverage for safe water and availability of sanitation infrastructure at the household level in Zanzibar is still inadequate. The most recent information to date, as provided by the HBS 2004/05 data, indicates that almost 30 percent of the households in Zanzibar do not have access to safe drinking water. They rely on springs and wells as the main sources of water. There are big geographical disparities in the distribution of piped water (either private piped water, piped water on the neighbours housing unit or piped water on community supply). Almost 41 percent of people living in rural areas lack access to safe water as compared to 3.6 percent in urban areas. Aggregated data for Pemba, and particularly for Micheweni district, indicate large percentages of population relying on sources of water that are not safe (49 percent and 78.6 percent respectively). Almost 80 percent of Unguja's population has access to piped water.

Most of the households in Zanzibar have poor sanitation facilities. Almost one third of the households do not have toilets (41.4 percent in rural areas, as compared to 3.8 percent in urban areas). The percentage of households in rural Pemba that do not have toilets is about 55 percent (as compared to 17.5 percent in Unguja); with again Micheweni district showing the highest proportion (74.1 percent).

Future priorities / options

An important step towards increased performance of the water supply of Zanzibar had been taken in the implementation of a Water Policy in 2002, advocating for sustainable development and use of water resources for various purposes including irrigation and domestic use. However, as shown in the section above, there is still much room for improvement. Future effective measures to improve water and sanitation services in Zanzibar should include the maintenance of the existing systems and extension of services to cover rural areas, thereby ensuring access for the poor. User groups should be involved in the development and operation of water services in order for water supply to be sustainable and used economically. Furthermore, water and sanitation education (e.g. training related to food preparation and waste / excreta disposal) can help people making informed decisions and avoid risky situations and unhygienic behaviours.

3.6 Wealth, Education and Nutrition

The nutritional environment during the first years of life is highly significant, since this is the time when the most critical periods of growth take place. Most of the functional impairments related to malnutrition

such as growth faltering occur during the early years, and even before birth. It follows that caring for women and mothers is crucial for the sound health of the child. Moreover, early malnutrition has particularly damaging consequences for women, whose offspring will also be affected by their nutritional status, causing a vicious circle to occur.

The malnutrition of women and children is associated with a range of socio-economic factors; however we shall concentrate on two of the factors that have been most closely linked: wealth status and mother's education.²⁸ In general, the relationship between wealth status and mother's education and nutritional status is expected to be positive. So, the wealthier the household and the better educated the mother, the better off the household nutritional situation.

The data from the DHS (2004/05) indicates that in general, there is a consistent positive relationship between the educational level of the mother and the nutritional status of the mother and child. This is the case for most of the indicators, especially the level of micronutrient intake and the general nutritional situation of the mother and child. The relationship is slightly weaker between the mother's education and breastfeeding, in fact, the data indicates that the duration of breastfeeding is not affected by either educational or wealth status. The same relationship applies to the wealth status of the family and their nutritional status.

3.7 Actions Being Undertaken to Address Nutrition and Health

Poor food utilization is a strong driving force behind malnutrition and food insecurity in general. Food utilization interventions are therefore designed to improve the individual's capacity to use food in a manner that would enhance their health, wellbeing and their productive participation in society.

Currently, the nutrition department of the Ministry of Health works at the central and the community level, carrying out various interventions for improvising nutrition in Zanzibar. Their main activities include:

- Vitamin A supplementation and de-worming of 6-59 months children (bi-annual and community based);
- Supplementation of iron folate to pregnant mothers (clinic based);
- Salt iodation in Pemba;
- Child growth monitoring;
- Conducting surveys and situational analyses of nutritional status;
- Delivery of health and nutrition education to health sector staff and to the community.

Besides the various departments and units of the Ministry of Health (e.g. the IMCI unit), other key actors engaged in general treatment of diseases and illnesses include the Zanzibar AIDS Commission (ZAC), development assistance agencies and NGOs.

3.8 Summary

In sum, good nutrition status is dependent upon each person having appropriate intakes of macronutrients and micronutrients, combined with adequate healthcare and access to safe drinking water sanitation. Nutritional status also depends on the availability of sufficient knowledge about appropriate diet, taking into account local food habits to prevent problems of under nutrition and diet-related non-communicable diseases as well as sanitary and hygienic practices.

²⁸ Based on the overall outcomes of the DHS (2004/05)

4 POLICY & INSTITUTIONAL ENVIRONMENT FOR FOOD SECURITY

Rallying political will and institutional commitment to fighting hunger and food insecurity is crucial in focusing both actions and resources in the right direction. Achieving this closely goes hand in hand with the existence of a conducive policy environment and strong institutional coordination and capacity.

4.1 A Human Rights-based Approach to Food and Nutrition Security in Zanzibar

The human right to adequate food and to be free from hunger is firmly established in international law, including the International Covenant on Economic, Social and Cultural Rights (ICESCR)²⁹ and the Convention on the Rights of the Child (CRC)³⁰. By ratifying these legal instruments, states have recognised the obligation to progressively realise the right to food and other rights contained in them. At the 1996 World Food Summit, leaders from 185 countries (including the United Republic of Tanzania) reaffirmed, in the Rome Declaration on World Food Security, "[...] the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger".

FAO has shown that reduction in hunger can be understood as an investment in the national economy.³¹ A food-secure work force is more productive, less often sick and its members are more likely to invest in their future as their immediate needs (such as food) have been met. Direct and indirect transfers targeted at vulnerable population groups may also stimulate the economy, as well as serve the pursuit of equity. A rights-based approach empowers local communities to participate in decision-making and facilitates people's efforts to take direct responsibility for themselves, thus reducing their dependence on state assistance.

Thus, resources allocated for the progressive realization of the right to adequate food can be seen as an investment in the country's human capital and development. Human rights-based approaches should be part of a pro-poor growth strategy.

Human rights principles can also be applied in assessing the policy and institutional environments for food security. This is recognized with respect to the right to adequate food in the Voluntary Guidelines³²: an assessment of relevant policies and institutions should be undertaken by government as a basis for the development of an action plan to create an enabling environment for the realisation of the right to adequate food (and other economic, social and cultural rights). The policy environment should enable people to achieve and maintain food security. A contributing factor to the non-realization of the right to adequate food may be inadequate and ineffective institutional performance or a lack of institutional response because no appropriate institution exists. Lack of capacity to deliver needed services may be another reason for inadequate institutional performance.

Both final outcomes, i.e. food-secure individuals, and processes, i.e. the ways in which final outcomes are achieved, are important with a human rights-based approach. This is directly related to good governance. In assessing the policy and institutional environments for food security, is it thus of importance whether:

²⁹ Most relevant are Articles 2 and 11 of the ICESCR

³⁰ Articles 24.2c and 27 of the CRC

³¹ For example, see [The State of Food Insecurity in the World 2004](#) (Rome, FAO)

³² FAO. [Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security](#) (Rome, 2005). The Voluntary Guidelines are the result of inter-governmental negotiations that lasted two years, and were adopted by the FAO Council in November 2004.

- impacts of policies and administrative actions are equitably distributed among the food insecure and vulnerable;
- the ways in which policies and administrative actions are implemented promote equality and are non-discriminatory in reaching the food-insecure and vulnerable;
- there is transparency in the ways that decisions are made and public resources are administered;
- individuals/institutions with responsibilities and duties for implementing food security actions and providing public services can effectively be held accountable for adverse decisions, poor performance and/or inadequate administration of resources;
- food insecure and vulnerable people are effectively participating in policy formulation;
- implementation and monitoring, and whether institutional efforts are included to empower them with an understanding of what the right to adequate food means and their role in realising the right.

Box 2: Governance and the right to food

The affirmation at the World Food Summit of the “fundamental right of everyone to be free from hunger” highlighted another dimension of good governance - the obligation of states to respect human rights and fundamental freedoms. And the adoption in 2004 of “Voluntary guidelines to support the progressive realization of the right to adequate food in the context of national food security” by the FAO Council provided a practical tool to assist national efforts to fulfill that obligation.

The impact on governance and food security can be seen in several countries that have already recognized a “justiciable” right to food. In India, for example, the Supreme Court mandated cooked lunches in all of the country’s schools. Both nutrition and school attendance have improved dramatically where the programme has been implemented, particularly among girls. Given the critical role of maternal nutrition and education in breaking the cycle of hunger and poverty, the benefits will be felt for generations to come.

4.2 Overview of agricultural policy environment

The Zanzibar Government, like that of many African countries, since the mid 1980s pursued major structural adjustment programmes (SAPs) in response to internal and external shocks. Food availability is closely linked to economic and agricultural policy; hence, to fully understand the vulnerability to food security in Zanzibar, a closer look should be taken at the macro economic and structural changes in Zanzibar. The economic reforms that resulted in market liberalisation of food and export crops and removal of subsidies have resulted in significant changes in the structure of the agricultural sector. Under these reforms the government withdrew from direct involvement in agricultural production, processing and marketing (with the exception of the clove sector); leaving the agricultural production system to be more determined by market forces and the activities of farmers and other private sector actors.

Regarding the clove market, the government commissioned a study on the clove industry with the intention of restructuring clove production and marketing. Based on the outcome of the study the Government is in the process of preparing a Clove Development Strategy focusing on: crop husbandry; increasing tree population; introduction of new harvesting techniques; increasing processing and liberal marketing structure.

The removal of subsidies has resulted in low use of modern inputs and agriculture technology due to low purchasing power of the agriculture producers. Furthermore, the withdrawal of the government from direct production and services delivery in anticipation of creating room for private sector involvement has virtually left agriculture producers inadequately supplied with the necessary inputs for production.

The governments' focus is now on promoting and sustaining an enabling environment for growth in agricultural production, trade and investment in order to achieve the national objectives of enhancing food security, increasing rural incomes, achieving export growth, and conserving the environment.

With regards to promoting growth in agriculture production, the focus of MALE is on addressing some of the many issues that constrain the performance of the agricultural sector in the country development. Within a given time frame strategic areas for intervention are:

- i) Strengthening the institutional framework for managing agricultural development, with a special focus of defining roles of key actors in the sector at different levels and strengthening their capacity;
- ii) Increased private sector participation in agricultural development through creation of a favourable climate for commercial activities. This will include a stable macroeconomic environment and appropriate changes to the administrative and legal framework;
- iii) Clarifying public and private roles in improving support services, including agricultural research, extension, training, regulation, information and technical services and finance.;
- iv) Paying special attention to marketing of inputs and outputs so as to improve net farm returns in the short term and commercialize agriculture in the medium and long term.
- v) Identification of mechanisms to mainstream the planning of agricultural development in other sectors to ensure that attention is given to such issues as rural infrastructure development, the impact of HIV/AIDS and malaria, youth migration, environmental management, etc.

4.3 Current Policies, Strategies and Initiatives with Bearing on Food Security

4.3.1 Sectoral policies and national frameworks

Agricultural Sector policy (2003)

Agricultural Policy of Zanzibar, assert that the role of the Ministry of Agriculture, Livestock and Environment is concentrated on public support functions, policy implementation, and management and promotion of an enabling environment for private sector production, trade and investment. Increased and sustainable agricultural growth will be based on structural changes aiming at increasing productivity, developing new technology and producing new products. The overall goal for Zanzibar Agriculture Sector Policy is to promote sustainable development of the agricultural sector for economic, social and environmental benefits for its people with specific objectives to:

- modernize and commercialize the agricultural sector so as to increase productivity and rural incomes while ensuring an ecologically sustainable environment;
- attain household and national food security and improve nutritional status of the people particularly children and lactating mothers;
- increase agricultural exports in order to increase foreign exchange earnings for the nation;

- raise agricultural contribution to the national economy and hence improve living standards of the people and create employment opportunities;
- improve the quantity and quality of agricultural products for which the country has comparative advantage;
- promote gender equality in agricultural development and production in order to ensure that women have equitable access to and control over productive resources including land, water, credit and extension services;
- promote integrated and sustainable use of natural resources;
- enhance national capacity to manage and develop the agricultural sector in collaboration with other stakeholders;
- promote primary processing and to provide agricultural raw materials for agro-processing and agro-based industries.

The Land Policy (1997) which promotes a secure land tenure system to encourage the optimal use of land resources which plays a very significant role in food production;

The Water Policy (2002) which advocates for sustainable development and use of water resources for various purposes including irrigation and domestic use, all being crucial for food security;

The Fisheries Policy (1997) which aims at promoting efficient utilization of the available fisheries resources in order to contribute to the growth of the national as well as household food supply and dietary diversification;

Other policies:

Given the multifaceted nature of food security issues, there are several other policies including those on financial institutions, health, HIV/ AIDS, social welfare, employment, gender, cooperatives, transport, telecommunication, trade, industry, community development, labour, and science and technology; and international pricing and marketing policies e.g. World Trade Organization (WTO), that influence food security.

Vision 2020 and ZPRP: The Revolutionary Government of Zanzibar seeks to address key poverty and sectoral problems through an integrated and participatory approach involving all key stakeholders using overarching frameworks such as the Vision 2020 and the ZPRP. Agriculture was among the priority sectors in The Zanzibar Poverty Reduction Plan (ZPRP). The ZPRP targets have set to achieve the Zanzibar vision 2020 development goal of reducing abject poverty and Millennium Development Goals of halving the poor people by 2015. Strategic focus for the agriculture sector in the ZPRP included:

- Re-orientation of marketing infrastructures,
- Improving agriculture support services,
- Encouraging agro-forestry and social forestry.

ZGRPS: This second generation poverty reduction strategy for Zanzibar recognises the symbiotic relationship between growth and poverty reduction, and tackles food security from a cross sectoral perspective.

4.3.2 Major steps with regards to policy implementation

Development of Agricultural Sector Strategic Plan

An Agricultural Sector Development Strategy Plan (ASDS) has been formulated in 2004. The ASDS provides a comprehensive strategy and framework for the effective implementation of the Agriculture Sector Policy leading to sustainable development of the sector. It comprises a set of innovative actions and identifies a number of strategic options for the growth and development of Agricultural Sector, which upon its adoption and implementation will have long term impacts on agriculture production and productivity, food security, poverty alleviation, natural resource conservation and overall economic growth. The ASDS is in the infant stage of its implementation.

Formulation of Various Projects

Various projects have formulated with broad objectives to increase agricultural production and productivity, improve research and extension services, farmer empowerment (financially and technical), promotion of private sector involvement in production and provision of services to farmers and natural resources and environmental protection. A summary of the current projects is provided in annex V.

Implementation of Special Programme for food security

The phased out Special Programme for Food Security³³ strived to successfully demonstrate the potential that exists to rapidly increase the productivity, by introducing a package of improved techniques, and technologies related to improved water control, crop intensification, and farming system diversification, of livestock and agriculture. Essentially, the project adopted a participatory approach, where farmers contribute much of the labour, while the programme contributed funds to support the implementation of various activities. The project consisted of four components: water control, agronomy, constraint analysis and training.

The specific objectives of the project were to identify and demonstrate appropriate technologies to better control water for agricultural production, and to intensify rice and vegetable production through improved varieties, soil fertilization, and integrated pest management.

The project's outputs were recorded as the following:

- In all sites at which irrigation infrastructures were rehabilitated or constructed, an improvement in the efficiency of water use was realized through better water control and management;
- Identification and demonstration of appropriate technologies, these included the use of the recommended rates of fertilizers, the use of high yielding rice varieties, and the general use of good husbandry practices. The increased productivity of the paddy which reached 5.4tons/ha clearly demonstrated the potential for improving food security and income;
- Farmer empowered on identifying and solves their constraints, organizing and carrying out their day to day activities and establishing small producer groups;
- The constraints hindering the adoption of improved technologies have been identified, as well as the requirements of the farmers for removing these constraints.

Lessons Learned

Organizing People: Zanzibar's irrigation schemes are smallholder schemes, which need self-organizing irrigation institutions. When organizing makes good sense (economic sense) people can organize themselves speedily, and without the benefit of catalysts or facilitators. This project showed that organizing farmers around an idea, which makes economic sense, indeed needs little effort.

³³ See Progress Report of January 2001 - November 2002: Project TCP/URT/0066(D) - Expansion of Special Programme for Food Security (Water Control Component for Zanzibar).

Despite a huge burden shouldered by the farmers in terms of material, and labour contribution, farmers were able to organize themselves to fulfil this task, simply because they saw the economic sense of their contributions to the whole scheme.

Institutional reforms beyond irrigation management: Irrigation unit reforms, as well as the current efforts in the irrigation master plan, only look into irrigation management issues. The main lesson learned is that there is a need to have multi-sectors institutional reform, such as credit, input and output markets, as well as land tenure, and extension services. Such broad multi-sector institutions make sure that reforms go beyond irrigation management which will make farming activities more viable.

The institutional alternatives, that have the best chance for success in smallholder situations, are those that help smallholders move to a substantially higher productivity and income from where they are. The best place to start seems to be the markets. Hence, we should bring the smallholder farmers in contact with stable and reliable markets for the marketing of their products. When their irrigated holdings provide them with decent livelihood, smallholder farmers will be ready and eager for irrigation management.

Participatory training program: The flow of training up to grass root levels appeared to be an important milestone of this project. Involvement of local trainers created a favourable atmosphere for dialogue, exchange of experiences as well as information, and the interaction between farmers and technicians. This kind of training was very appropriate because it directly targeted the beneficiaries.

The experiences gained and the lessons learned from the pilot phase of the SPFS also call for an up-scaled food security programme to implement all relevant actions on the ground. Such a programme would also address the main weakness of the pilot phase, including the obstacles posed by the non-irrigation related constraints to increased production, and the development of a stronger focus on the poorest and most vulnerable groups.

4.4 The Institutional Context and Coordination

Food security is a multi faceted and complex phenomenon that is both a cause and consequence of poverty. Accordingly, efforts to tackle food insecurity should involve a wide approach that draws on the resources of all the various sectors that interact with food security. For instance, in order to improve the nutrition level of children, a school feeding programme might be developed which would require collaboration between the agricultural, health and education sectors. Similarly, monitoring the health and nutritional status of children might also be part of such a cross sectoral approach.

4.4.1 The main institutions with bearing on food security

As in most other states, several institutions, bodies and organizations exist in Zanzibar that touch upon food and nutrition security in their areas of work. These mainly include:

Ministry of Agriculture, Livestock and Environment (MALE):

The development of agriculture and its sub sectors, namely fisheries, livestock and forestry are the mandate of MALE. The Ministry establishes sectoral policies and implements programmes that target the goals specified therein. For the purpose of enhancing food security, the MALE plays a prominent role both in terms of planning and execution. However, the Ministry does not currently have in place a comprehensive and cross sectoral programme specifically aimed at improving and monitoring the food security situation of Zanzibar.

Ministry of Health (MoH) & Zanzibar AIDS Commission (ZAC):

Health and nutrition are aspects that contribute towards determining the levels of poverty and food security amongst communities. The interaction between the nutritional status of individuals and their vulnerability to disease causes high levels of vulnerability and morbidity amongst specific groups. The people living with HIV/ AIDS are an example of a group that suffers acutely from the interconnected linkages between nutrition, health and poverty, causing a reduction in their levels of productivity and life expectancy. In this regard, the MoH and ZAC are critical institutions for fighting malnutrition and food insecurity through a cross sectoral approach.

Ministry of Youth, Employment and Women and Children (MoYEW):

The work of the MoYEW touches on the wellbeing of some of the most vulnerable groups in the community both in terms of poverty and food security, namely women, children and the unemployed. The generation of employment and the involvement of youth and women in productive and income generating activities are essential conditions for increasing income and improving household food security.

Ministry of Tourism, Trade and Industry (MTTI):

The MTTI is the lead institution for governing and coordinating trade issues, including the imports and exports of food and other agricultural produce. It is also the centre for the promotion of investment, private sector participation and the development of small and medium enterprises (SMEs). Food safety matters are also amongst the mandate of the MTTI, whereby the safety controls on incoming foods are managed by the consumer protection department. So, the MTTI plays a large role in the food economy of Zanzibar, especially given the high level of consumption of imported food stuffs on the isles.

Ministry of Land, Water and Housing (MoLWH):

In order to pursue food security in a comprehensive manner, it is important to address the issues of land policy and management and water availability and use. Particularly since these factors are often major determinants of the level of agricultural productivity and stability of production. Therefore, efforts that are directed towards the amelioration of the food security situation in Zanzibar should inevitably be coordinated with the programmes and projects of the MoLWH.

Chief Ministers Office - Disaster Management Unit

The mandate for the management of emergency and disaster situations lies with the Chief Minister's Office of Zanzibar. This includes the management of food emergency situations, both in terms of warning and mitigation systems.

District Government Authorities (DGAs):

The DGAs play a critical role in the process of enhancing food security because of their level of direct involvement with the communities at the district and village level. They also have a strong role in monitoring, supervising and reporting on service delivery, resource allocation and programme outputs.

Civil Society Organizations (CSOs):

CSOs have emerged as key players for the implementation of participatory agricultural development and food security programmes. They play a role in the provision of extension and credit services as well as lobbying and advocacy for policy changes.

The multiplicity of the institutions relating and working in the context of food security calls for a concerted effort in collaboration and coordination. This issue is further discussed in the concluding chapter.

5 SUMMARY AND RECOMMENDATIONS

The previous chapters have shown the complexity of the Zanzibar food security situation and many of the determining factors. This analysis also helps to demonstrate the inseparability of poverty, vulnerability and food insecurity.

In this chapter of the report, the main aspects of the food security situation of Zanzibar are summarised at first. Subsequently, some broad actions and policy recommendations for addressing the situation are outlined. Whilst addressing the major aspects that have been identified in the study, it is not a comprehensive list of possible actions, but rather a selection of guiding issues for policy and strategy formulation processes. Further detail, elaboration and consultations with stakeholders and the Zanzibar communities are necessary for taking these preliminary recommendations to their full conclusions. Finally, this chapter also highlights the vulnerable groups with regards to food security, as well as recognise the vulnerability that is faced by the natural environment itself. Using a table format, the nature of various vulnerabilities is explored, in addition to the key contributing factors, and some key interventions and recommendations.

5.1 Summary of Food Security Situation

The table below summarises the main food security areas that have been covered in chapters one to four, in addition to the key factors that determine and may impact on household food security:

Table 21: Summary of key factors and findings relating to food security in Zanzibar

Factors related to food availability at the national level	Summary of key findings
National food supplies	<p>National food production deficit, especially for rice and maize</p> <p>High volume of import for rice, wheat and sugar amongst others</p> <p>Low levels of agricultural productivity</p> <p>Agricultural productivity restricted by poor soil fertility, environmental pressure, population growth and urbanisation, dependence on rain fed agriculture, low market linkages</p> <p>High incidence of post-harvest losses</p>
International prices (food imports and export of tradable goods)	<p>Rising food prices in the domestic markets</p> <p>High impact of international prices on national prices and purchasing power, currency depreciation</p>
Factors related to food availability at sub-national level	Summary of key findings
Transport infrastructure	<p>Some rural roads difficult to access during rainy season</p> <p>Extra costs associated with food transport</p>
Markets	<p>Under-developed district level marketing</p> <p>Poor demand in coastal areas</p>
Agro-ecological conditions	<p>Coastal and coral soil based areas tend to have a lower level of food production and less variety of food available</p>

Fertile inland zones are the highest food producers, but also the most densely populated, much of the food is consumed within the zone

Urbanisation pressures are progressively pushing out urban and peri urban farming

Factors related to food access	Summary of key findings
Food sources: production and purchase	<p>Majority of rural households engaged in some level of subsistence farming, but with low productivity</p> <p>High level of dependence on purchase of food across all areas and all wealth profiles - especially rice, wheat, sugar, animal protein</p>
Access to factors of production	<p>Poor tend to have fewer productive assets</p> <p>Small land holdings, increasing fragmentation with population growth</p> <p>Insecure land tenure</p>
Poverty, vulnerability and livelihood diversification	<p>High levels of income and food poverty in both urban and rural areas</p> <p>Concentrations of poor in Pemba</p> <p>Many living with low incomes and precarious livelihoods: high poverty mobility</p> <p>Low level of income/ livelihood diversity in some areas</p> <p>Low access to foods such as meat and various fruits and nutrients</p> <p>Shocks to food access include: increasing food prices, weather shocks, seasonality and clove dependency</p>
Factors related to food utilization	Summary of key findings
Child health and nutrition	<p>High levels of child malnutrition (stunting, PEM, VAD, anaemia)</p> <p>Poor infant feeding practices</p>
Maternal health and nutrition	<p>High prevalence of anaemia, under-weightiness, poor mother health</p> <p>Low level of health education</p> <p>Impact on maternal mortality and health of newborns</p>
Health and Disease Burden	<p>HIV/AIDS identified as an important risk</p> <p>High prevalence of diseases such as malaria, ARIs</p> <p>Children often suffer from fever and diarrhoea</p>
Water and sanitation	<p>Poor access and availability to safe drinking water</p> <p>Large proportion of rural households do not have toilets</p> <p>Water and sanitation situation most adverse in Pemba</p>

Factors related to policy and institutional environment	Summary of key findings
Policy environment	Lack of a comprehensive policy framework for food security
Institutional coordination	Several institutions working in the field of food security with no overall coordination Institutional gap in terms of rural development policy Insufficient information dissemination due to lack of clear responsibility

5.2 Actions and Policy Options for Addressing Food Security

5.2.1 Acute Food Insecurity - Short to medium term shocks

Acute food insecurity is the condition that arises from the various shocks (short to medium term) that may impact the household negatively in terms of food security. Some of these shocks have been discussed in some detail in the previous sections, whereas the section below highlights some of the options for managing acute food insecurity:

Food access programmes and social protection initiatives for the most vulnerable:

- Food for work programmes: In many developing countries, a significant number of people are subsistence (or below subsistence) farmers producing only enough to feed their families for part of the year. Food for work programmes provide support to such households while developing useful infrastructure such as small scale irrigation, rural road, buildings for rural health centres and schools. This would be beneficial in Zanzibar especially when targeted at workers that suffer the cycles of seasonality such as clove pickers and urban tourism workers.

In Zanzibar, the Special Programme for Food Security (2003) piloted such a scheme, whereby a food for work initiative led to strong farmer and community participation in improving water management and irrigation in both Unguja and Pemba.

- Targeted feeding programmes: These are schemes that contribute to enhancing human capability by providing food directly to targeted groups. Such schemes include school feeding and milk programmes, feeding of expectant and nursing mothers and children under the age of five, soup kitchens and canteens. The impact of targeted direct feeding programmes is to reduce malnutrition and related illnesses, especially amongst the most vulnerable. Such programmes could be of strategic importance both at times of food shocks as well as to address the nutritional status of vulnerable groups on the islands, particularly in Pemba, where there are the highest numbers of the poor and food insecure.
- Direct Transfers and Consumption Smoothing: Forms of public action aimed at enhancing the resiliency of households can help to smooth such damaging volatility in income and food consumption. So, in circumstances of high poverty mobility, great gains can arguably be made from smoothing fluctuations and uncertainties than in simply seeking to reduce the percentage of total households below a fixed poverty line.

Public action should seek to combine longer term sectoral growth with consumption smoothing initiatives that result in potentially larger reductions in aggregate poverty in the shorter-term. These might include micro-credit focused on consumption support, enhancing savings behaviour and security, public works with a stronger employment guarantee element, new forms of crop insurance, village-level grain banking, and possibly targeted (seasonal) food

market interventions aimed at price stabilization. Income transfer initiatives are also a means of boosting the food purchasing power of an individual or household. Income transfers can be in cash or in kind, including food stamps, rations or other targeted measures for poor households.

Such transfers can potentially benefit smallholders who are embarking on risky initiatives, the poorest households (see table 22 in section 5.3) who have no access to any safety nets, and groups such as women, elderly and the incapacitated.

Early warning and response mechanisms

The primary victims of large scale emergency situations such as drought, weather anomalies or economic shocks are always the poor. The time delay that is often incurred in disaster management interventions can be lengthy, reducing their effectiveness in lessening suffering and even mortality. Consequently, early intervention for avoiding and mitigating these circumstances such as warning systems and immediate response funds are necessary for avoiding further impoverishment of poor households.

The establishment of efficient food security and nutrition surveillance systems are an important precondition for responding to prevailing shocks. Such systems are especially pertinent when it comes to tackling shocks such as the recurrent droughts and floods that occur in east Africa and risks of environmental disaster such as Tsunamis. Strides have been made around the world in developing early warning systems and in mobilizing groups in developing community-based early warning systems (Sudan, Ethiopia). Additionally, numerous agencies have progressed in the elaboration of more global warning systems (FEWS, FIVIMS, GIEWS, VAM, etc.).

However, good warnings are not invariably coincident with good operational responses, and a lack of attention to contingency planning will hamper food support interventions. Hunger and malnutrition warnings should be combined with timely availability of food and inputs for resuming agricultural production.

Food emergency and disaster management issues in Zanzibar are currently part of the role of the Ministry of Agriculture, but also the Disaster Management Unit of the Chief Minister's Office. Coordination between these institutions and other relevant actors is important in order to develop effective systems. A Food Security Information Team should be established and equipped with necessary skills and tools, and linked up to regional food security monitoring initiatives. Facilitating the availability emergency stocks of food and seeds at times of shock is also a critical measure for responding to emergency situations.

5.2.2 Chronic Food Insecurity - Long term structural issues

Chronic food insecurity relates to the persistent and long term obstacles to achieving household food security. A host of interventions may play a strong role in tackling chronic food insecurity by increasing agricultural production and productivity levels as well as general household income levels; these include:

The development, control and management of water

The objective is to intensify the agricultural production of farmers through better water control and irrigation management. It is important to target drought prone areas and to develop synergies for the provision of safe drinking water in rural areas. Some of the proposed activities are:

- Irrigation development specifically with a focus on improving and developing irrigation infrastructures for water control and for a water distribution system, designing of new irrigation

systems in areas where there is a high potential for irrigation development. The new irrigation system should consider not only the rice production but include other crops such as cereals, vegetables, legumes, fruit trees, and other high value crops;

- The development of a rainwater-harvesting strategy plan; establishment of a pilot scheme, by constructing small earth dams for collecting rain water, this water will be used for agricultural purposes especially during the dry season;
- Encourage efficient water utilization; through enhancement of the irrigation system for high water control, and the guaranteeing of optimum utilization. Such systems include the development of drip irrigation, and other pressurized systems.

The intensification of crop production

The objective is to intensify crop production through the introduction of technology targeting smallholder farmers in all of the farming zones. Proposed activities are:

- Identification of target groups from "food insecure farming communities";
- Review of existing crop intensification technologies, and assessment of their strengths for up-scaling as well as their weaknesses. This is valuable information for future research;
- Conduct adaptive, or participatory, research on the identified problems in order to determine the appropriate technology that should be used for crop intensification according to farming system zones and extend research findings to "food insecure farming communities". Some of the important research themes should include: (i) the identification of suitable high yielding crop varieties; (ii) determination of sustainable crop fertilization practices, and technologies; (iii) crop intensification, in small holder environments in respective farming system zones and cropping systems; (iv) research on post-harvest practices and technologies in order to add value to the productivity of crops.

Intensification of animal and fish production

The objective is to increase the production, and productivity in the supply of all types of livestock and fish products to satisfy local demand as well as to enable the access to export markets thus insuring basic food security, improved nutrition standards and higher standard of living. Proposed activities are:

- Introduction of improved breeds of livestock (like poultry or milk goat) for crossing/exchange with local breeds;
- Reduction of the diseases affecting livestock, which are currently very widespread;
- Capacity building programme for livestock keepers, and their field staff;
- Promote exploitation of deep sea fish resources;
- Providing community education on the artificial reef, and the Fish Aggregating Device (FAD).

Capacity Building:

The objective is to develop capacity building programme at different levels from national, district to village levels and to improve management capacities (technical and financial) of smallholder farmers through participatory training and proposed activities are:

- Conduct participatory farmer trainings using farmer's study visits, farmers' field days and farmer Field School (FFS) approaches and specific aspects to be addressed will be according to the farmers' needs;
- Training on cross-cutting issues such as HIV/AIDS epidemic, malaria, gender issues etc;
- Developing the capacity of the most vulnerable groups (see table 22 section 5.3) to organize themselves for developing solutions e.g. savings and credit associations.

Marketing organization and strategies:

The objective is to improve farmers' access to markets, and to increase their bargaining capacity in both the input and output markets for agricultural products. Targeting of women farmers (e.g. seaweed farmers) would also help to empower them against gender biased marketing systems. Proposed activities:

- Facilitating the formation, and growth, of producer and marketing associations, with a focus on women's participation;
- Supporting farmers' associations to undertake demand-driven production (research) will lead to an improvement of quality, value added products, and production techniques;
- Creating and enforcing regulations, marketing procedures, and guidelines, for the operation of a wholesale and retail market system for agricultural commodities which ensures fair play;
- Identifying and removing the existing marketing bottlenecks.

Rural financial systems credit, risk insurance

There is a need to focus on the formation of institutions to provide for the short-term financial requirements in the sector through the formation of demand-driven community-based and legal financial institutions. This should also involve the promotion of linkage between existing banks and the rural financial intermediaries as this linkage will enable smallholder farmers to access financial services indirectly from formal financial institutions.

Rural finance can also benefit the landless and those with a low asset base to establish themselves with income opportunities, whether farm or non farm. The proposed activities are:

- Identifying / establishing and strengthening the informal financial intermediaries, as the key to unlocking opportunities, which are open to the rural population, and by accomplishing the objective of increased food production for national food security;
- The development and strengthening mechanism for the mobilization of savings, and for the arrangements of a supply of credit in the program areas;
- Mobilization and empowerment of the community based savings and credit schemes/groups;
- Developing mechanism for supplying finance to the poorest/ landless groups (see table 22).

Stability of prices

Price developments in Zanzibar are highly influenced by movements in regional and international prices. Movements in prices in the Mainland and the Tanzania shilling exchange rate also influence prices in Zanzibar. Stability in world prices and the exchange rate for the Tanzanian shilling has helped to stabilize and reduce the rate of inflation. Understanding and tackling the drivers of inflation and the pursuit of prudent fiscal and monetary policies can contribute to the reducing general prices.

These policies are especially of importance to rural landless and urban poor, who spend a large proportion of their incomes on the purchase of food.

Diversification, employment and off farm labour opportunities

Income diversification is positively associated not only with wealth accumulation but also with an increased ability to withstand exogenous shocks. Therefore, the importance of spreading risk in reducing vulnerability to shocks cannot be over emphasized. Diversification can occur within agriculture by increasing the range of agricultural products as well as diversifying into non farm activities such as petty trade, manufacturing, and services.

The underlying assumption is that diversification will reduce vulnerability and improve levels of consumption, but also that food insecure households in risky environments can in fact diversify. However, such is not always the case. Intervention should be designed to overcome the barriers to diversification and resilience. In this regard, public works, insurance and microfinance schemes as well as support for rural processing, cottage, and local transport service industries can have a significant impact. In Zanzibar, industries such as seaweed farming have proven to enhance poverty reduction by engaging the women of the communities involved, and diversifying incomes in the coral/ fishing zones.

Box 3: The rural non farm sector

Building Opportunities in the Rural Non Farm Sector

The basic aim of policies towards the rural non-farm sector should be to facilitate the participation of the poor in such activities, or at least reduce barriers to their participation.

Increasing the asset base of poor households (liquid assets, education, and access to credit) will allow them to participate in the more remunerative rural off-farm employment (self-employment or skilled labour employment) and “break” the duality of access to non-farm employment and concentration of wealth. Additional actions to lower barriers to the development of farm/non-farm linkages include addressing deficiencies in infrastructures (as they limit investment opportunities), improving agricultural technology (with a bearing for linkages backward and forward from farming), and promoting farmer organizations (as organized farmers tend to be more proactive in forging linkages with e.g. agribusinesses).

Source: ESA WP 03-17, FAO

Other possible actions include rationalizing land tenure policy, reducing costs through new technologies and lowered post-harvest losses, introduction of livestock and egg marketing, encouragement of diet diversity via home gardens, and diversification into cash crops where market outlets are favourable. In all cases, success has to be measured not simply in terms of more production, but also if it can be sustained. These activities would have a significant impact if targeted on youth, women, and other underemployed groups.

5.2.3 Hidden Food Insecurity - Nutritional aspects

Hidden food insecurity covers the nutritional dimensions of hunger and malnutrition. Several issues arise from this analysis as well as from the ZPRP I review consultations with regards to the food utilization, which have led to the following recommendations:

Maternal health and nutrition

- Improve nutrition and health education;
- Increase maternal (pregnant and lactating) food intake for better maternal nutrition, optimal foetal growth and improved birth outcomes;
- Delay age of first pregnancy until after adolescence and increase birth intervals to strengthen women's nutritional status and improve birth outcomes;
- Reduce demand for female labour during and after pregnancies to optimize maternal energy balance by promoting labour saving technologies;
- Increase access to mosquito nets, reproductive health services, HIV/AIDS education and prevention, iodated salt and potable water for reduced exposure to disease and illness and to enhance food safety.

Child health and nutrition

- Increase child food intake for better child nutrition and reduced vulnerability to diseases and early mortality;
- Increase the practice of exclusive breast feeding to ensure healthy growth in early childhood;
- Increase child access to mosquito nets, health services, iodated salt and potable water for reduced exposure to disease and illness and to enhance food safety;
- Widen the spread of immunization;
- Develop health systems for limiting mother to child transmission of HIV/AIDS.

Water and sanitation

- The maintenance of the existing water and sanitation;
- Extending water and sanitation systems to cover rural areas;
- Involving user groups in the development and operation of water services;
- Water and sanitation education.

5.2.4 Future Food Insecurity - Risks to future livelihoods

Land Management and Urbanisation

In many areas, agricultural land is at pressure from the growth of urban communities. Growing populations and increasing settlements are straining both the size of agricultural land and the fertility and health of the natural environment. Some possible interventions are as follows:

- Review and enforcement of land use and zoning plans;
- Protection of agricultural land, especially in environmentally fragile areas;
- Securing current and future access to the sea for coastal communities as tourism developments are rapidly expanding;
- Forward planning for food availability in the context of a growing population and shrinking area for agricultural cultivation.

Environmental Degradation

The environment of Zanzibar is rather diverse and fragile. Yet it is currently facing many challenges from a variety of sources including population growth, poor soil management techniques, tourism

developments, deforestation, destructive fishing practices and a lack of effective liquid and solid waste management systems amongst others. The impact of these issues is strong on food security, and further deteriorations pose a large risk to future food insecurity. Some possible actions for tackling this situation include:

- Tree planting and reforestation;
- Promotion of eco-tourism;
- Enforcement of environmental laws and regulations;
- Public- Private Partnerships for waste management;
- Farmer education for better soil management.

5.2.5 Institutional Aspects for Improving Food Security

Policy and Planning Environment

Whilst the ZSGRP, the Agricultural Sector Policy and Strategy identify interventions to improve agricultural productivity in Zanzibar, there remains to be no comprehensive government policy framework for achieving food security. This places the objectives of the overarching policy frameworks of the Vision 2020 and the ZSGRP in relation to food security at risk, since they cannot be achieved in the absence of a clear food security policy framework.

Given the complexity and multidimensional nature of food security there is a need for a multi-sectoral food security policy framework that will provide a mechanism for prioritization of interventions, coordination of implementation, monitoring and evaluation of food security issues. The policy framework should address Government challenges to ensure food security to its people on a sustainable basis through issues related to increased food production and productivity; trade; distribution; management; safety; food safety-nets and support to the vulnerable and institutional coordination. The incorporation of food security and nutrition plans at all planning levels is also critical.

Institutional Coordination, Gaps and Capacity

Wider coordination amongst these and the other relevant institutions is also necessary in order to ensure that food security concerns are incorporated in the entire policy domain. A consolidated national alliance against food insecurity will require a re-examination of the various institutional structures, roles and capacities. This may be achieved for instance by operating through the Chief Minister's Office or some other entity which can ensure overall coordination and a comprehensive vision and action.

Institutional vacuums should also be addressed because quite often, rural development issues do not clearly fall under the institutional mandate of neither the Ministry of Agriculture nor that of industry. An example of this is the design of policies and programmes geared towards non-farm rural activities, which generally fall in to this vacuum. This institutional constraint has to be resolved before any meaningful policies are taken towards the rural non-farm sector.

Furthermore, the capacity to implement the policies and plans that are designed to reduce poverty and food insecurity is low amongst the relevant institutions. Some of the capacity constraints include a lack of technical expertise, low financial planning and management skills, insufficient financial resources and the lack of adequate equipment to manage and control the development process.

5.2.6 Monitoring and Dissemination of Information

The immediate objective is the supply of the relevant information, to all stakeholders on the operation, performance and impact. Proposed activities are:

Acute Food Insecurity

- Create a strong monitoring and surveillance systems related to food emergencies.

Chronic Food Insecurity

- Undertake food security status assessments - involving the development of indicators and methods for monitoring food security changes;
- Develop a better understanding of household food dynamics;
- Review how well food-insecure and vulnerable groups are targeted by policy and programme interventions aimed at reducing food insecurity;
- Review of the processes by which policy and programme interventions are formulated and implemented ;
- Strengthen awareness of the access to food and nutritional status of vulnerable groups(see table 22, section 5.3);
- Effectively disseminate information on the food security and nutrition status of the community to policy and decision makers;
- Establishing benchmarks for linking food security and nutrition outcomes to national targets and goals.

Hidden Food Insecurity

- Mobilize households, community groups and leaders to recognize and demand good nutrition for women and young children in particular;
- Increase awareness of nutrition issues and promote better nutritional practices by using mass media.

Future Food Insecurity

- Formulate a forward looking national food balance sheet;
- Formulate future food security scenarios taking in to account natural disaster risks, population/urbanisation trends, and environmental pressures.

5.3 Identifying Vulnerable Groups and Factors relating to Vulnerability

Vulnerability is concept that helps to clarify the risk profiles of households and their susceptibility to shocks. The ability to distinguish vulnerable groups enables social support to be temporally and spatially targeted in order to prevent such groups from sliding into destitution when shocks occur. Some groups may be chronically vulnerable, requiring support on a routine basis; others may experience transitory vulnerability (e.g. in the lean season before the next harvest). Table 22 below identifies the main vulnerable groups in Zanzibar:

Table 22: Summary of vulnerable groups, key contributing factors and actions against vulnerability

VULNERABLE GROUP	NATURE OF VULNERABILITY SITUATION	KEY CONTRIBUTING FACTORS TO VULNERABILITY	ACTIONS AGAINST VULNERABILITY
Demographic Categories			
Women	High levels of poverty and number of female headed households	Lack of rights/control over major productive assets	Supporting current livelihoods for women such as seaweed farming and cottage industries and promoting new income opportunities
	Poor nutritional and maternal health	Traditional roles ascribed by society	Developing community based initiatives for improving social status of women
	Low access to income generating opportunities	Lack of access to a good diet and to health care facilities	Improving availability and access to mother and child health facilities Targeting women of all ages for education and training
Youth	Poverty and low incomes	Limited access to productive assets	Getting more youth into vocational training and/ or higher education

	Low access to income generating opportunities	Inadequate education or vocational skills	
		High level of unemployment	Empowering young women to take part in economic activities
		Traditional roles ascribed by society (female youth)	Developing entrepreneurial skills and access to resources (information, credit, etc)
Elderly	High levels of poverty	Poor health conditions	Developing community based targeting mechanisms for the old
	Inability to engage in income generation	Strained social support networks and burden of looking after orphans	Clearing backlog of payments for pensioners
		No access to employment or to pensions	Promoting non labour intensive income generation activities
		Lack of productive assets	Improving availability and access to health facilities and medication
Orphans	Insecure access to basic necessities - food, housing, clothing	Staying in large families with limited parental care	Developing targeted social support mechanisms for orphans, including increasing access to food, nutrition, health and education
	Vulnerability to risks of poor educational and human development	Living with HIV/AIDS	Developing community and school based targeting mechanisms for improving consumption of food
	Current and future food and nutrition insecurity	No support for health and education	

		Strained social support networks	
Persons with disabilities	High levels of poverty	Discrimination in households and community	Social education initiatives against discrimination
	Inability to engage in income generation	Low level of access to public buildings and transport	Institutionalising accessibility of disabled to both physical and economic infrastructures
Persons living with HIV/AIDS	High levels of poverty	Discrimination and social exclusion	Targeted food, nutrition and livelihood support initiatives
	Low ability to participate in economic activities	Lack of access to basic health care necessities	Improve availability and access to healthcare for HIV/AIDS
		Poor nutritional status	Social education initiatives against discrimination
VULNERABLE GROUP	NATURE OF VULNERABILITY SITUATION	KEY CONTRIBUTING FACTORS TO VULNERABILITY	ACTIONS AGAINST VULNERABILITY
Food Poverty and Livelihood Vulnerabilities			
Rural poor	High poverty head count And low income flexibility	Low level of asset ownership (land, trees, fishing equipment, etc)	Explore options for additional sources of income, especially in the non-farm economy
In particular:			
<ul style="list-style-type: none"> • Firewood Collectors • Seaweed Farmers and • Fishers with Hooks 	High proportion of income spent on food	Lack of wage opportunities	Strengthen farm and non- farm linkages and marketing
		Paucity of coral based soils causes low	

<ul style="list-style-type: none"> • Clove Pickers • Rural landless 	High dependency on fishing/ seaweed for income	access to arable land in coastal areas	Increase private sector investments in the rural sector and access to export markets
	High dependency on firewood collection for income	Access to sea restricted to some groups causing low involvement in fishing and seaweed	Develop a wage/ income protection mechanism for clove and other agricultural labourers
	High dependency on clove labour for income so vulnerable to changes in the clove market and wage levels	Exposure to production, weather and economic shocks	Improve rural infrastructure
	Diet restricted by low income and production (fish, oil)		Strengthen market linkages with tourism industry
	High risk associated with firewood regulations so it is an unsustainable source of income		Increasing resources to rural communities, particularly information (for production and marketing) and credit for investment
Urban poor	High poverty head count	Urbanisation and land pressure	Tackling the land tenure and management issues
In particular: <ul style="list-style-type: none"> • Unemployed • Underemployed • Seasonal workers 	Highest dependency on food purchase	Negative changes in the prices of foods	Controlling the macroeconomic and supply variables that are fuelling growing prices
	Highest level of cash dependence	Wages/ salaries that do not increase as fast as food and general prices	Tackling urban unemployment and underemployment by developing industries and promoting MSMEs
		Seasonality of tourism related activities	Targeting the urban poor for food relief
		High levels of urban unemployment	Counter-seasonal works programmes
			Wage/ income protection for urban poor

VULNERABLE GROUP	NATURE OF VULNERABILITY SITUATION	KEY CONTRIBUTING FACTORS TO VULNERABILITY	ACTIONS AGAINST VULNERABILITY
Environmental Vulnerabilities			
Deforestation and reduced biodiversity	Habitat degradation and environmental degradation	Encroachment on forest areas from settlements, farming and tourism development	Tree planting and reforestation programmes that involve the communities
	High risk associated with firewood regulations so it is an unsustainable source of income	Increasing quarries and salt farms	Strict adherence to the tourism zoning plan and environmental regulations
		Wildlife harvesting	Promotion of eco-tourism
Changing nature of coastal and mangrove zones	Decreasing access of fishers and seaweed farmers to the sea	Transformation of coastal environment due to tourism development	Protection and existing nature areas and enforcement of existing environmental protection regulations
		Strict adherence to the tourism zoning plan and environmental regulations	
	Decreasing level of marine and marine resources	Illegal dumping of waste and litter	Conservation and wise use of mangroves, coral reefs and other inshore fish habitat
Increasing pressures on fisheries resources strongly affecting artisanal fishers		Coral harvesting for construction and destructive fishing techniques	Community environmental education programmes
		Enforcement of environmental regulations	

Land management and planning	Decreasing size of land holding for agriculture	Poor agricultural and soil management techniques result in topsoil loss, erosion and soil deterioration	Coordination of efforts between various institutions for integrated management Stronger enforcement of environmental management regulations
	Increasing land conflicts	Settlement on agricultural land and crowding in farming areas	Stronger enforcement of the land use planning regulations
	Low productivity of farmers	Limited land resources	Improving agricultural practices and reversing deforestation
	Increasing numbers of rural landless	Growing population	Clarification of land tenure policies and titles to land
	Growing urbanisation pressures		Increasing agricultural productivity

ANNEX I GENERAL BACKGROUND TO ZANZIBAR

Zanzibar is part of the United Republic of Tanzania (URT), consisting of two main islands, Unguja and Pemba (and many small islets), which lie about 40 and 60km off the coast of Mainland Tanzania respectively. According to the 2002 population census Zanzibar has an estimated population of 981,754 people, of which 620,957 people live in Unguja and 360,797 in Pemba. The annual population growth rate is 3.1 percent. The two islands have a total land area of 2,643 km² (Unguja 1,658 km² and Pemba 985 km²), making Zanzibar the most densely populated part of East Africa.

Zanzibar experiences a lowland tropical humid type of climate dominated by bimodal pattern rainfall influenced by the prevailing monsoon trade winds. Rainfall through Zanzibar varies within the range of 1000 - 2500 mm/yr. Mean annual rainfall for Unguja is 1700 mm, whilst that for Pemba is 1800 mm. The mean maximum temperature is 23.5 °C and 21 °C for Unguja and Pemba, respectively. The climate is characterized by four distinct seasons:

- Vuli: the short rains from October - December, with most rainfall in mid November;
- Kaskazi: the hot dry season from January - February, with little or no rain;
- Masika: the long rains from March - May, accounts for almost half the annual total rainfall;
- Mchoo: relatively cool dry season, from June - September, when light showers may occur.

The agricultural sector

Zanzibar has adequate plant and animal resources that provide a livelihood to farmers, fishers and livestock keepers who form the major proportion of the population. The Island is also endowed with rich marine resources that have remained underutilized due to low utilization capacity. The existing forestry resources offer an excellent opportunity of eco-tourism development. Though Zanzibar experiences high land pressure but the potential of the available land for agriculture has not been fully utilized due to a.o. low use of modern technology. The arable land for agriculture is 130,000 ha grown with a wide range of food and cash crops. High value crops such as fruits, vegetables and spices can be grown profitably on the limited land available. There is also high potential for surface irrigation using existing rivers, streams and water catchments sources particularly for vegetable and rice production. The potential land for rice irrigation is estimated to be 8,000 ha.

The reduction of poverty and food insecurity will depend to a high degree on improving economic growth particularly in the agricultural sector as it employ a large portion of the population and is a major contributor of export earnings. The performance of the agriculture sector since mid 1970's has been low and volatile. Several factors have contributed to the poor performance of the agricultural sector in this country including: limited capacity of institutions coordinating the sector; continued use of traditional technologies (non-mechanized tools, unimproved seeds and planting materials); inadequate agricultural services support (extension, research, lack of rural financing, marketing bottlenecks; declining of soil fertility and over exploitation of natural resource, heavy reliance of rain fed agriculture, non-conducive land tenure systems.

Poverty and Socio-economic Conditions

Widespread poverty is a major development challenge for Zanzibar. About 49 percent of the Zanzibar population is considered poor, with 13 percent living even below a modest food poverty line (HBS 2004/05). Poverty is more pronounced in the rural areas and Pemba islands, with women being highly disadvantaged group. Poverty is manifested by low income of the people with a large proportion of people living at less than a Dollar a day and limited or inadequate access to basic social services such education, health, water and sanitation, and low inclusion in social and economic processes. Key

poverty indicators for Zanzibar, (ZRSP progress report, 2003) include: life expectancy of 48 years, infant mortality rate at 83 per 1000; under five mortality rate of 114 per 1000; 40 percent of population has a low literacy rate and net enrolment for primary education in 1999 was 75 percent.

Access to safe water is a major problem in Zanzibar especially in the rural areas, where piped water and access to protected sources has increased to a very small percentage over five years. At present, about 96 percent of Zanzibar urban residents have access to piped water and 81 percent in rural areas in Unguja, while in Pemba, Micheweni district has the lowest access with only 56 percent with piped water connections (HBS 2004/05).

The level of transport infrastructures in town areas are at a satisfactory level. In Unguja there are four trunk roads leading out of Zanzibar town. In Pemba the construction of a new main road connecting the southern town and port of Mkoani with the northern town of Konde has facilitated the opening up of new areas for cultivation. There are a number of rural feeder roads on both islands but most of are not in a good condition.

Almost every village in Zanzibar has a primary school, a dispensary and a small market place. Efforts are underway to ensure that villages are supplied with electricity and telephone services.

Major Reforms and the Policy Environment

Macroeconomic Reforms

To address the structural economic weaknesses the Government embarked upon an Economic Recovery Programme (ERP) in 1986. Its objectives were geared towards increasing the output of food and export crops through appropriate incentives to production, improving marketing structures, increasing available resources to the agricultural sector, rehabilitation of physical infrastructure in support of directly productive activities and other aspects related to fiscal, monetary and trade policy. The first ERP was followed by the second ERP in 1991 - 1994, so as to further the reforms initiated by the first programme.

The economic reforms in Zanzibar that have started in mid 1980s have moved the economy from a controlled economy to a market economy gradually pulling the government out from activities that it entrusted itself for nearly three decades, and have resulted in significant changes in the structure of the agricultural sector. Price has largely been decontrolled and subsidies removed. The government has also liberalized the marketing of food and export crops (with exception of cloves), and allowed for the private sector to deal with input marketing and distribution.

Under these reforms, the policy focus shifted to the provision of basic social and infrastructural services of the economy and government withdrew from direct involvement in agricultural production, processing and marketing. This shift favours agricultural production systems that are more determined by market forces and the activities of farmers and other private sector and less determined by direct government interventions. The government focus is now on promoting and sustaining an enabling environment for growth in agricultural production, trade and investment in order to achieve the national objectives of (i) enhancing food security, (ii) increasing rural incomes, (iii) achieving export growth and (iv) conserving the environment.

The removal of subsidies has resulted to low use of modern inputs and agriculture technology due to low purchasing power of the agriculture producers thus aggregating the problem of poverty especially in the rural communities. Furthermore, the withdrawal of the government from direct production and services delivery in anticipation of creating room for private sector involvement has virtually left agriculture producers inadequately supplied with the necessary inputs for production.

The local government reforms

Local government reforms remain to be nascent in Zanzibar, with plans to address several institutional arrangements including:

- Improper balance between functions assigned to local government and their real empowerment in the form of finance, personnel, and legal jurisdiction,
- Overlapping or unclear responsibility in legislation,
- Lack of institutional coordination and poor arrangements,
- Reporting arrangements between central government and the district,
- Council membership.

These reforms will be particularly critical to the implementation of interventions to deal with delivery of support services to farmers.

ANNEX II ANNUAL FOOD REQUIREMENTS AND DEFICIT IN ZANZIBAR - CALCULATIONS

	A	B	C	D	E	F	G	H	I	J
Food Item	National Production (MT)	FEV in kcal	National Production (Millions Kcal per annum)	Assumptions of Basic Food Basket	Contribution to Daily Calories Requirement	Annual Calories Requirement per Food (Millions)	National requirement (Kilos)	National requirement (MT)	National Food Deficit (MT)	National Food Deficit (%)
Paddy	20,404	3540	72,230	50%	1050	383,250	108,262,712	108,263	- 87,859	-81%
Cassava	166,266	1530	254,387	25%	525	191,625	125,245,098	125,245	41,021	33%
Maize	2515	3650	9,180	5%	105	38,325	10,500,000	10,500	-7,985	-76%
Other Staples*	77,707	1213	94,259	10%	210	76,650	63,190,437	63,190	14,517	23%
Fish	21,864	950	20,771	10%	210	76,650	80,684,211	80,684	-58,820	-73%
Total	288,756	10,883	450,826	100%	2100	766,500	387,882,457	387,882	-99,126	-26%

* Banana, Sweet Potatoes, Yams

A MALE food production data

B Food energy values extracted from tables of representative values of foods commonly used in tropical countries (Platt, 1985)

C $(A \times B) / 1000$

D Assumptions: based on the experience of the ministry of agriculture staff, who have been working in the field of food security.

E $B \times D$

F Total annual calorific requirements were calculated based on a total population of one million and average calorie intake of 2,100 Kcal per person:
 $2,100 \times 365 \times 1,000,000 = 766,500$ million Kcal

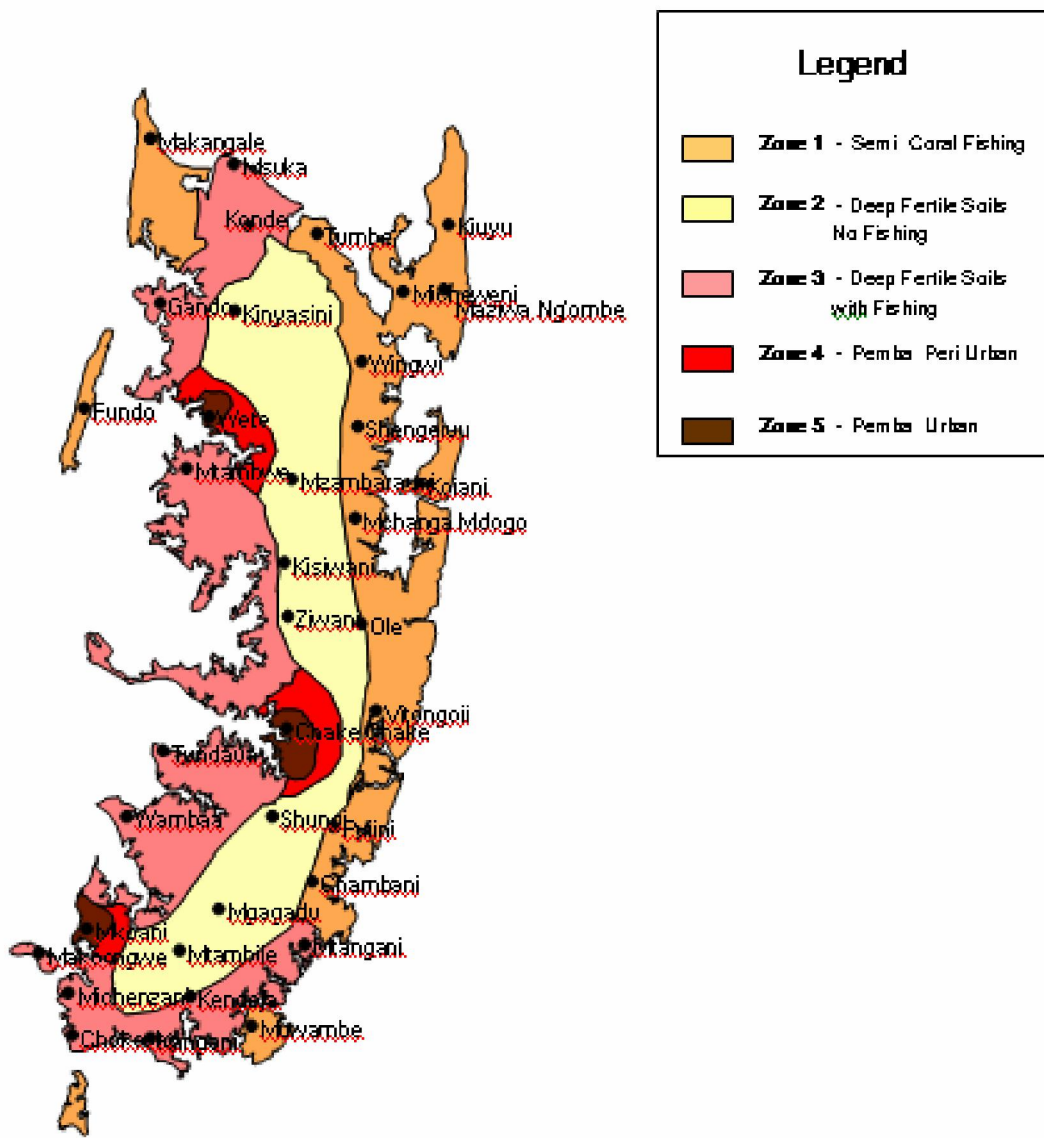
G $(F \times 1,000,000) / B$

H $G / 1000$

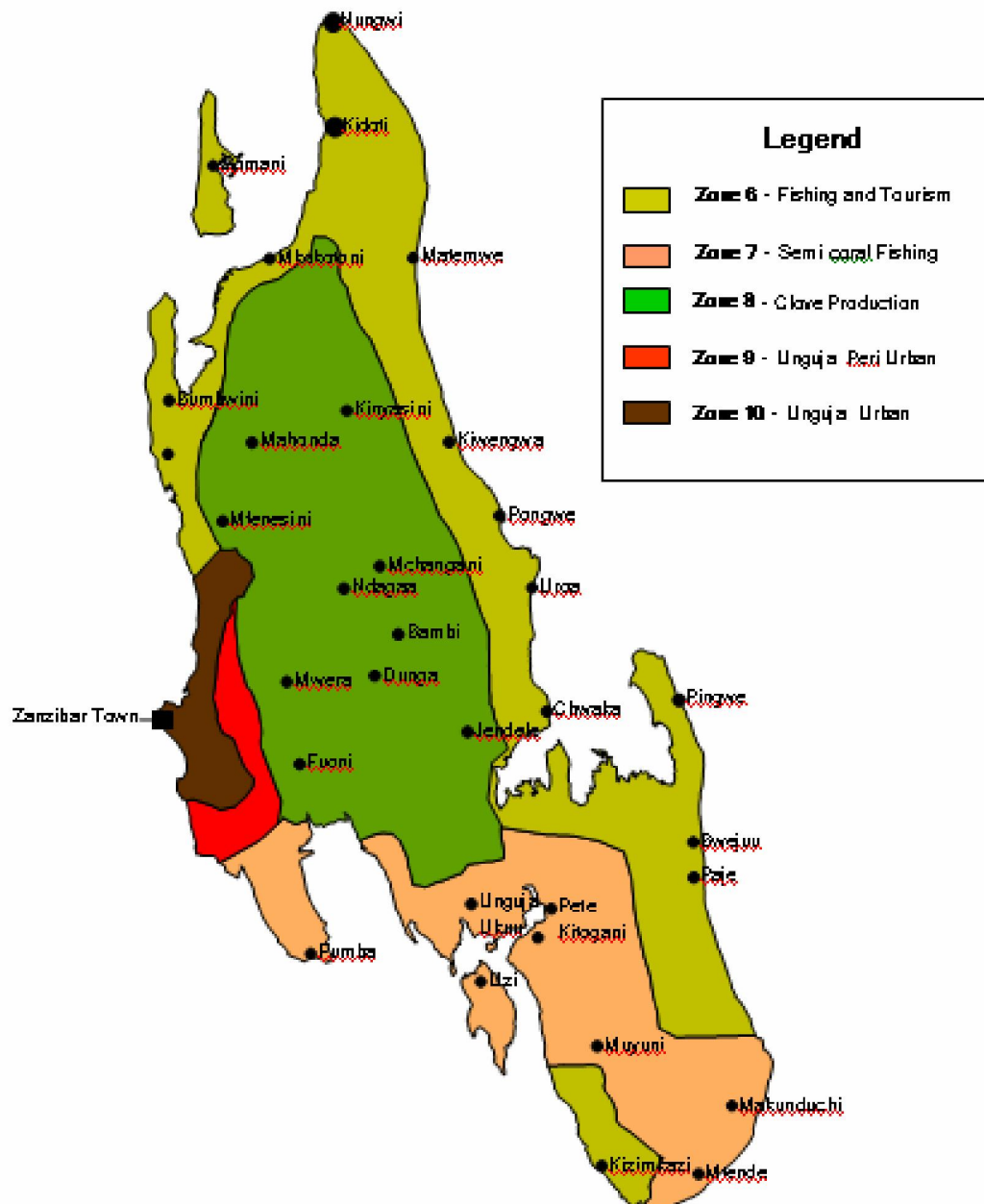
I $A - H$

J I / J

ANNEX III LIVELIHOOD ZONES OF PEMBA



ANNEX IV LIVELIHOOD ZONES OF UNGUJA



ANNEX V SUMMARY OF CURRENT PROJECTS IN THE MINISTRY OF AGRICULTURE, LIVESTOCK AND ENVIRONMENT

Project	Ministry/ Agency		Objectives	Duration	Cost estimate (USD. millions)
Agriculture Services Support Programme (ASSP)	MALE/IFAD		Promote farmers access to, and use of, relevant agricultural knowledge and technologies, which, through sustained partnerships with service providers, contribute to productivity and profitability	11 years (phases one: 7 years, phase two: 4 years)	6 Million for the 1 st phase
Agriculture Sector Development Programme- Livestock, ASDP-L	MALE/IFAD		Promote Development of livestock sector	6 years	1 Million
Participatory Agricultural Development and Empowerment Project - PADEP	MALE/ BANK	WORLD	Increase agricultural productivity and production on sustainable basis in order to improve farm incomes, enhance food security and reduce poverty	5 years	3.5 million
Marine and Coastal Environmental Management Projects (MACEMP)	MALE/ BANK	WORLD	Promote sustainable use and management of EEZ resources Empower coastal communities to access opportunities so that they can request, implement and monitor sub-projects that contribute to improved livelihoods and sustainable marine ecosystem management.	6 years	22 million
Child Survival and Development	MHSW/ UNICEF		Improve health, nutrition and survival of under fives	5 years per phase (currently completing 3 rd phase)	5 million (per phase)

ANNEX VI THEORETICAL & CONCEPTUAL FRAMEWORK FOR FOOD SECURITY

Food security exists when all people have, at all times, physical, social and economic access to sufficient, safe and nutritious food that meets their dietary energy requirements and food preferences for an active and healthy life. Household food security means that all members of the household are food secure. Food insecurity exists when people lack adequate access to sufficient, safe and nutritious food for normal growth and development, and for active and healthy lives. Household food insecurity means that one or more members of the household are food insecure. Food insecurity can be caused by unavailability of food, lack of sufficient purchasing power to acquire and/or produce sufficient, safe and nutritious foods. At the household level, inappropriate acquisition and distribution, and/or inadequate use of foods can contribute to food insecurity of one or more members. People or households that suffer from periods of a lack of access to sufficient, safe and nutritious foods, while having adequate access at other times, are still considered food insecure. Food insecurity can thus be chronic (at most or at all times), seasonal, or transitory when an extraordinary event occurs that negatively affects food access after which adequate access is restored (see Vulnerability to food insecurity). When people or households suffer from food insecurity, their right to adequate food is not realised, even if the food insecurity condition is temporary. Only when people or households are food secure, as defined above, do they fully enjoy their right to adequate food.

Hunger has been referred to as an uneasy or painful sensation which is caused by a recurrent and involuntary lack of access to sufficient food³⁴. Hunger can lead to malnutrition (defined below) and is usually the consequence of food insecurity. In the USA, a distinction has been made when measuring food insecurity and hunger, i.e. people may be food insecure without being hungry. In this case, food insecurity refers to a continuous concern about acquiring sufficient food that is not necessarily associated with a sharp reduction in food intake. In developing countries, the reduction in food intake as a result of food insecurity among the poor normally means that people are hungry. Hunger has also been described in terms of degrees of severity, i.e. the extent to which people are forced to reduce their daily food intake.

Nutrition security means that a person enjoys at all times an optimal nutrition condition for an active and healthy life. An optimal nutrition condition is relative to age, desired life style, and physiological condition, and covers both quantitative (dietary energy requirements) and qualitative (protein, mineral and vitamin requirements) aspects. Persons who at no time, or who at some times only, enjoy an optimal nutrition condition, are nutritionally insecure. As with food insecurity, nutrition insecurity can be either chronic (at all or at most times), seasonal or transitory. Persons can be nutritionally insecure due to food insecurity, or due to non-food causes, such as poor health and sanitation conditions that result in certain diseases that affect the absorption of food by the body. Particularly relevant to the nutrition security of small children are child care and feeding practices that negatively affect children's nutrition condition. Nutrition security means the enjoyment of the right to adequate food and of the right to health.

Hidden hunger refers to sustained deficiency in vitamins and mineral intake in relation to a person's requirements. The most prevalent deficiencies globally are in intakes of iron, iodine and vitamin A. It is estimated that worldwide about 2 billion people suffer from iron deficiency (the vast majority are women and children), over 1.5 billion from iodine deficiency and 800 million from vitamin A deficiency.

³⁴ Eileen Kennedy. Qualitative measures of food insecurity and hunger. In: Proceedings - Measurement and Assessment of Food Deprivation and under nutrition. International Scientific Symposium, Rome June 2002. FAO, 2003 (pages 165-180).

These deficiencies can be present even when daily energy intakes are adequate. It is referred to as "hidden" because often there are no visible signs (in mild to moderate cases), and the persons suffering from these deficiencies are unaware or do not have enough information to identify physical symptoms associated with these deficiencies (in more severe cases).

Under nourishment means a level of food intake with energy content that consistently fails to meet the dietary energy requirements of a person. In the same way, over nourishment means a daily energy intake that consistently exceeds energy requirements. Children and adults whose body weight significantly, and for an extended period, exceeds their normal weight, are thus over nourished, for example. Dietary energy requirements of an individual are determined by the energy needs for normal body functions, and by energy needs to maintain good health and normal activity. Dietary energy requirements vary with age, gender and life style. They also vary between individuals of the same age and gender, as life styles and activity levels vary. At the same time, as life styles and activity levels change over time for the same person, so do her/his daily energy requirements, including for short periods of time, such as in seasonal agricultural labour.

Household level survey data on food intake are often not available at country level. To estimate the daily energy intake for a country, FAO uses the data from food balance sheets to measure the daily energy available for human consumption, or daily energy supply (DES), which is thus an indirect measure of daily energy intake. The prevalence of under nourishment, or food deprivation, is then estimate for countries by applying mathematical formulas to approximate the distributions in the population of daily energy requirements and of the daily energy supply³⁵. Per capita DES and the prevalence of under nourishment are used to monitor over time the country's food security position.

People suffer from under nutrition when they are undernourished, and/or when they poorly absorb, or when their bodies make poor use of, the dietary energy, protein, vitamins and minerals contained in the foods they consume. Poor absorption most often is due to the person suffering from one or more diseases. For example, when children suffer from high worm loads, they poorly absorb and utilise energy, proteins and minerals and vitamins, and often suffer from under nutrition, even when their daily intake of these is in line with their normal, worm-free requirements. Under nutrition has thus food- and non-food causes.

People suffer from malnutrition when they have a physiological condition that may be caused by a consistently deficient intake of energy, protein, and/or of vitamins and minerals, or by a consistently excessive intake of these, relative to their requirements. Malnutrition thus refers comprehensively to all forms of under- or over-nourishment, and/or of consistent deficiency in the intakes of proteins, vitamins and minerals.

Vulnerability to food and nutrition insecurity refers to the presence of factors that place people at risk of becoming food insecure or malnourished, including factors that affect people's capacity to deal with, or resist, the negative impact of risk factors on people's access to adequate food and/or on their nutrition conditions. Vulnerability thus combines exposure to one or more risk factors, and the capacity to withstand the effects of that risk or those risks. People or households that are exposed to certain risks, but have adequate capacity to deal with those risks and maintain or quickly recover adequate access to food, are not considered vulnerable. On the other hand, people or households that have little or no capacity to safeguard their access to food, even when confronted with a minimal risk factor, are considered vulnerable or even highly vulnerable. One can think of vulnerability in terms of degrees,

³⁵ Loganaden Naiken. FAO methodology for estimating the prevalence of undernourishment. In: Measurement and Assessment of Food Deprivation and under nutrition. Proceedings - International Scientific Symposium, Rome June 2002. FAO, 2003 (pages 7 - 26 and appendices).

depending on the combination of: (i) the extent of exposure to risks (and the types of risks) and (ii) the capacity to compensate for the effects of those risks on the adequacy of food access or on one's nutrition conditions. Food insecure people or households are also vulnerable, because any exposure to a risk will further aggravate their food insecurity condition.

External risks factors to which vulnerable groups may be exposed are far-ranging. They include: (a) climatic and environmental changes: droughts, floods, environmental degradation, deforestation, (b) demographic and economic changes: rapid population growth, sharply rising consumer prices or falling producer prices, (c) health and diseases: HIV/AIDS pandemic, high malaria incidence, plant pests, (d) wars and armed conflicts, and (e) laws, policies and regulations that adversely affect the resource-poor.

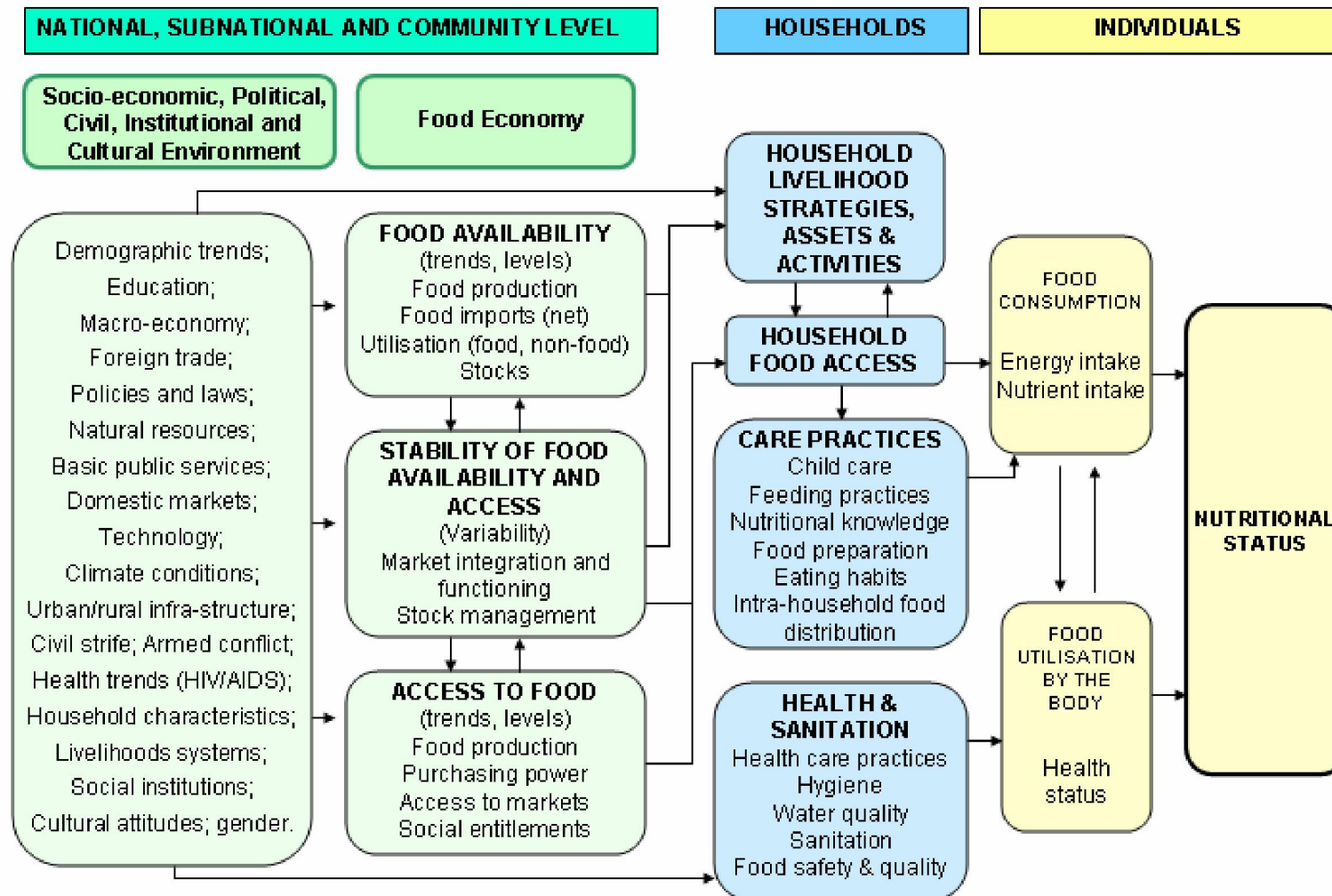
Food availability is achieved when sufficient quantities of food are consistently available to all individuals within a country. Such food can be supplied through domestic output, commercial imports, existing stocks or food assistance.

Food access is ensured when households and all individuals within them have adequate resources to obtain appropriate foods for a nutritious diet. Access depends on the income (in cash or in kind) available to the household.

Food utilization is the proper biological use of food, requiring a diet providing sufficient energy and essential nutrients, potable water, and adequate sanitation. Effective food utilization depends in large measure on knowledge within the household of food storage and processing techniques, and on basic principles of nutrition, child care and illness management.

Stability of food supplies, access and utilization refers to the steady availability of adequate supplies for use by households and households continuing access to those supplies. Stability of supply is a function of geography, climate and the market, while stability of access and utilization is determined mainly by the absence of shocks to household own production, income, social transfers and environment.

Conceptual-Analytical Framework on Food Security, Livelihoods and Nutrition



Source: FIVIMS Framework

ANNEX VII INVENTORY OF MAIN INFORMATION SOURCES

- Agricultural Sample Census 2002/03; Revolutionary Government of Zanzibar, Office of Chief Government Statistician, September 2005
- Household Economy Analysis for Zanzibar 2001/02; Revolutionary Government of Zanzibar, World Food Programme and Save the Children, 2003
- National Strategy for Growth and Reduction of Poverty - Tanzania (2005)
- Participatory Water Service Delivery Assessment on Drinking Water (2004)
- State of Food Insecurity Reports - FAO
- State of the Environment Report for Zanzibar (2004/2005)
- Tanzania Demographic and Health Survey 2004-2005; National Bureau of Statistics, December 2005
- Tanzania Mainland Rapid Vulnerability Assessment 2006, Government of Tanzania, Ministry of Agriculture, Food Security and Cooperations
- Tanzania Population and Housing Census (2002)
- Twin Track Approach to hunger reduction: priorities to national and international action; FAO, 2003
- Zanzibar Agricultural Sector Policy
- Zanzibar Agricultural Sector Strategy - Draft
- Zanzibar Clove Sector Study (2004)
- Zanzibar Country Analysis 2003; Revolutionary Government of Zanzibar, Ministry of Finance and Economic Affairs, 2003
- Zanzibar Draft Household Budget Survey 2005; Revolutionary Government of Zanzibar, Office of Chief Government Statistician, 2006
- Zanzibar Poverty Reduction Plan I (2002-5)
- Zanzibar Rapid Vulnerability Assessment 2006, Revolutionary Government of Zanzibar, Ministry of Agriculture, Livestock and Environment (MALE)
- Zanzibar Socio-Economic Database - OCGS (2004)