A comprehensive study and operational analysis for the establishment of an emergency food reserve in Zanzibar, Tanzania

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ACRONYMS and ABBREVIATIONS

CFSVA	Comprehensive Food Security and Vulnerability assessment
CIF	Cost, Insurance and Freight
EFR	Emergency Food Reserve
FAO	Food and Agriculture Organization
FGD	Focus group discussion
HBS	Household Budget Survey
HIV/ AIDs	Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome
IFPRI	The International Food Policy Research Institute
IMF	International Monetary Fund

MANREC	Ministry of Agriculture, Natural Resources, Environment and Co-operatives
MOS	Months of Supply
NEPAD	New Economic Partnership for Africa Development
PWG	Programme Working Group
RGoZ	Revolutionary Government of Zanzibar
SGR	Strategic Grain Reserve
TOR	Terms Of Reference
T/shilling	Tanzania Shilling
UNADP	United Nations Assistance Development Programme
UNHCR	United Nation High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
URT	Untied Republic of Tanzania
VAD	Vitamin A Deficiency
WFP	World Food Security
WFS	World Food summit
WHO	World Health Organization
ZDFSN	Zanzibar Department of Food Security and Nutrition
ZFSNP	Zanzibar Food Security and Nutrition Programme
ZFSNSA	Zanzibar Food Security and Nutrition Situational Analysis
ZSGRP	Zanzibar Strategy for growth and Reduction of Poverty
ZSTC	Zanzibar State Trading Corporation

EXCUTIVE SUMMARY

The Food and Agriculture Organization's (FAO) definition of food security is a situation that exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. The global food crisis of 2008/2009 has made a number of countries refocus attention on the supply of food in their countries to ensure food security for their populations. The FAO is supporting the Revolutionary Government of Zanzibar (RGoZ) to conduct a comprehensive study and operational analysis to establish emergency stocks in Zanzibar through the Programme Working Group (PWG) of Emergency Preparedness and Response under the United Nation Assistance Development Programme (UNADP) 2011-2015. This is in an effort to address food insecurity within its population especially during emergency situations caused by calamities such as drought, floods or other manmade situations like conflicts and political upheavals. A study was therefore commissioned to look at the feasibility of establishing the emergency reserve with special focus on reviewing the present food security situation to determine the size, location, operational modalities, human resources needs and the financial implications of establishing and running an emergency food reserve.

Since 2002 the Revolutionary Government of Zanzibar (RGoZ) has placed increasing emphasis on poverty reduction and the improvement of daily life conditions of its population. A number of studies have been done and some key policy frameworks have been developed including the Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP) also called MKUZA its Swahili acronym. This also includes the Food Security and Nutrition Policy with the resultant Food Security and Nutrition Act of 2011 that has been passed and provides for a food reserve. Zanzibar does not hold any stock at the moment and the importation and distribution of the preferred staple food (rice) is done by private importers who mainly concentrate on meeting the buying market. Domestic production is very low compared to the needs of the population and 80% of the population relies on purchased food rather than the food they produce for some part of the year. It is against this background that studies carried out have shown the extent of vulnerability of the population. The Comprehensive Food Security and Vulnerability Analysis (CFSVA) carried out in 2010 indicated that about 26% of the population is food insecure and 4% is chronically food insecure. A total of 49% have been classified poor by the Household budget carried out in 2009/2010 period. In 2008 Zanzibar experienced a food crisis that put 700 000 people or about 51% of the population at risk. Considering the above facts and looking at other countries running similar programmes of keeping strategic grain reserves like Mali Ethiopia Kenya Tanzania Malawi Zambia and Zimbabwe and analyzing their experiences an analysis was done to find what can be done in Zanzibar.

Calculations were done using internationally recommended standard of nutrition requirement and the recommended rations. The Department of Food Nutrition and Nutrition have been producing Food Balance Sheets since 2007 and these have shown that rice contributes about

50% as an energy supplying food among others like cassava, maize, yams and bananas. The amount required to take care of the 30% of population that are food insecure for a period of 3 months which is the lead time for importing more rice was established to be 12,000 tons. It was recommended that Zanzibar needs an emergency food reserve of a minimum of 12,000 tons which can be built to a maximum of 22,000 tons by 2016 when local production is expected to have increased to levels that can support the reserve. It was recommended that though the Act has several purposes for now it should operate for social relief and emergency situations only until enough experience and capacity is built to tackle the other activities. The existing storage structures are not suitable for storing the reserve immediately and leasing is recommended while government constructs warehouses of a capacity of 30 000 tons to accommodate the future storage of paddy rice from local production.

The initial indicative annual costs of establishing and running the reserve was estimated at US$26 624 987.00. This is a substantial amount that needs careful planning. A lean, simple and flexible structure was recommended for the management of the reserve to be supervised by the hierarchy that is already in the Act. It is essential that a proper information system is set up to support the activities of the reserve and its risk management will depend to a large extent on the accurate analysis of this information.

The workshop held received the study as a good start to the implementation process and identified some gaps that need more investigation like a more thorough look at the market interface with the timing of recycling of the reserve. Indicators that will trigger the release of the reserve for social relief and safety net programmes also need to be investigated and established in greater detail.

1. Introduction

1.1 Background

The 1996 World Food Summit (WFS) set a target of a reduction in the number of hungry people by at least 20 million every year between 2000 and 2015.[1] Although some regions showed progress since then, it has however been difficult in Sub Saharan Africa to achieve these targets due to a multitude of factors varying from political, environmental to conflicts and poverty to mention a few. The FAO Cereal Price Index doubled in the year to April 2008, food riots in 23 countries prompted a global crisis worldwide. Another round of increases, of similar extent, was triggered in mid-2010 in the aftermath of poor harvests and export bans.[2] A number of countries in Sub Saharan Africa, because of this global crisis, are now focusing on food self sufficiency and social safety nets for their populations through implementation of Food Security Programmes that meet their individual socio – economic, political and agricultural environments.

[1] Jenny Clover 2003 Food Security In Sub Saharan African Security Review Vol.12 No.1

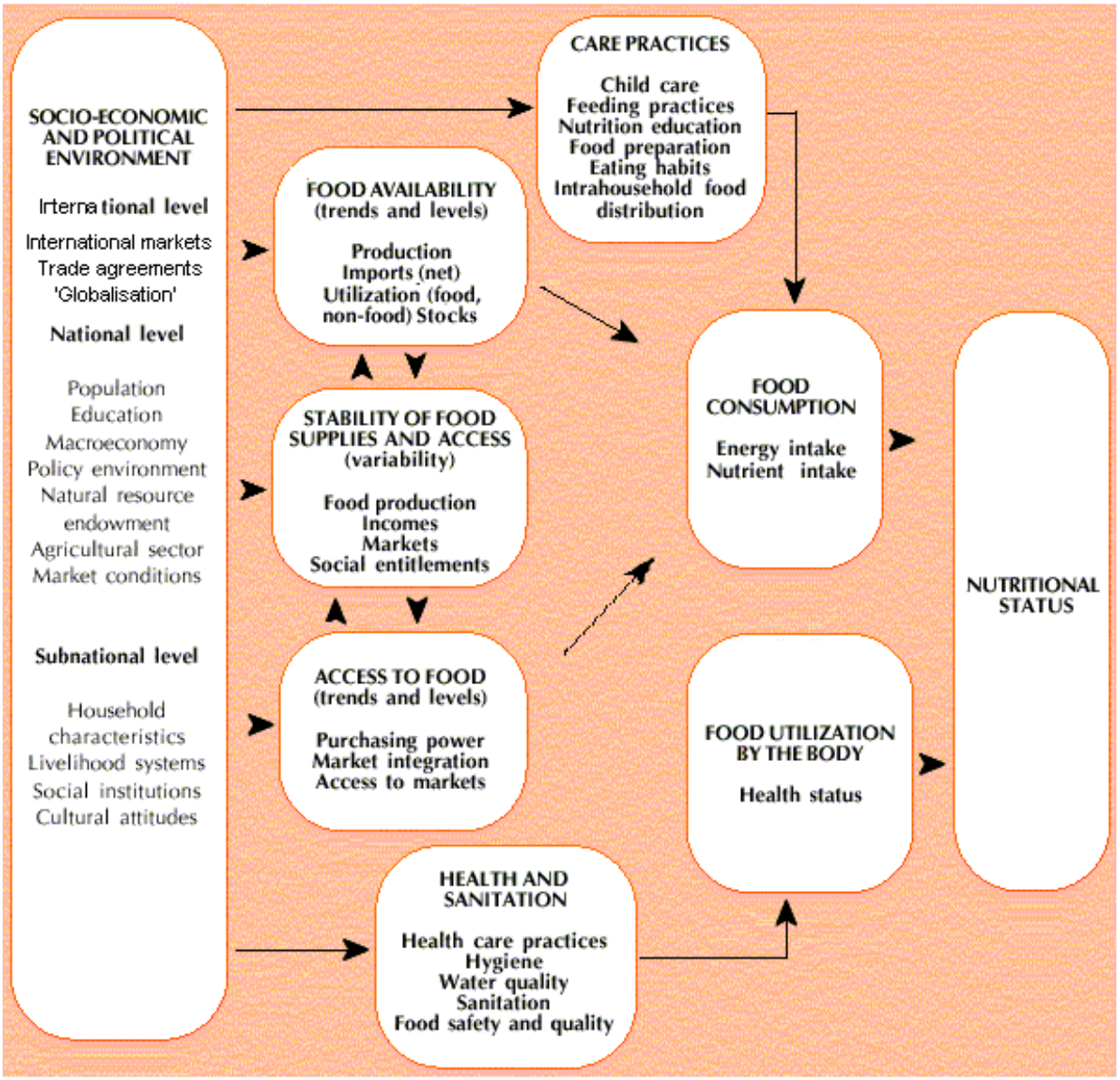
[2] Food Security Guide One World Publication February 2012

It is against this background that the Revolutionary Government of Zanzibar (RGoZ) has been working on the different aspects of ensuring a food secure environment for its population with support and Assistance from FAO. Since 2002 the Revolutionary Government of Zanzibar (RGoZ) has been placing an increasing emphasis on poverty reduction and the improvement of daily life conditions of its population. Some key policy frameworks have been developed including the Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP) also called MKUZA its Swahili acronym. Studies have been carried to assess the levels of food supply, food availability, food access and nutritional requirements for the different sections of the population. These studies led to the crafting of a Food Security and Nutrition Programme which has culminated in the production of the Food Security Policy with the resultant Food Security and Nutrition Act of 2011. Section 25(1) of the Act provides for establishment of a food reserve hence the need to have a comprehensive study and operational analysis for the establishment of an emergency food reserve in Zanzibar, to provide safety nets and social relief programs to the population in times of need. This is one of a number of interventions that the RGoZ is putting in place to ensure food self sufficiency with assistance from a number of donor and development partners. Others are focusing on increasing domestic production and provision of an environment that encourage livelihoods to thrive.

The FAO definition of food security is a situation that exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.[3] (See also appendix 1)The definition incorporates important elements of quality status, reliability and the aspect of individual and cultural preferences. It is looked at now as a basic human right that is enshrined in Article 25 of the Universal Declaration of Human Rights, sometimes referred to simply as Right to food. This definition was adopted at the 1996 World Food Summit. For a nation or region, food security is determined by three essential elements of food supply namely availability, access and utilization. Fig 1 below summarizes the critical inter-relationships of these components and the socio – economic and political environment that determine how these elements operate. This is further analyzed in the context of the different levels of international, national and sub-national level up to the individual being. Studies carried out in Zanzibar so far have to a large extent tried to gather data to analyze and document the realities on the ground with reference to these aspects in a quest to come up with realistic interventions that would target the gaps and have inefficiencies identified.

[3] Elizabeth Cromwell and Rachel Slater 2004 Food Security and Social Protection

Figure 1: Components of food security



Source: Food and Agricultural Organization

Food Availability in the food security context deals with food supply which has to be available in sufficient quantity with acceptable quality and at the same time addressing the variety preferences of a nation or household or individual. The availability or supply of food at national level can be addressed through domestic production or imports or a combination of both. Food availability then is a function of how efficient these two sources are managed and operated. It is also very much reliant on the prevailing socio-economic set up, climate and the political

environment within the country. This is where the issues of food insecurity start as food availability, though an important element, does not guarantee food security. Food access focuses more on the demand and is influenced by economic factors, physical infrastructure and consumer preferences. Food can be available but if the population cannot access it easily (maybe due to inability to purchase it) then food insecurity is experienced. The food utilisation aspect is concerned with the preparation, consumption of food and the biological capacity of individuals to absorb and utilise nutrients in the food that they eat. There are a lot of interrelationships that affect the food security situation differently and at the different levels of national, household and individual well being.

Food insecurity exists in three interlinked situations: acute/transitory, cyclical/seasonal and chronic. In a chronic situation it is long term and persistent which is usually associated with extreme poverty while the acute or transitory occurs when there is a sudden shock or calamity that creates a devastating shortage of food. The cyclical or seasonal occurs at certain times of the year for example the period between planting and harvesting. For the situation in Zanzibar references will be made to these elements to show the reality on the ground as a background to the study.

1.2. Terms of Reference

Under the United Nations Development Assistance Plan UNDAP 2011-2015 the Food and Agriculture Organization of the United Nations (FAO) is participating in five Programme Working Groups (PWG) of which Emergency Preparedness and Response is one. It is through this programme working group that FAO supports the Revolutionary Government of Zanzibar (RGoZ) to conduct a comprehensive study and operational analysis to establish emergency stocks sometimes referred to as Strategic Grain Reserve stocks (SGR) in Zanzibar. For this study it will be referred to as the Emergency Food Reserve. The three main objectives of the study are;

1. To establish the nature and scope of vulnerability to food insecurity in Zanzibar, in order to make concrete recommendations on how the EFR can be an effective food emergency response
2. To recommend on the location(s) of stock(s), their management and operational modalities
3. To determine the costs for the establishment and maintenance of the EFR.

(See Detail in Appendix 2)

1.3 Scope

The scope of this study was to review the food supply in Zanzibar both internally and externally paying attention to the availability, existing marketing and supply arrangements that are in operation. This included establishing the existence of a stocking policy and the relevant statistics on domestic production and imports over the past 5 years. The size and location of the

Emergency Food Reserve (ERF) was to be determined taking into account domestic production, consumption, storage capacity including an assessment of the food supply risks to Zanzibar. The financial implications of the establishment of the stocks needed to be analyzed and determined. Recommendations on the institutional structure for management and operation ofr the EFR identifying initial establishment procedures, stock recycling, replenishment operations, the staffing required including fixed operating and maintenance costs needed to be established as part of the study. In order for the EFR to operate efficiently and to respond to its environment in a timely manner the information requirements for the decision making processes were to be established. At the end of the study three major out puts were expected:

1. A half day workshop to present the main findings and recommendations of the FAO mission to the relevant stakeholders.
2. A final report highlighting main findings and recommendations;
3. An Operational Procedures Manual based on the Report findings and recommendations from the half day workshop, covering, but not limited to, the following:
    - Management structure, authority and responsibilities of all bodies involved in decision making, financing, operation and maintenance of the reserve;
    - Role and responsibilities of the agency administering the reserve and its financing;
    - Conditions for triggering release of grain from the reserve and release procedures;
    - Procedures for procurement, storage, recycling, quality control and financing.

1.4 Procedure

The methodology for this study was based mainly on secondary data collection which included the use of several tools mainly literature review of studies carried out in Zanzibar and also studies done in other countries of similar socio- economic situation, key informant interviews using structured checklists and Focus Group Discussions. A comprehensive work plan for the study was submitted earlier to FAO Tanzania. Experiences from countries like the mainland Tanzania, Ethiopia, Mali Malawi Zambia and Zimbabwe provided some useful insights. The experiences from these countries played a major role in the formulation of the recommendations for the study taking into account the local conditions and set up in Zanzibar. A lot of time was spent reviewing the studies that were carried out in Zanzibar through the assistance of donors, development partners and the RGoZ in their quest to address the food security and nutrition situation in the country. Studies had already been done on food availability, vulnerability assessments, food accessibility and consumption levels including production of food balance sheets, nutrition levels and livelihoods. A total of 21 Key Informants from different departments where interviewed as shown in Appendix 3. Two Focus Group Discussions (FGD) were held one in Pemba with the Ministry of Agriculture staff, for their views on the setting up of the EFR and the other one in Unguja with the major importers/traders in the private sector to find out their views on how they can participate in the modalities of the

operation of the reserve (See Appendix4 Table1 and 2). This was necessary because currently the importation and stocking of rice is handled by the private sector. The grain reserve brings in the aspect of government importing a substantial amount of rice into the country and this may be viewed as direct competition that could potentially distort the marketing of grains in the country. An amicable public private partnership in this scenario needs to be cultivated for the mutual benefit of all. This has worked in other countries like Zambia, Malawi and Ethiopia where the private sector and donors participate in both the procurement and recycling of the Food Reserve Agency stocks through public tender processes and loan arrangements. Inspection tours of storage infrastructure and seaport facilities were carried out in both Pemba and Unguja to assess the present status. A travel itinerary undertaken in this study is given in Appendix 4 Table 3 indicating the main activities

2. Rational for a SGR System in Zanzibar

The increasing occurrences of natural hazards or shocks like droughts, floods and crop failures due to poor performing varieties or diseases and pests has led to food security programmes getting prominent attention at national and regional levels in Africa. Furthermore, e other factors of food insecurity like conflicts, political upheavals and policy induced imbalances are still present in the continent. Food insecurity has tended therefore to be on the increase in many countries. One of the interventions that has been in use for many years in ensuring food self sufficiency at national and household level has been to focus on increasing productivity, storage, and value-addition of produce to ensure food availability. This has been followed up by attempts to ensure food access and utilization to the benefit of populations. Success in these attempts is very limited in Africa and a number of nations and regions have succumbed to famine with devastating consequences, but a few examples of success do exist. Although evidence has shown that many countries and regions in Africa that are vulnerable to natural hazards have limited capacity or are poorly prepared to respond, there are, nevertheless, many cases of successful famine prevention including in Kenya and Botswana in the mid-1980s and Zimbabwe and South Africa in the 1990s.[4] This was largely due to maintenance of grain reserves, appropriate policy and marketing environment and better preparedness. There are a lot of challenges that nations face in their quest to ensure food and nutritional security at household level.

Analysts generally believe that Africa's current food emergencies are the result of a combination of problems that range from drought, floods and adverse weather patterns and civil conflict, to political-economic crisis, HIV/AIDS and poor policy decisions. No single factor is uniquely responsible. All these factors in one way or another present shocks that can have devastating effects on the food supply and food access including utilization at the human body level.

In Sub Saharan Africa, due to the need for provision of social protection and safety nets for their populations, a lot of countries that had not done so have been giving considerable

[4] Jenny Clover 2003 "Food Security In Sub-Saharan Africa" African Security Review Vol 12 No 1, 2003

attention to the establishment of Strategic Grain Reserves(SGRs) also referred to as emergency food reserves or food security reserves. The 2007-2008 food crisis has also served to renew interest by several countries in having SGRs. In 1997 FAO produced a set of Guidelines for the establishment, management and operation of these SGR which has been used as a reference point by the countries in setting up their reserves.[5]The International Food Policy Research Institute (IFPRI) in 2009 carried out case studies of four countries in Africa namely Ethiopia, Kenya Malawi and Mali that have been maintaining grain reserve for a considerable time. This led to some very critical findings which are relevant to policy rationale for those countries about to set up reserves and a review of the past reserves' performances and future rationalization. These findings are summarized in Box 1. The findings indicate some of the pertinent issues that countries planning to put up reserves need to seriously consider when setting up the management and the operational modalities. This is not to say the findings prescribe what is to be done but act as an important reference and useful experiences from countries that have been operating Strategic Grain Reserves for a number of years that could guide the establishment of a similar reserve for example in Zanzibar

Box 1; Findings and messages from the IFPRI case studies on SGRs in four countries

1. A strategic reserve is not the same as a food stock held by marketing boards/parastatals: Enforcing a floor price and ceiling price by marketing boards or parastatals has always involved holding physical stocks of grain. Strategic grain reserves are different from such stocks. In fact, the strategic reserve was introduced in many countries because marketing boards failed to address shocks, such as the prolonged droughts in the countries of Sahel region.
2. Institutional design, stock level, and integration with social safety net are the keys to success: Operational performance with respect to benefits and costs of strategic reserves vary widely across countries. The costs of holding a metric ton of food varied from US$ 20 to US$ 46 in these countries. The studies argue that this is largely attributable to varying institutional designs, stock determinations, and linkages with the social safety nets and emergency programs.
3. Increasing stock level can potentially have large negative consequences: Increasing stock levels in the absence of the right institutional designs, optimal stocks, and integration with the safety nets can depress market prices and increase subsidy bills. This study estimates that prices can be depressed by 10–40 percent depending on stock size, rotation mechanism, and storage locations.
4. Food-based safety nets can generate demand and support local markets: In all of the four case countries, social safety nets programs are much smaller than needed. The study demonstrates that scaling up social safety nets, such as school feeding or food for education programs, can generate local demand, which under certain conditions can boost production and contribute towards smallholders' income.

Sarah Gusfason, 2010 Strategic grain reserves in Africa Sarah IFPRI report

[5] John Lynton – Evans 1997 "Strategic Grain Reserves – Guidelines for their establishment, management and operation. FAO Agricultural Services Bulletin -126

Taking the experiences in Africa described above and focusing on the subject matter of this report which is Zanzibar one can safely conclude that although it may have some uniqueness as a country the general trend is the same in terms of food insecurity and uncertain environmental shocks that can occur. Therefore it is prudent to take note of the above mentioned findings.

Box2 below gives a summary of the geographical context and climatic conditions including the main livelihood activities that the population is engaged in, in the two islands that make up Zanzibar as a country. The study was carried out within the framework of this geographical set up and livelihood activities by the population reacting to the prevailing climatic conditions and their surrounding environment

Box2: Geographical, Climatic and Livelihood Context of Zanzibar

Geographical

Zanzibar is part of the United Republic of Tanzania (URT), and consists of two main islands Unguja and Pemba (and many small islets). They lie about 40 and 60 km off the east coast of mainland Tanzania respectively. The total land area of Zanzibar is 2,643 km2 (Unguja 1,658 km2 and Pemba 985 km2). Based on the 2002 population census and with a growth rate of 3.1% per annum, the current population (2012) is estimated to be 1,358,792 of which two-third live in Unguja. With around 514 persons per square kilometer, Zanzibar is the most densely populated part of East Africa. Administratively, Zanzibar has been divided into five regions; three in Unguja and two in Pemba. Each region is further divided into two districts, totaling ten districts for the whole of Zanzibar.

Climatic

The climate is of a lowland tropical humid type dominated by bimodal pattern rainfall averaging within a range of 1500 mm - 1900mm per year. Mean temperature lie around 22 °C. 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. 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.

Livelihoods (appendix; for maps showing the zones) Livelihoods in Zanzibar are categorized into three major zones whose main characteristics with regards to vulnerability to food insecurity and malnutrition are briefly described below:

Fertile agricultural zones the mainstay of the households is crop production, livestock and clove related agricultural labour. Additional income earning activities include fishing, petty trade, seaweed farming and making bricks, aggregates and lime. Vulnerability to food insecurity in these zones is more seasonal and is most prevalent during short rain seasons (vuli rains).

Fishing zones are located in the coral areas with patchy arable land, are characterized by marginal land with limited potential for crops and livestock production. There is not much diversification of income generating activities as most of these areas are prone to environmental degradation. The households in these zones are highly vulnerable to acute, chronic and seasonal food insecurity and malnutrition.

Urban and Peri-Urban 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, (petty) trade and casual labour opportunities. Vulnerability of the people in these areas is related to issues of food price fluctuations and exposure and susceptibility to contagious disease outbreaks and high level of HIV/AIDS infections.

Sources of information:

1. **Zanzibar Food Security and Nutrition Policy, April 2008 Ministry of Agriculture, Livestock and Environment RGoZ**
2. **Household Budget Survey 2004/5**
3. **Zanzibar food Security and Nutritional Programme, April 2008 Ministry of Agriculture, Livestock and Environment RGoZ**
4. **Comprehensive Food Security and Vulnerability Analysis (CFSVA) conducted in November 2009 - January 2010**

The detailed population proportion of the different livelihoods is shown in the Appendix 5 which shows agriculture as the dominant livelihood which forms the basis of people's lives even if they are involved in other livelihoods. In terms of crop production, the main food crops and their prevalence at house hold level is shown in Table 1 and Fig 1 below.

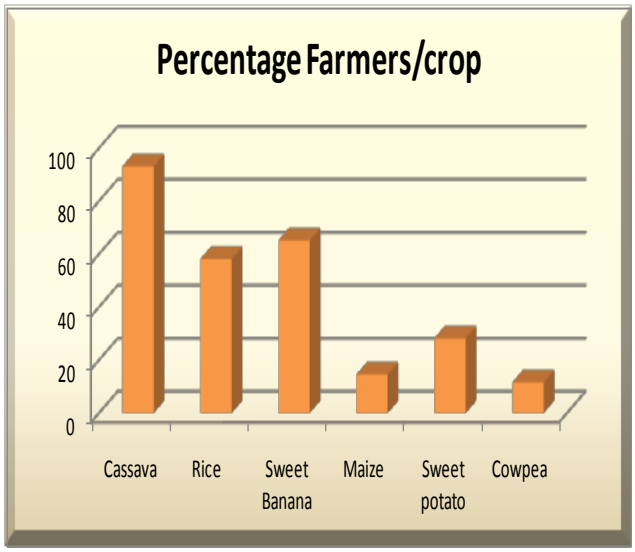


Figure2. Crop prevalence at household level

Food Crop	Percentage Farmers/crop
Cassava	93.1
Rice	58.1
Sweet Banana	65.1
Maize	14.5
Sweet potato	28.2
Cowpea	11.5

Table 1; Crop prevalence at household level
Source; CFSVA 2010

Hunger and absolute unavailability of food do not tend to be major problems on the islands; however, overall food supply in the country is insufficient to meet national annual demand. The major factors affecting Zanzibar's food availability are low and unstable domestic agricultural production on the one hand, and a high reliance on food imports on the other (See table 2 and Fig 3). Reliance on imports can negatively affect food availability should there be any problems of finance or availability in the supply countries or in the logistics of supply. Zanzibar as a nation does not have a Strategic Grain Reserve or a Grain Marketing Board nor does it rely on food assistance on a structural basis.[6]In addition, the imports are solely handled by the private sector to the effect that government has no stocks of its own where it can draw quantities for relief programs or emergencies that come up annually. It has to rely on the private sector stocks at any particular point in time or import from the mainland. This in itself is not a sustainable situation both in terms of costs and food security and it exposes the population to high risks. Risk could be reduced if the private sector was empowered to a level where they can carry reserve stocks in case of emergencies because storing large stocks is costly. The government, at any given time, does not have instant information on how much grain is in the country for planning purposes. The types and diversity of foods produced by rural households in the islands varies and is heavily dependent on their wealth status and livelihood. The wealthier the household the more diverse the foods produced.[7]In such a scenario if there is a shock on

[6] Zanzibar Food Balance Sheet 2007,Zanzibar Food Security and Nutrition Programme (ZFSNP)

[7] Comprehensive Food Security and Vulnerability Analysis (CFSVA) conducted in November 2009 - January 2010

the rice supply side, the poor household will be severely affected as their coping mechanisms will be limited and access to alternative food reduced.

A strategic grain reserve for food relief and implementation of safety nets is needed to address these problems and make the islands' food self sufficiency a reality. The government's timely response to emergencies will be ensured and their relief activities towards the vulnerable groups in the population more effective.

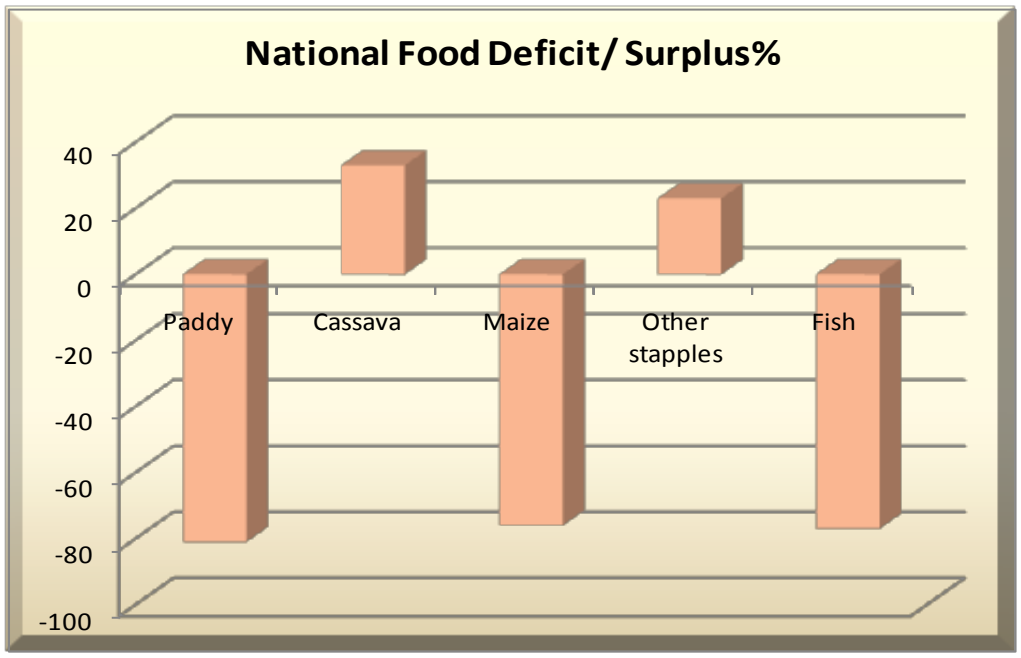
The overall crop production per unit areas in Zanzibar is low with production levels far below potential yields as reflected in table 2 below. Therefore the potential is there to increase productivity and increase the food supply per household such that harvests will be adequate to provide adequate nutrition from harvest to harvest with surplus for sale.

Table 2; Average Food crop yield compared to potential yields 2003

Crop	Average yield t/ha	%average potential yield	Potential yield t/ha
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	6.00	60.0	10.0
Maize	2.5	41.7	6.00
Sorghum	2.0	40.0	5.0
Yams	12.0	40.0	30.0
Cowpea	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	3.00

Source; Zanzibar Food Security and Nutrition Situational Analysis 2006 (UNIDO study Department of Planning MANREC 2003)

Figure3. Food Supply and Deficits 2006



Source of Data; Zanzibar Food Security & Nutrition Situational Analysis June 2006 Ministry of Agriculture, Livestock and Environment RGoZ See appendix 6 Table 2 for data details

3. Study Findings

3.1 Review of Food Supply Situation

Food supply is a function of domestic production, imports and holding stocks minus exports for a given period i.e. Total Supply (Ts) = Production (P) +Imports (I) +Stock (S) – Export (E). It simply tabulates the country food supply and utilization covering all food commodities and the same formula can also be applied to the supply of the individual food items.[8] It does not cover issues of access or biological utilization as this is dealt with separately. When working out food supply, domestic production covers all production commercial and non-commercial including household gardens and its reporting is done for primary commodities at farm level. However other finer calculations are done on production of processed goods e. g converting primary commodities like paddy rice to the processed polished rice that is ready for consumption. This formula is difficult to apply in the Zanzibar situation due to lack of reliable data especially on stocks available and exports at any given time.

According to the Zanzibar Food Security and Nutrition Programme (ZFSNP 2008) the overall food supply and availability in Zanzibar is determined by the production of small holder farmers living on Unguja and Pemba islands, and to a large extent by the importation of foods. Overall domestic production of staple foods, fruits, and vegetables as well as levels of fish catches have

[8] Zanzibar Food Balance Sheet 2007

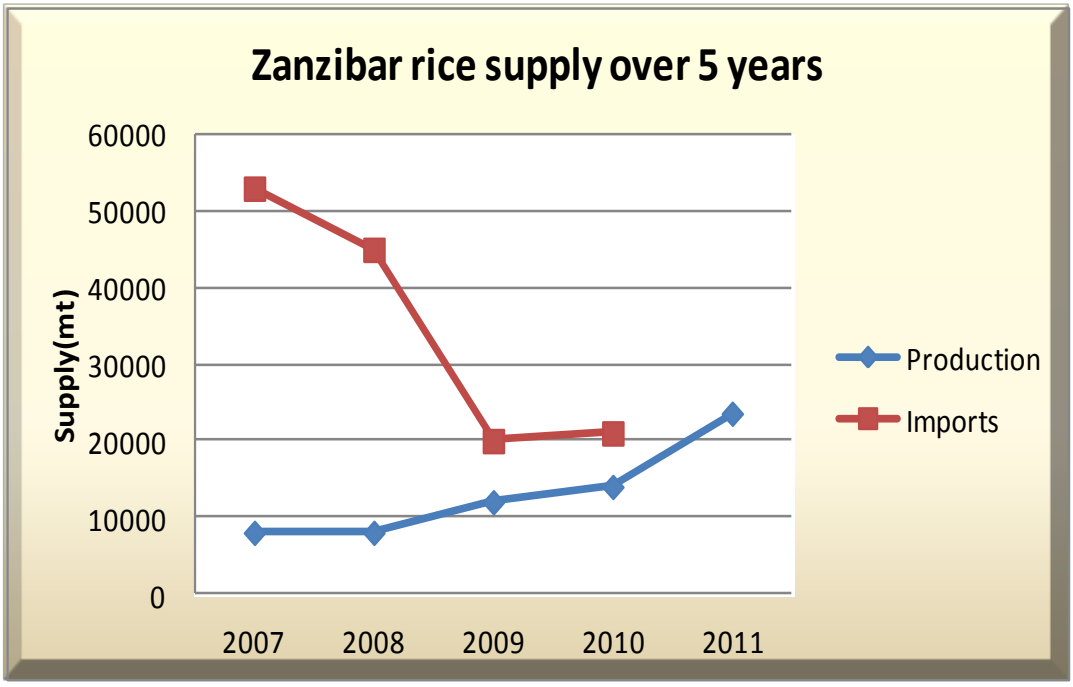
remained at rather low and unstable levels over the past years. Domestic production is largely dependent on small holder farming. An estimated 70 percent of the agricultural labour force consists of women who generally have inadequate capacities and limited access to productive resources necessary for improvement of productivity. Consequently, imported foods constitute a large proportion of the food available and consumed in Zanzibar. Estimations indicate that about 41 percent of Zanzibar's annual food requirements are accounted for by food imports.

Rice which is the main preferred staple food in Zanzibar is not produced in large quantities domestically and it is estimated that 80% of the rice consumed is imported. (Fig.4) The importation of a staple food for local consumption presents a lot of risks to the country as feeding the nation is dependent on uncontrollable external factors. According to the ZFSN Department's 2011 White paper the cost of rice has risen by 100% from 600/=Tshillings per kilogram in 2006 to 1200/=Tshillings in 2011 in Zanzibar.[9] Therefore the short and medium outlook is a gradual increase in food prices which is not a good trend in food security terms

The risk is clearly shown by Fig 4 where imports drop in 2008 and 2009 because of export bans in supplying countries. Even if the country has finance to purchase rice imports, if rice is not available to import then the country is at risk. This then emphasizes the importance of having a physical reserve stock to allow for time to seek alternative. It also points to the importance of increasing domestic production. Although local production is showing a steady increase, the level is still too low to meet local demand. It is however difficult to calculate the actual requirement for rice in the country by using data on the imports and local production because the private sector imports only quantities they can sell. This was evident during the warehouse inspections done at private sector premises and from the focus discussion held with the private traders. Traders do no find it costs effective to hold large stocks of rice and therefore stock are stored for a few months unlike in a reserve situation where a minimum stock has to be available all the time. The only way to calculate would be to use the nutritional requirement and rice's contribution to this requirement and the population estimate for the islands. This gives a rough estimate of about 120 000 tons of rice per annum. Local experts have estimated that Zanzibar consumes 6000 tons per month which would give an annual consumption of 72000 tons. Others estimate it to be between 80 000 – 100 000 tons. Maize is not preferred as a staple food as it is on the mainland and its production and imports are very low and do not meet the expected requirements though domestic production has been showing a steady increase (Fig.5). The reduced quantities imported meant that locally the supply was low and food insecurity was experienced due to low local production that could not compensate for the import shortfall.

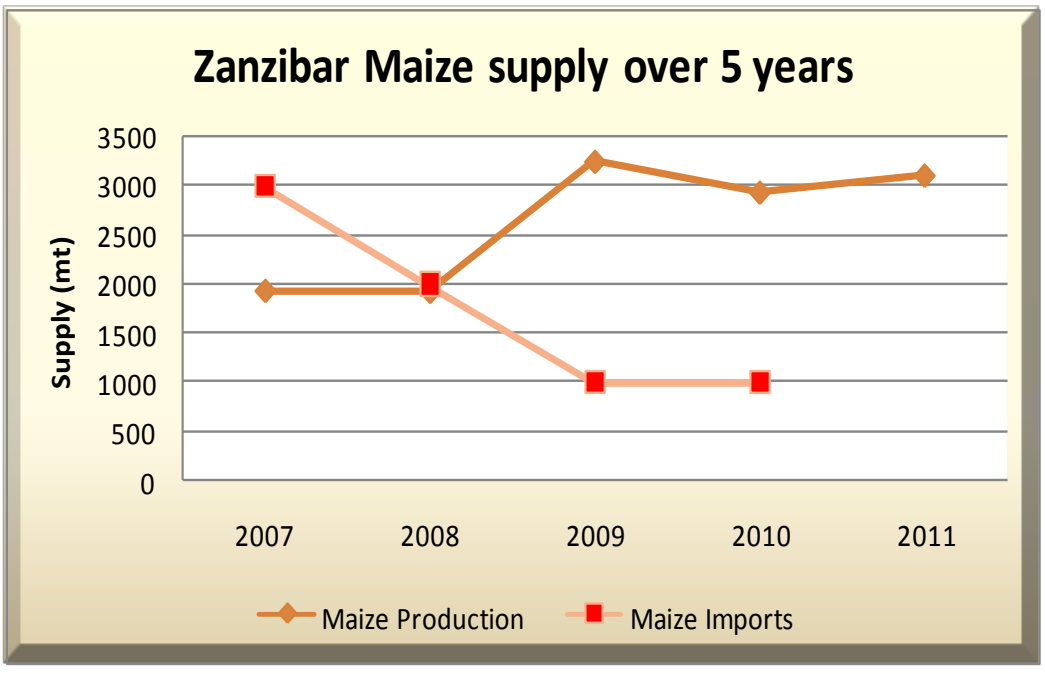
[9] Zanzibar Rice Development Programme, 2012. Revolutionary Council Paper, Ministry of Agriculture, Livestock and Environment

Figure4. Rice Supply Situation - last 5 years



Source of Data Food Balance Sheets 2007- 2011
See also Appendix 6 table 1 on Domestic Production and Import supply of the main crops

Figure5. Maize Supply Situation - last 5years



Source of Data Food Balance Sheets 2007- 2011 See also Appendix 6 table 1 on Domestic Production and Import supply of the main crops

The liberalization of the economy in the 1970s led to the government liberalizing the marketing of agricultural produce. In Zanzibar, importation and distribution of rice is handled primarily by the private sector through traders. Although this has worked efficiently in making sure there is enough rice grain to meet the market demand it is not clear whether the quantities handled totally satisfy the domestic requirement for rice. The studies that have been carried out have also shown that the social responsibility of feeding the vulnerable groups has not been met adequately under this present arrangement. In addition, in times of emergencies the government may find it difficult to meet the needs of the population without holding a reserve stock which it has control over. Most private operations will stock quantities they know they can sell without investing too much into storage and at any given time the private sector will not be holding the larger quantities that are required to meet the needs of an emergency situation. This has been found to be a challenge that needs to be addressed to ensure self sufficiency in food supply.

It has therefore become clear and critical to the government after two successive food vulnerability studies have shown the need to improve and ensure the food supply to a substantial segment of the population that is food insecure and to improve the state of preparedness to respond to emergency situations. However, this is not in any way discrediting the tremendous work that the private sector is currently doing to bring in the much needed stocks for everyday consumption. It is also expected that the private sector will continue to play a significant role in the establishment and operational modalities of the emergency food reserves including encouraging domestic production. Investment in domestic production by both private and public sector in partnerships can go a long way to reducing the reliance on imports.

Grain storage is an expensive venture and the private sector is not expected to keep huge quantities of grain unless it's on a lease agreement or it is for a very short time and the subsequent turnover is expected to be done profitably. One of the major objectives of the establishment of the emergency food reserve in Zanzibar is to ensure this food supply mainly for social relief for the vulnerable groups and as security in emergency situations as described earlier.

The other two factors of food security relating to access and utilization have more shortcomings and challenges that have been identified in Zanzibar. According to the Zanzibar Food Security and Nutrition Situational analysis (ZFSNSA 2006) access to food is one of the foremost food security problems for many households, both rural and urban. The inability of households to obtain an appropriate and nutritious diet throughout the year is a noted difficulty. The rate at which prices of food items and non food items rise is higher than the growth of the incomes of almost all the poor and vulnerable. The Household Budget Survey (HBS 2004/5) estimates that 49 percent of the Zanzibar population is considered poor, with 13 percent living below a modest food poverty line. This further compounds the problem of supply when a major part of the population cannot afford to buy or access food.

A high level of malnutrition recorded in the many studies in Zanzibar further add to the problem of inadequate food supply especially to the poor and most vulnerable groups within the population. For example the ZFSNSA (2006) study reports that child malnutrition is strongly

present in Zanzibar with 23 percent of under-fives being stunted, 6 percent wasted and 19 percent underweight. Prevalence of nutritional anemia is equally high with 75 percent for under-fives and 63 percent for women in the age of 15-49. Iodine deficiency indicators as well as vitamin A deficiency (VAD) in Zanzibar are also not favorable. Inequitable intra-household distribution affects the nutritional status of particularly women and children.

In summary therefore having reviewed studies done already and the current production level in the country it is clear that there is a high risk with regards to the food supply situation since government has no stored stocks of its own to use for vulnerable sections of the population in times of need and more so in an emergency situation for the whole population. It cannot be over emphasized that climatic calamities like drought or floods can happen anytime and it is justifiable that the Revolutionary Government of Zanzibar needs an emergency food reserve as stated in its Food and Nutrition Act to improve the reliability of food supply.

3.2 Vulnerability to food insecurity

The environment in which people live influences their risk and vulnerability to food insecurity and hunger. Within the environment the vulnerability context is affected by critical trends (e.g. population growth, national and international economic trends, political and technological), shocks (e.g. natural disasters or man-made) and seasonality cycles changes (of prices, production, livelihood strategies) that occur. [10] (Seed appendix 7) The above can be summarized in the formula below in an attempt to assess the risk of a population

R= **H** x **VULN** x **Pop** where;

R- Risk to food insecurity: Probability of harmful consequences or expected losses (specifically with regards to food security)

H = Hazard: Probability of occurrence of a potentially damaging phenomenon within a given time period and area

VULN = Vulnerability of a household to the impact of specific hazard

POP = Population living in the areas at risk

Source = CFSVA 2009/2010

It is estimated that more that 80% of the population in Zanzibar depend directly on food that they buy to meet their daily food requirements for part of the year. It means any changes in prices can present a huge risk to the population rendering them vulnerable. However, the majority in the rural areas do depend on food they produce for some months until they run out of their harvests. Therefore their vulnerability is also highly depended on the seasonal yields

[10] Sustainable Livelihoods Guidance Sheets Section 2, 1999. Department for International Development. UK
Appendix 7 gives some more detail on the trends, shocks and seasonal changes that influence vulnerability

they harvest. The CFSVA 2009/2010 established that on average for 90% of the households, harvests lasted for 2.8 months for the Vuli harvest and 3 months for the Masika harvest. This means every year the families have to purchase food for those gap months and depending on prices and availability, food insecurity risks rise. Only 10% of households are left with some reserve stock after 6 months.

Although those with stocks for 6 months is enough to get them to the next harvest if there is a problem with the next harvest then the households are vulnerable to shortage of food for the rest of the year which clearly implies seasonality cycle exposure. Table 3 shows the duration of harvests and food supply in months for the different districts in Zanzibar. The ZNSNSA report (2006) indicated that 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. There are also issues of crop losses during harvest, storage and processing which for rice are estimated to be around 13%.[11]

The cropping season calendar that is shown in Figure 6 below indicates the activity timeline for the households and generally harvests run out when there is more work to be done on the farm like preparing fields, planting and weeding. This is the time when more food is required by the households to provide the necessary energy

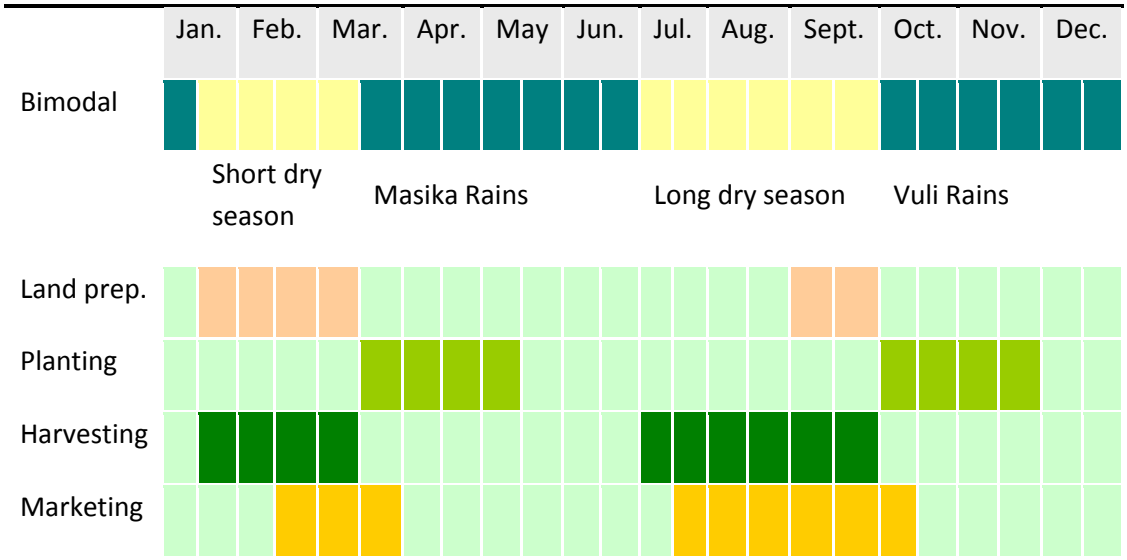
[11] Mlingi Betty A and Rajab Khadija 2009" Assessment of Post Harvest Losses of Major Food Crops and Fish in Zanzibar. Ministry of Agriculture and Environment – Zanzibar and The Food and Agriculture and Organization of the United Nations (FAO), Tanzania.

Table3. Duration of harvests, and food supply for the rainy seasons per district.

Island and the Districts	Duration of Masika Harvest (MOS)	Duration of Vuli Harvest MOS)
Unguja	**3.5**	**3.3**
North A	3.4	3.2
North B	3.4	3.3
Central	3.4	3.2
South	3.7	3.6
West	3.8	2.8
Pemba	**2.4**	**2.2**
Wete	2.3	2.1
Mcheweni	2.1	1.9
Chake chake	3.0	2.5
Mkoani	2.3	2.4
Rural Zanzibar	**2.9**	**2.8**

Source; CFSVA 2010 see also fig 1 in Appendix 6

Figure 6: Cropping Seasons Calendar



(Source: WFP, Vulnerability Analysis and Mapping Unit/ CFSVA 2010

There are coping mechanisms families use to mitigate against shortages of food due to different types of shocks and circumstances which include alternative cheaper crops, reduction of meals and meal quantities which in the end reduces their consumption levels and dietary diversity affecting overall food security.

There are several shocks that the population is exposed to annually. Nationally at least 83.1% of households reported at least one shock over the year preceding the Household Budget Survey of 2004/2005.Examined by island more households in Pemba than Unguja reported these shocks.

Table 4 below shows the distribution of these shocks on the population. The main shocks that the population in Zanzibar experience are food price rises, plant and animal diseases plus pests and droughts. These shocks affect access to food and ability to obtain high yields from their production fields. The issue of low production and low productivity per unit area has been studied and results have shown that there is very low use of chemical fertilizers or mechanization especially at harvest of rice to reduce losses. Hence productivity has remained low.

Percentage of Population	Type of Shocks experienced in previous year
57.70	High food prices more so in Pemba than in Unguja
49.40	Plant disease and animal pests
44.80	Drought

Table; 4 Shocks and percentage of population affected in previous year 2010

The conditions described above give rise to an insecurity profile indicated in table 5 below

Table5: **Food Insecurity Profile in Zanzibar 2010-**

Categories and groupings	Proportion of food deprived/undernourished peoples (food insecure) Percentage	Proportion of peoples living in critical food poverty (chronic food insecure) Percentage
Nationwide	26	4
urban	24	2
Rural	27	8
Male headed household	26	5
Female headed household	21	4
North A	26	3
North B	31	6
Central	14	2
South	29	4
West	43	5
Urban	28	1
Wete	45	13
Micheweni	46	17
Chake chake	31	6
Mkoani	26	9
Source: Household Budget Surveys 2009/2010		

This indicates a high dependence (See Appendix 6) on imports of staple food for the population and that alone presents a lot of risks of price fluctuations and availability on the international market when required especially in an emergency situation.

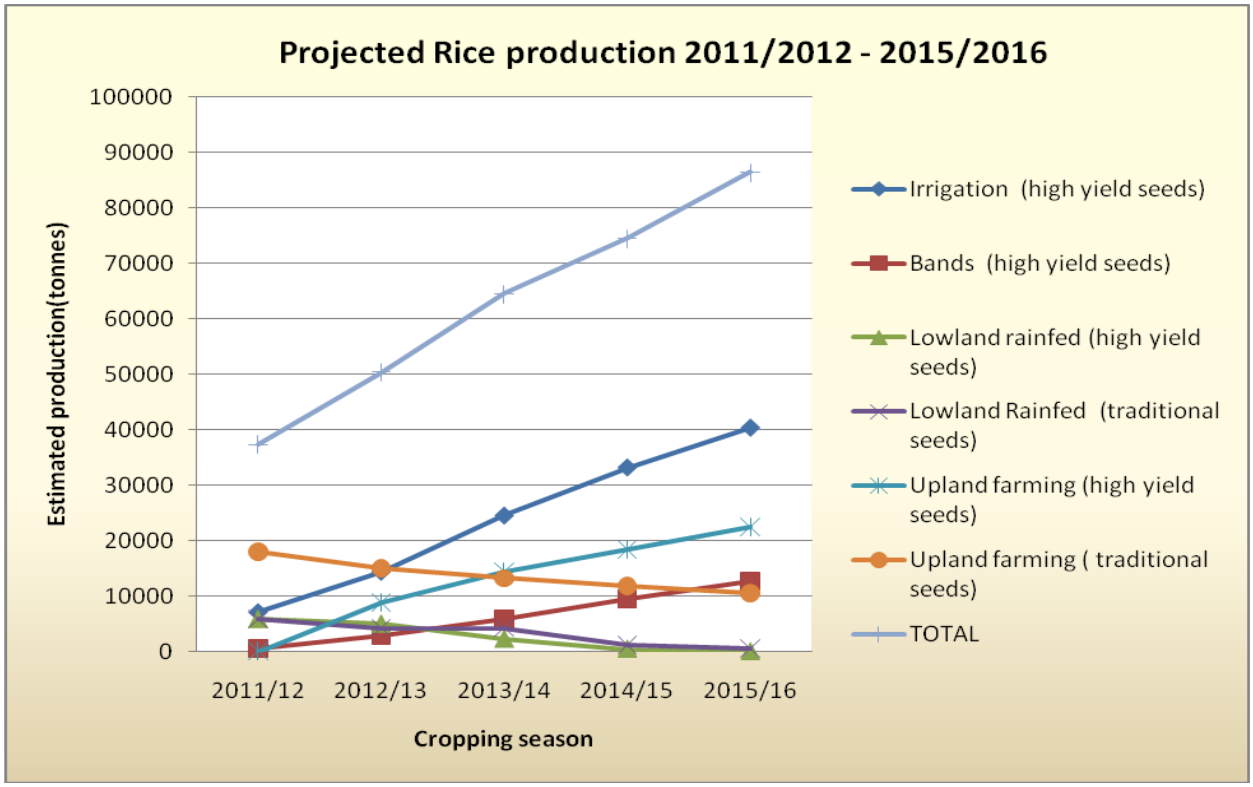
Although the Revolutionary Government of Zanzibar through the Ministry of Agriculture, Livestock and Environment is giving high priority to increasing rice production, the development of this sector will take quite a few seasons to get to the level of self sufficiency. It is however important to note some of the projected achievements expected from this initiative as shown in the table 6 and figure 7 below

Table No. 6: Projected Rice Harvest 2011/2012 - 2015/2016

EXPECTED HARVEST (TONS)	2011/12		2012/13		2013/14		2014/15		2015/16	
	acres	Tons	acres	Tons	acres	Tons	acres	Tons	acres	Tons
Irrigation (high yield seeds)	1,987	7,153	4,012	14,443	6,812	24,523	9212	33163	11,200	40,320
Bands (high yield seeds)	300	480	1,800	2,880	3,675	5,880	5925	9,480	7,925	12,680
Lowland rain fed (high yield seeds)	4,879	5,854	3,521	4,975	346	2,245	558	465	0	0
Lowland rain fed (traditional seeds)	14,136	5,855	11,969	4,225	10,469	4187	5,607	1121	2,177	439
Upland farming (high yield seeds)	0	0	8,000	8,799	12,000	14,400	15,333	18,339	18,667	22,399
Upland farming (traditional seeds)	45,100	18,040	37,100	15,106	33,100	13,240	29,767	11,906	26,433	10,573
TOTAL	**66,402**	**37,382**	**66,402**	**50,428**	**66,402**	**64,475**	**66,402**	**74,474**	**66,402**	**86,411**

Source; Zanzibar Rice Development Programme, 2012. Revolutionary Council Paper. Ministry of Agriculture and Natural Resources

Figure 7; Projected Rice production levels 2011 to 2016



Source; Zanzibar Rice Development Programme, 2012. Revolutionary Council Paper. Ministry of Agriculture and Natural Resources

The projected target indicates an import reduction of 75% by 2016 which would greatly improve the food supply situation at household levels especially in rural areas. The increase in production seems to be more on the increase in area under production than on the productivity per area. Since there is supply of improved seeds, fertilizer and mechanization the focus on the inherent expected higher productivity should also be emphasized to increase the intensive nature of the different farming systems indicated in table 6. In addition considering the islands limited land resource, intensive agriculture makes good sense against the growing population.

Although households both in urban and rural areas attempt to cope by increasing the diversity of their food consumption based on their production and purchases they remain mainly reliant on purchases. Livelihoods and access to food are also at risk of deterioration as a result of a range of environmental pressures. Increasing urbanization pressures are also adversely affecting livelihoods as farmers and livestock keepers based around urban and peri – urban areas find that they are slowly being squeezed out by the increasing sizes of the urban areas. The population density on the island also keeps increasing as the population is increasing meaning natural resources for livelihoods are also shrinking.

3.3 Size and Location

3.3.1 Size of the Emergency Food Reserve

The size of the grain strategic reserve is determined by a number of factors which come to play and it is a complex issue which relates to prevailing conditions in the country. A number of countries base it on market demand e. g. Zambia, others on calorie requirement for the maximum vulnerable population at the time e.g. Ethiopia which incidentally is easier when dealing with one major staple crop and others use more pragmatic approaches e.g. Malawi, Kenya and Zimbabwe[10] which in some cases include animal feeds too. It is also common practice that there is a minimum quantity at which the reserve should always be maintained and a maximum above which it becomes too costly to maintain. It is however also critical that statistics of the different components that make up the estimate be available otherwise it becomes very difficult to estimate. Table 7 below shows some of the sizes countries in Africa have been using over the years.

Table 7: Strategic Grain Reserve Sizes in Different Countries in Africa

Country	SGR Sizes in tons	Population	Commodity and source	Average Vulnerable Population
Ethiopia	2004 = 407 000 2013 = 1 500 00	90,837,739	Wheat; mostly from imports	8,000,000
Kenya	1997= 270 000 2012 =720 000	41,070,934	Maize; mostly from own production	3,000,000
Tanzania mainland	1999= 150 000 2011= 180 000 2015= 400 000	44,841,226	Maize; from local production	1,400,000
Malawi	1981 = 180 00 2011 = 60 000	15,879,252	Maize; a combination of local production &imports	1,700,000
Zambia	1999 = 180 000 2011 = 225 000	13,881,336	Maize; local production	2,800,000
Zimbabwe	1997 = 936 000 PS = 500 000 Fund = 436 000	12,084,304	Maize; a combination of local production and imports	2,200 00

See Appendix 8 and 9 for more detail on vulnerable populations and SGRs in these countries

NB With regards to sources in the maize producing countries the imports are highly depended on the season when there is a droughts imports dominate but during good seasons no imports feature at all.

In a situation like Zanzibar where local production is presently small, and the major part of the staple food is imported using market demand is tricky. The private sector that encompasses the major importers may not necessarily import the country's requirement but rather what sells on the market quickly. Only the segment of the population, that can afford it, demand imported rice. Long term storage is not their priority as it becomes costly. Therefore to use market demand in this instance could lead to an underestimation of quantities required for the reserve. Strategic Grain Reserves are meant for government to have a buffer stock for quick responses to disasters, food shortages and to cover the vulnerable part of the population who will be most

likely affected. Therefore the calculation of quantities is mostly based on that proportion of the population. This has worked in most of the countries shown in Table 7 showing the estimated SGR which they targeted and revised over periods of times since the 1980s. The same approach and assumptions were used for calculating the quantities for Zanzibar. The target size of the grain reserve is therefore a function of cereal requirements of the vulnerable population and the lead time required for additional supplies to be made available for distribution.

The Household Budget Survey report of 2010 estimates the most vulnerable proportion of the country's population to be about 30% at most (See table 5). At current population estimate of 1 358 792 this represent 407 638. The recent combination of global food and fuel price rise and the inadequate and erratic rains leading to a drought in Zanzibar in 2008 presented a food shortage crisis in the country. The World Health Organization in its Humanitarian Appeal of 2009 estimated that the level of acute malnutrition following the food shortage and food insecurity across Zanzibar islands elevated by 22.5% (300 000). The population at risk for food insecurity due to this drought was about 700 000 people which translates to 51% at current population estimate.[12] Most SGRs operate between a minimum and a maximum so that at any given time the reserve stock moves between these levels. The same can be applied to Zanzibar where the 30% most vulnerable people are the basis used to estimate the minimum required to respond to their needs on a regular basis. The 51% of population can be used to calculate the maximum to cover the population most likely to be at risk should a shock like drought, which is becoming more frequent, occur. The following are some of the assumptions that were used to calculate the reserve stock estimates;

Assumptions for calculations;

1. **That the population of Zanzibar now stands at 1 358 792 based on the 2002 census and at a growth rate of 3.1%**
2. **That the vulnerable proportion of the population in Zanzibar is 30%**
3. **That rice the preferred staple food in Zanzibar contributes 50% of the cereal foods consumed**
4. **That rice is the most preferred staple food by the population and has already been chosen as the choice crop for the EFR through the Food Security and Nutrition Act No.5 of 2011.**
5. **That the nutrition requirement are based on Internationally accepted standard of**
   - **2100kcal/person/day**
   - **10 percent of total energy provided by protein**
   - **17 percent of total energy provided by fat**
   - **Adequate micronutrient intake**
6. **That the lead time allowable for importation of food is 90days**

A standard food ration is that which covers the daily per capita energy requirement (2,100 kcal) and is adjusted for the population under consideration. FAO in its 1997 guidelines for establishment, management and operation states that a total of 160 -175 kg of cereals is

[12] Zanzibar Disaster Management Policy 2011. The Revolutionary Government of Zanzibar

required to meet this energy requirement. This converts to **480 grams** per day for the 175kg per person per year. The UNICEF/UNHCR/WFP/WHO guidelines give a range of possible combination and the cereal recommended range depends on the other contributing food items included in the ration (See table 8). The average from the table is about **400grams** which is also used in the Ethiopian calculation of its emergency food reserve The Disaster Management Department in the 2nd Vice President's Office in Zanzibar working together with the Red Cross during the 2008 drought used **500grams** per person per day as their ration size. However for calculating the EFR quantities the above rations have to be adjusted according to other sources of energy like cassava, yams maize and bananas which the population might be relying on. For Zanzibar these four crops are used concurrently with rice in the daily consumption by both urban and rural populations. The three above ration sizes were used in the calculations

Table8: Examples of adequate full rations in terms of energy, protein and fat for populations entirely reliant on food assistance.

ITEMS	**RATION quantity in mg**				
	Example 1	Example 2	Example 3	Example 4	Example 5
Cereal	400	450	350	400	400
Pulses	60	60	100	60	50
Oil (vit. A fortified)	25	25	25	30	30
Fish/meat	-	10	-	30	-
Fortified blended foods	50	40	50	40	45
Sugar 15 - 20 – 25	15	-	20	-	25
Iodized salt	5	5	5	5	5
Energy: kcal	**2113**	**2075**	**2113**	**2146**	**2100**
Protein (in grams and in % kcal)	58 g;11%	71 g; 13%	65 g; 12%	55 g; 10%	65 g; 12%
Fat (in grams and in % kcal)	43 g;18%	43 g; 18%	42 g; 18%	42 g; 17%	39 g; 17%
Source : UNICEF/UNHCR/WFP/WHO guidelines by Graeme A Clugston					

The ration quantities mention above refer to total requirement from the various cereals based food stuffs that are consumed, therefore to calculate requirement for one crop in a mix of crops one has to find the contribution of that crop to the overall requirement. For rice the Food Balance Sheets indicate that it contributes about 50% in quantity.

Tables 9: Estimates of the emergency food reserve in Zanzibar

Proportion of Population	Minimum Amount At 50%	Maximum Amount At 100%	Mean
407 638 = (30%)	**8,438**	**16,876**	**12,657**
700 000 = (51%)	**14,490**	**28,980**	**21,735**

See Appendix 10 for detailed calculations

Based on the calculation above the recommendations to government is that for now the **minimum requirement for the Emergency Food Reserve is 12 000 tons and its maximum 22 000 tons.** The 12000 tons should be built in the first year of operation and continue for next five years and 22 000 be built up from year 2016 when local production is expected to contribute the major part of that quantity.

3.3.2 Location of the Emergency Food Reserve

In terms of location it is generally cheaper to locate the reserve in the production area than in consumption area but considering the sizes of the two islands utilizing the reserve it may not make much difference where the reserve is located except consideration for its safety from environmental hazards like flooding, etc. It is therefore obvious that the sea port area where most of the government storage facilities are located is not ideal for the location of the reserve due to risk of flooding and the prevailing high humidity condition.
The road infrastructure is adequate to support movement of the reserve from a central position therefore only two depots are required to store the reserve one in Unguja and the other in Pemba. It will prove costly to decentralize the reserve to regions or districts at this stage due to inadequate institutional capacity. In addition since the objective is to maintain control and supervision over the physical stocks, spreading the reserve over several locations will increase both the costs and physical time spent on those activities. Fewer strategic locations can be readily monitored and supervised and this can have a greater impact on the efficiency of the whole operation. The one location per island can be used for the main storage and eventually, if necessary, one might envisage smaller satellite warehouses at district level that can be used as transit storage areas during distribution. The reserves can be located in the urban or peri urban

areas of Zanzibar town in Unguja and at Chake Chake town in Pemba. The location should be on reasonably high ground to protect the reserve from flooding. District warehouses already exist in most districts except Pemba where Mchiweni district has no warehouse. Mchiweni incidentally is the district with the most vulnerable population as it experiences erratic rains frequently. In such areas where the warehouses are nonexistent efforts could be put in place to work with the communities to construct them.

The grain storage analysis study that was done concurrently with this study has found that most of the existing storage facilities are not suitable for immediate use. Those that are suitable are of smaller capacity and cannot hold the recommended amount. It further recommends that as a start the Zanzibar State Trading Corporation (ZSTC) warehouses in Malindi and Saateni with a total storage of 24 000 tons be considered for leasing and be used for Unguja. It also recommends that for Pemba the ZSTC warehouse in Tibirinzi be repaired and used for the storage of the reserve

The target amount for the Emergency Food Reserve is 12000 tons and it is recommended that this be split between the two islands at the rate of 60% Pemba and 40% Ugunja to cater for the higher vulnerable population in Pemba. However, due to lack of appropriate storage facilities only 5000 tons can be stored in the Tibirinzi warehouse which belongs to the ZSTC after some repairs. It means for now 7000 tons will be stored in Ugunja preferably in the Saateni warehouses. During the workshop reservations were expressed on the vulnerability estimates for Pemba produced by the different studies.

The road infrastructure on the island is all weather roads that adequately cover the districts and the logistics of moving stock in times of emergencies should not present any difficulty as long as it is well planned and coordinated well in advance to minimize delays in the delivery of relief supplies.

3.3.3 Storage Infrastructure

The storage of the grain can initially be done thorough leasing warehouses from ZSTC. Although the recommendation is that there be two locations used, one in Pemba and the other in Unguja, management should be controlled from the Unguja base where the management headquarters will be based. The material for rice storage ideally should be in jute bags as poly propylene bags can present problems during storage especially if the rice has high moisture content. Mainland Tanzania are using jute bags for their maize storage and therefore these bags are available on the market and on importation this could be included as one of the requirements for the reserve. It will also be a form of identification for the reserve stocks in the market

As mentioned earlier the existing storage structure which are easily available to the government are not suitable for immediate use. The structure are in a state of disrepair and will need a lot of investment to bring them to the level they can become safe for grain storage. See photos 1 and 2 in Appendix 11

In Pemba the storage structure in Tibirinzi was identified as one that can be used with minimal repairs and should be ready for use; it has a capacity of 5000 tons (See photos 3 and 4 below)

Photo 3 : Tibirinzi warehouse in Pemba

Photo 4 : Inside the Tibirinzi Warehouse

The storage analysis study further recommended that the government construct new warehouses to accommodate the reserve and consideration on capacity should be given to the fact that future storage will be of paddy as local producers will be selling paddy to the reserve

which has a longer storage life than milled and polished rice. Rice milling capacity is also very low in the country and consideration should be made to build up this capacity. The storage capacity recommended is for 30 000tons because in 2016 on wards when the reserve is increased to 22,000 tons (rice), this equates to 30 000 tons paddy equivalent. It is more cost effective to build that capacity initially than build again in 2016.

Zanzibar's seaport facilities are better developed in Unguja than Pemba. The Wete seaport and Mkoani are small and can only handle small cargo ships (See photos 3 &4 in appendix 11). This means major offloading and customs clearance will be done in Ugunja Island and small boats will be used to move consignments for Pemba. This will introduce extra cost of double handling.

3.4 Operational Modalities;

The Food Security and Nutrition Act No. 5 (2011) states the purposes of the Zanzibar Food Reserve as;

- Ensure reliable supply of food in Zanzibar
- Meet local shortfalls in the supply of food
- Meet any other food emergencies caused by drought or floods or by any other natural disaster, as may be determined by the council; and
- Solve problems relating to supply of food in Zanzibar
-

Initially however it is advisable that the reserve is used solely for food relief and safety nets programmes run by government so as to make it financially viable and reduce subsidy costs. This is because running the reserve for all the purposes mentioned above requires a highly efficient management system operating and linked to a well developed marketing system. This is not yet the case in Zanzibar and a learning curve is necessary to equip the institutions involved with the necessary experience and capacity. With time the capacity building efforts and institutional improvements in the government will enable the government to gradually add the other responsibilities in the Act. For example "Solving problems relating to supply of food in Zanzibar" is a complex issue that involves interface with the market which require delicate handling to ensure market growth at the same time encouraging domestic production growth. The department of Food Security and Nutrition is planning to put together safety nets and social relief programmes that will draw from the reserve and at the same time encourage self sufficiency at household level to avoid developing a dependency syndrome. These are important because uptake from the reserve will stimulate production from the small holder farmer's hence increasing food availability at household level

3.4.1 Composition and Operations

Maintaining food reserves is an expensive venture. Without the efficient management of the grain stock there are three potential adverse effects that can happen;

1. Large subsidies maybe required to pay for the storage costs
2. Grain quality may deteriorate and can pose health risks to the poor households who receive these grains or any of the safety net programs that may be running including school children
3. In good harvest periods when older stock needs to be recycled for fresh stock the release of grain on the open markets can distort markets and adversely affect private sector incentives and impede markets development.

It is therefore critical that when the policy decision to hold an emergency grain stock is made, importance be placed on devising measures to minimize fiscal costs, ensure food safety, and reduce distortive impacts of stock policies on grain markets. In Zanzibar a policy decision has already been taken and an Act is in place for the establishment of the grain reserve. Government has already chosen that rice will be the staple grain to be stored in the reserve. However considering the volatility of rice prices on the market and the difficulty in the logistical arrangements of bringing rice into the country, it may be prudent to consider an additional grain like maize to ensure food availability. The private importers of rice for sometime have been chartering cargo ships to transport their consignments of between 8000 – 10000 tons of rice from places like Vietnam, Pakistan and Thailand. However the piracy in the Indian Ocean around the Somali coastline has made it so risky that it is now difficult to charter cargo ships. Importers are now relying on container ships which can only carry 1000 – 2000 tons at a time and this means more frequent import orders are required. This has also led to the price rise for rice from an average of 530 to 700 USD per ton of rice CIF[13] to Zanzibar. The costs are not sustainable. It is therefore risky for the grain reserve to rely on rice alone given the current challenges mentioned. It may be necessary to have a portion of the reserve in maize as cassava the next important staple after rice cannot be easily stored in a reserve. Rural families usually stagger their cassava planting to make sure they have access throughout the year.

The Emergency Food Reserve management and day to day operations will be detailed in a handbook to be provided as part of this study. However in summary as indicated earlier on, the size recommended is a minimum stock of 12000 tons to be built up over a period of 1 year operating for the next five years and the maximum of 22 000 be built by 2016 onwards, mostly from local production . This idea is to encourage the local production of rice and reduce the importation component. Increase in local production has to be synchronized with local development of the market to absorb the surplus at the same time bearing in mind that the reserve can only absorb a certain amount. The rice development strategy that the Government is putting in place is supposed to start giving some results by 2013 with some results already

[13] CIF* = Cost, Insurance, and Freight. The quoted price includes delivery to the Free On Board point including the cost of insurance on the goods.

visible as the 2011 harvest shows (Figure 3 above). The reserve will create the demand for farmers to produce and have a market to sell to. This, as mentioned earlier can be forged in partnership with the private sector that can contract farmers. In practice during processes of import and local purchases to meet the minimum and maximum of 12000 and 22000 milled rice, the grain reserve should never go below 8,000 tons and never above 30 000 tons at any given time in order to maintain reasonable costs of operation in relation to the social functions of government targeting the vulnerable population on a regular basis.

Since government has not been involved in the import and purchasing of grain it is important that the private sector plays a pivotal role in the procurement process to build up the reserve and to recycle the reserve. The private sector can buy from both local production and imports for a start but as local production improves purchases should be domestic. Other countries like Zambia and Ethiopia have successfully used the tender process for procurement. Local importers who have been involved in bringing the rice supplies into Zanzibar should be given priority so that there is little disruption of the marketing channels and processes in Zanzibar

3.4. 2 Procurement for the reserve:

As mentioned earlier, initial procurement of the reserve will be through imports as the current local production is not going to meet the required quantities. As local production increases and surplus for sale is realized the reserve should purchase paddy rice from the domestic production through private buyers to reduce costs and gradually reduce imports of polished rice. The reserve should float procurement tenders with adequate lots to meet replenishment quantities for the reserve during the two annual harvests of Vuli and Masika. The pricing mechanisms should be negotiated seasonally with a view to stimulate local production of rice and provide a win win situation for all participants. It would prove costly for the reserve to buy from individual farmers and organize the movement of small quantities to the central storage. Private buyers can go out to buy until they fulfill the tendered lots and supply in larger quantities. District warehouses can be used for these local purchases by the private buyers and they can move the grain to the central storage points for purchase by the reserve. Any other surplus will go on the general market for sale once the requirement for the reserve is fulfilled. Quality assessments should be instituted at intake and prices paid should be based on the grading standards as stipulated in the Operations Manual

3.4.3 Release and Recycling

The timing of disbursements and the instruments to use in terms of safety nets will be up to the funds and the capacity available to government. It is recommended that stock recycling of the remaining quantities after disbursement be done every six months. The actual release time should be during lean times when supplies are low so that there is minimal disruption to the normal marketing system. Based on the literature review, this seems to be from October to January of each year. Polished rice is more perishable than paddy therefore its shelf life is also limited. It is more prone to moisture and pest damage due to the absence of the husk protecting the seed. In addition since the rice is imported even the dates of harvest may not be

reliable. From experience importers have indicated that the safest period to store polished rice, if looked after diligently, is six months. Ideally for optimal efficiency stocks should be recycled every three months but due to anticipated problems of bringing in the rice six months should be sufficient for the first few years of operation and thereafter improvements can be made according to the prevailing conditions. The order to release should be given by the highest authority over the reserve which as per the Act is the National Food Security and Nutrition Council and then during the release period the quantities that can be released should be stated for the EFR Manager, Director and those that need clearance from the Chairman of the Council. This will allow for flexibility especially in times of crisis. More details on management structure and responsibilities are in sections below. It was not possible to get into the detail on market timing, indicators to be used and early warning modalities in this study and it is recommended that a separate study to focus on those be done as the reserve is set up.

The stock levels for the reserve should not be static but should be determined by the seasonal fluctuation of the vulnerability assessment that should be carried out regularly to inform on the stocks required. This is because it will be costly to maintain large stocks which may not be required for a long period as long as the minimum amount is reserved in case of an emergency. The assessments therefore need to be done at least six months ahead of procurement or harvest to indicate how much is to be stored for that season. Vulnerability is not a fixed state and changes from season to season and responding to reality situation will be more cost effective than just maintaining the maximum quantities required as long as the minimum quantity to respond to an emergency situation is guaranteed all the time.

At recycling stage the reverse of what happens at procurement should be used. Tenders in lots should be floated and sold to private traders. An early warning system should be worked out to inform the buyers when the tender will be announced. This will allow them to plan their imports and reduce their orders to accommodate the lots from the reserve so that there is no glut of rice on the market. It is critical therefore that quality control be of the highest level in storing the reserve. Importers would not be interested in buying poor quality rice neither would the reserve realize a good price if the rice is of poor quality. The other customers that can be considered at recycling are government departments like hospitals, colleges, prisons etc who should purchase from the reserve at recycling stage. Sales should not be made to individuals to limit distortions on the market

3.5 Institutional implications (Management Structure/Authority and Responsibilities)

The Food Security and Nutrition Act of 2011 established what is referred to as the National Food Security and Nutrition Council. The Council is responsible for overseeing the

implementation of the Food Security and Nutrition Policy and programme to achieve the stated goals which includes the emergency food reserve. It is chaired by the second Vice President who has the authority to make the final decisions on matters concerning the programme. Specifically on the reserve the Council decides on behalf of the Government a crisis situation warranting Zanzibar Food Reserve release, and to what level required.

Below the council there is the Food Security and Nutrition Steering Committee which in summary acts as an advisory body to the Council and the Department of Food Security and Nutrition in the effective implementation of policy and guide, direct and approve activities. It also promotes the efficient allocation and utilization of resources which will directly affect the operations of the food reserve.

The Director of the Department of Food Security and Nutrition is the Chief Executive Officer of the Department and this is where the emergency food reserve will be housed and therefore its manager will report to the Director. The Director will be responsible for the day to day activities of the emergency food reserve among others subject to the direction of the Steering Committee and will also determine the supporting staff for the department including the emergency food reserve staff compliment

It is against this background of the senior management structure set in the Act that a management structure for the emergency food reserve is recommended as shown in Fig 5 below. The idea is to have a lean, simple and flexible management structure that can respond to the needs of the vulnerable population effectively. It is recommended that there be an overall Emergency Food Reserve Manager who will be supported by a compliment of well qualified and trained 6 officers covering the areas as shown in Figure 5. These Officers will have support staff members as deemed necessary. The policy for a lean staff focuses on the fact that each staff member at senior level has to multi – task in order to fulfill the requirements of running the reserve in a streamlined manner without necessarily employing a lot of staff. For example though the depot managers are mainly to focus on operational issues they would also cover issues like the markets, monitoring tenders and participating in the early warning issues to predict and forecast the trends that will lead to distribution of grain. The job description showing the responsibilities of each of the levels are given in Appendix 12

The structure recommended is expected to be adequate for the current size of the emergency food reserve. However it is important to realize that as the reserve increases in size regular review of the staff compliment for more streamlining and adjustment needs to be done on a regular basis to ensure effectiveness and efficiency. It is also recommended that during distribution to government programmes and recycling, additional staff can be hired on a limited contract bases. The following services can be sourced from service providers through a tender process; Fumigation Services, Major Machinery, Installations and Building Maintenance, Canteen Services., Office Cleaning Services.

In the long run it is advisable that the Emergence Food Reserve should evolve with time to become a semi autonomous entity that can run its affairs with little supervision. It should also fund itself reducing its dependence on government, although Government will always need to bear the costs of any safety net programme through reimbursing the Reserve for any distributions made. A food reserve fund could be created and be deposited offshore and interest used to run the facility while the fund will be ready for purchase of more grain during recycling. The reserve should not be expected to make a profit but should operate at cost and break even. This can be achieved as long as the stock levels are maintained at appropriate levels and not be too large.It is therefore necessary at the outset that an exit strategy for the reserve should be worked out and involvement of the private sector be the key to its success. With increasing private sector participation and increased role to handle all the points outlined in the Act, it is possible for the entity to minimize its impact on government finances.

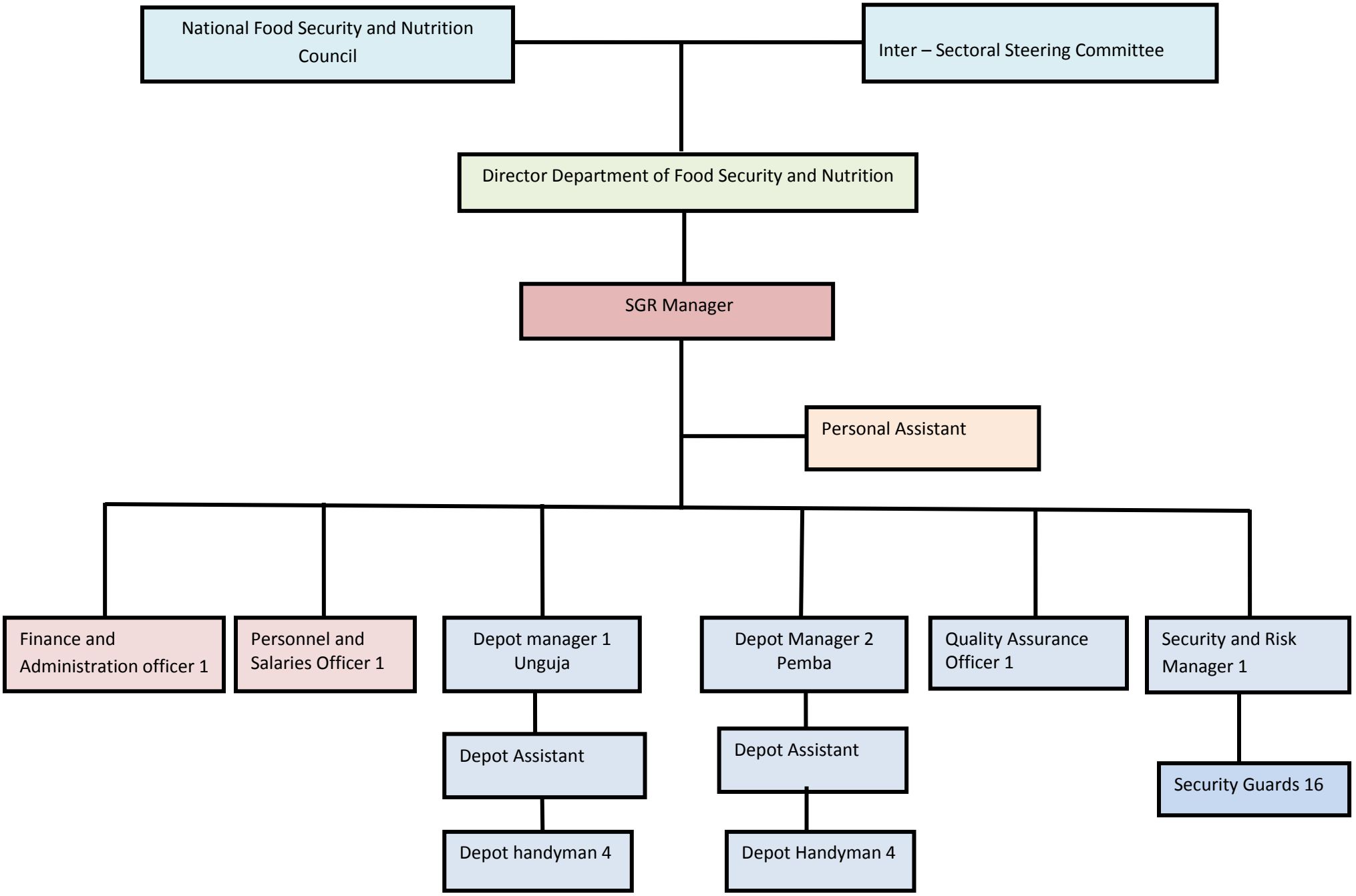


Figure 8; Emergency Food Reserve Organogram

3.6 Financial Implications

The Zanzibar Food Reserve is owned by the government and ultimately it is the government that will finance the cost of establishing and maintaining the reserve. It is important at the outset that government clearly commits itself to this for the reserve to operate effectively. In Section 28 of the Act it is stated that the funds and resources to manage the Zanzibar Food Reserve shall be derived from the following sources;

1. any money from government subvention
2. Money from sales of food reserve at recycling stage
3. Any money or resources made by way of donations, loan or grant made within and outside Zanzibar

With consideration given to the above it is recommended that for the first two years of operation the government budgets to fully fund the reserve with help from any interested donor agencies for the Capital developments, purchase of equipment, establishing the stocks, payment of Staff and their benefits etc for the smooth setting up and running of the reserve

Below are indicative estimates of the costs to establish and manage the emergency food reserve. It should however be borne in mind that these are indicative, and do not include issues like interests, handling costs at port and during distribution etc. A more thorough look at these costs is needed but this should serve as a guideline to the expected costs

Table 10; Indicative Estimated Costs of 1st year of Operation

ITEM	Estimated Cost in US dollars
Capital Development and Equipment	4,020,000
Initial Procurement Costs for EFR	22,140,000
Annual EFR Storage Costs	396,000.00
Annual Human Resources Costs	68,987.00
Total	**26,624,987.00**

It is important to note that the US$22,140,000 initial procurement costs is for the building up of the reserve and probably after six months there maybe additional resources to make up for any distribution that government will have used and the need for recycling.

The costs for construction of new depots and purchase of equipment has been detailed in Appendix 13 Table 1 showing the breakdown. This is an input from the International Consultant on Storage Analysis,

Storage Costs were calculated using the average cost of US$ 33 based on the range of costs determined on the African continent that range between US$20 – 46 (See Box 1)

Personnel Costs were calculated using the current government rates for civil servants inclusive of benefits. (See Appendix 13 Table 2) No calculation can be made for the contract workers to be hired as this is dependent on the social programs to be set up. These can be included at a later stage

As indicated in the Act, government has to budget for the reserve in the first years of its operation but with time it is advisable that an exit strategy for the reserve is worked out where the private sector gets more and more involved and a semi autonomous organization able to fund its own activities in partnership with the private sector is established. The government will still be able to purchase the quantities it needs for its social responsibilities and programs

3.7 Information Requirements

In Zanzibar the marketing of agricultural commodities is liberalized and for the Government information collection on the food situation and market information has not been on a regular basis. The marketing of agricultural commodities is regulated by both the municipalities and district councils, who focus mainly on the management and smooth functioning of the physical markets and the collection of fees. The marketing of agricultural produce falls under no specific institutions' responsibility, and consequently there is no institution that provides market information. There is no clear cut information management system in place that works consistently covering issues like food supply, stocking levels, changes in market prices, import quantities and requirements etc. Most records and statistical collection of this data has been done intermittently. In the end data cannot be used effectively for decision making with a degree of confidence that is acceptable due to lack of accuracy and consistency. Studies that have been carried out in an effort to produce a Zanzibar Agricultural Marketing Policy 2010 draft have indicated the need for the establishment of a credible market information service. Initiatives have already been put in place in the Department of Food Security and Nutrition where a surveillance team has been collecting data that is used for the publication of the Food Balance Sheet annually. So far they have produced four Food Balance sheets for 2007, 2008, 2009 and 2010. There is need to strengthen the initiatives to improve the collection of the necessary data for decision making in the running of the grain reserve. The following are some

of the areas of critical importance to the information requirements for the establishment and maintenance of this reserve in an efficient and strategic way. It will be necessary to have credible Seasonal Vulnerability Assessments to ascertain stocking levels for the grain reserve so that it does not become too costly to procure quantities which may stay for long periods of time in store. The following information is important for **Seasonal Vulnerability Assessment;**

1. Seasonal Crop Production Forecasts for all districts
2. Market Information Systems
3. Early Warning Systems locally, regionally and globally

The collection of data currently is not in a standardized format and this presents the problem of accuracy. The collection of data is also conducted in a fragmented manner and this leads to duplication of efforts by the different actors. It is recommended that a single authority be appointed to coordinate the collection and analysis of agricultural statistics relevant to the operation of the reserve. This authority would be mandated to bring together those departments and independent agencies that are normally engaged in one way or another on these statistics. Through this coordination a strategic plan to collect accurate information and properly analyze it should then be worked out with the requisite division of labour so that each department or agency contributes their expertise to achieve the intended objective.

1. Department of Food Security and Nutrition
2. Ministry of Agriculture and Natural Resources (Statistics Unit, Planning and Policy, Extension)
3. Office of the Chief Government Statistician Zanzibar
4. Tanzania Meteorological Authority – Zanzibar Branch
5. Department of Disaster Management
6. Red Cross – Zanzibar Sub Office

The appointed authority would coordinate regular meetings that will work on the submitted and analyzed information and estimate the food situation nationally. The use of global and regional early warning systems information to feed into the local information should be done so that more accurate forecasts are synthesized. Policy makers can then make the decisions timely and implementation is done and responses to emergencies are successful. In Zanzibar it is recommended that the Department of Food Security and Nutrition is appointed as the authority to coordinate since the department is responsible for the management and operation of the reserve. Extensive training that standardizes methodologies to be used in the different departments is a prerequisite to a successful and effective information collection. This is important because importation of rice will be done for the foreseeable future and what happens in other parts of the world where rice is produced and consumed will definitely affect the price and availability of rice on the international market.

3.7.1 Market information System

For the department of Food Security and Nutrition to make recommendations to the Council on the operation of the grain reserve on issues like when to release and when to recycle and

replenish with fresh grain it will need up to date and accurate market information. The decision then made, on the release of the grain reserve will have minimal effects on the operation of the market.
Therefore it is essential that market information is collected regularly on market prices and availability trends of the main staple foods like rice, cassava, maize and banana. This information is also used by the department for production of the yearly Food Balance sheet.
The proposed Zanzibar Agricultural Marketing Policy 2010 draft identified three marketing channels based on the characteristics of the clientele and nature of products.

1. The first channel serves the low income local market segment that is composed of nation – wide network of smaller district council/municipality run markets; informal neighbourhood based structures and road side vendors. Much of the products flow in this channel is composed of locally produced unprocessed varieties of products that are preferred by this market segment
2. The second marketing channel supplies the medium to high income population mostly through retailers at the main central markets, specialty stores and supermarkets. Products marketed under this channel, particularly vegetables are largely sourced from outside Zanzibar (mainly from the Mainland) during the off season period
3. The third channels supplies hotels and restaurants. This channel is characterized by 'exotic ' varieties that are not consumed in large quantities by the local population

From the above the first and second are the most relevant to the emergency reserve's operation and focus should be on collecting the most information from these channels. Such information as the fluctuation of prices of commodities, the supply situation and commodity shortage signals can inform as indicators. The speed at which the collected information can be made available to potential users is crucial for timely decision making. Organizing for the regular collection of prices and availability information from selected markets can have the problem of costs especially if collectors are employed. Arrangements can be made through market authority using a standardized format for regular collection and incorporating the cost into market fees paid to the authority. The appointed authority would then determine the data to be collected and design the standardized format for the purpose. It is still important to train and monitor the data collectors to ensure they follow the given format.

3.8 Risk Management and Monitoring

Zanzibar is currently highly dependent on import of its staple food rice to a degree of about 80%. This indicates a considerable exposure to world market price instability and other changes taking place in the freight business e.g. piracy which has already had an impact on the price of importing rice. These risks can in principle be laid off on the market by using risk management instruments. This in broad terms involves standardized or tailor made contracts which are market based. The standardized contracts are called commodity futures and options while the tailor made contracts involve forward contract, swaps and commodity bonds and loans. This is a

sophisticated system of commodity trading and risk management that needs experts to work out what is appropriate for the Zanzibar rice traders should the government decide to use them.

Locally however a risk management system can assist in timely response to emergency situations. This is done by well informed decisions that depend on accurate data collection and analysis of the coming season to guide the release and distribution of the reserve including timing of recycling. In Zanzibar the first thing that needs to be done is to strengthen the institutions that are involved in data collection as discussed earlier. When seasonal vulnerability of the population to anticipate the requirement is done in advance, the importation and purchase of domestic production will be done on that basis. This will minimize over importation that could depress prices when time to recycle is determined or under importation that could lead to shortages and the government failing to fulfill its social relief responsibilities.

It is recommended that the Security and Risk Management Officer has a dual function to assess and monitor the actual risk of storing the EFR and also to be the intelligence collector of the factors and data that indicate the level of vulnerability which are now currently used by the (DFSN). He/ She should work closely with the Early Warning Unit in the department for this function.

4. Challenges and Lessons Learnt

The availability of reliable data during the study presented a challenge and this is not conducive for decision making for government. Specifically data on imports and any exports that occur annually are not consistent and they also depend on who has the data. Ministry of Trade have data but it is not consistent and at times quantities and values do not match. There is also a lack of coordination in data collection hence the different records of the same item kept by different departments. Communication between the institutions concerned with food security can be improved to synchronize activities. One lesson learnt is that the number of studies that had been carried out before this study was done made the study more focused as other issues on food insecurity had already been established. In addition Policies and Acts that were enacted before the study assisted in directing the thinking of government in food security. (See Appendix 14) However, more time was needed to look at the different aspects in greater detail than what was allocated.

5. Conclusions

The establishment of an emergency food reserve is achievable. It is necessary considering the vulnerability situation in Zanzibar. The reserve is recommended to be 12 000 tons initially procured through imports and gradually met through local production. There are prerequisites before setting up the reserve which are to do with capacity building and provision of good storage infrastructure. However, leased premises can be used to initiate the process. The reserve, as a start, should operate for relief and social programs and take up the other functions in the Act later as experience is gained. More detailed studies are needed to establish indicators for release, recycling and long-term interface with the market. Engagement of the private sector is key to success of running an efficient reserve.

6. Recommendations

1. A strong public private partnership has to be forged with the private sector that is currently involved in the importation and distribution of rice to minimize mistrust between the government operating the EFR and the private rice importers, traders and retailers. The private sector is needed to participate in the importation of and distribution of rice to minimize the impact of the EFR on the market that has been developed over the years.
2. An alternative grain crop like maize which is produced locally and is available in the region should be given serious consideration to become part of the Emergency Food Reserve, especially for emergency situations.
3. Communication between public and private institutions that have a stake in the establishment and running of the food reserve has to be forged into reality. Presently there is very little communication.
4. Zanzibar as a country needs to reduce its dependence on importing staple food as a matter of urgency. The current highly volatile situation of prices on the international markets and piracy on the high seas mean that risks keep increasing. Intensive work on increasing local production is a must and policy frameworks to this effect have been put in place; what remains is full implementation and funding of these programmes.
5. The establishment of the EFR should be used to promote local production and programs that will involve private sector participation in contract farming with the small holder farmers will go a long way in ensuring increased local production which will ultimately reduce dependence on importation.

6. The Emergency Food Reserve is recommended to stand at a minimum of 12,000 tons and build up to 22 000 tons by 2016 when domestic production is expected to have risen to significant levels to meet reserve quantities. In the processes of the day to day operation (importation, local purchases, releases and recycling) of the reserve it should never be allowed to go below 8000tons and never above 30 000. Reviews on the size of the reserve should be done based on population and environmental changes on a long term basis.

7. It is recommended that the emergency food reserve be used not only for emergency situation but also for safety nets and social programmes to address the food insecurities identified by several studies and estimated to affect 30% of the population. This can be done at specific times of the year to address those food shortages. It should not be for free but linked to development goals in the district where the identified households work for food or cash to purchase food. School feeding programs and pregnant mothers and lactating mothers feeding schemes at clinics and hospitals can help address malnutrition.

8. The proper functioning of an Early Warning System is critical to the efficient running of the EFR. The Unit set up at the DFSN needs to be adequately resourced and adequately staffed to meet its expected requirements of providing assessments that will lead to accurate decisions being made by policy makers about the EFR operation every season.

9. It is recommended that the DFSN be appointed the Authority department to spearhead the establishment and improvement of the information collection and analysis for accurate forecast of the food situation every season. This should involve all the organizations tabulated in the Section on Information Requirements .Organization like Red Cross that have a network of 1600 volunteers all over the two islands can contribute a lot to information collection in the rural areas on food shortages and vulnerability that will be cost effective. It will supplement information supplied by government department in the districts. Regular sharing of information in scheduled meetings can improve flow of information for decision making

10. Training is a prerequisite for institutional capacity building for a number of institutions that are going to be involved in the running of the reserve. The management team and staff will require intensive training and learning visits to other established SGRs in the region like in mainland Tanzania and Ethiopia are recommended.

11. In the long term it will be advisable for the EFR to operate as a semi- autonomous agency to allow quicker decision making and efficient management as long as limits are properly set and those decisions that need higher authority are included in the procedures. Participation of the private sector is encouraged as the EFR evolves to encompass other responsibilities.

7. The Workshop and its Major Outcomes

A stakeholder's workshop to disseminate the findings and solicit a review was held on the 29th of March 2012 as per the TOR. It was attended by 21 participants from the different ministries and organizations that have a stake in the establishment of an emergency food reserve. After an official opening from the Deputy Principal Secretary in the Ministry of Agriculture a presentation on the study was made followed by a critical review offered by Dr Suffyan Koroma (FAO) to generate discussion and highlight some of the gaps. This was then followed by an open plenary discussion from which comments and questions were raised and in this report only highlights will be listed. A full report on the workshop accompanies this report as a separate output of the study;

1. The study was accepted as good and providing a start on the emergency food reserves establishment and operation.

2. The emergency reserve quantity of 12 000 tons was accepted as a reasonable quantity and it was felt its release on the market at recycling would not affect much the normal marketing situation since Zanzibar which consumes 6000 tons per month on average.
3. The cost of purchasing rice through imports was recognized and the importance of increasing local production was emphasized
4. The private sector was urged to start investing in agriculture through contract farming to augment the government efforts already in implementation process for rice production development.
5. The major gaps identified were
   - The interface of the reserve and market especially at recycling stage needs to be looked at in greater detail. The involvement of the private sector in agriculture production. Institutions to look at this were identified
   - The issue of indicators that will be issued to trigger release of the reserve needed to be identified and an FAO consultant was already coming to do this in Zanzibar.
   - More detail on the actual operation of the reserve in terms of how the population will view it and how to limit dependence syndrome developing

NB. For more detail see the report on the proceedings of the workshop accompanying this report

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40. TradeMark Southern Africa website Daily Nation January 2011 publication http://www.trademarksa.org/news/kenya-grain-reserves-fall-three-million-bags

41. IRIN humanitarian news and analysis January 2008 GLOBAL: An Ethiopian solution to costly food aid http://www.irinnews.org/Report/77118/GLOBAL-An-Ethiopian-solution-to-costly-food-aid

42. Mwangi S. Kimenyi, Nelipher Moyo, A Jessica Smith, 2011, Regional Approach to Managing Africa's Food Shocks; The Brookings Institution

43. Definition of Food Security www.fao.org/WAICENT/FAOINFO/ECONOMIC/ESA/fs_en.htm

9.APPENDICES

Appendix 1: Development of the definition of Food Security

Definitions of food security

Interest in food security has waxed and waned over time, particularly in relation to changes in the extent and nature of food problems worldwide. The 1975 UN definition of food security reflected the thinking of the day, which focused on adequate production at the global and national level. This was also a conventional view of food as a primary need.

Food security is, however, a matter of both limited food availability and restricted access to food. Amartya Sen has been credited with initiating the paradigm shift in the early 1980s that brought focus to the issue of access and entitlement to food. Food insecurity is no longer seen simply as a failure of agriculture to produce sufficient food at the national level, but instead as a failure of livelihoods to guarantee access to sufficient food at the household level.

Today, most common definitions begin with individual entitlement, though recognizing the complex interlinkages between the individual, the household, the community, the nation and the international community.[1] In the 1996 Rome Declaration on World Food Summit, food security is defined as:

A situation that exists when all people, at all times have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and health life.

In other words;
Food that is available at all times, to which all persons have means of access, that is nutritionally adequate in terms of quantity, quality and variety, and is acceptable within the given culture.[2]

Availability, access and affordability are all elements of food security, complex issues that encompass a wide range of interrelated economic, social and political factors—internal and external—which challenge Africa's ability to address food security. Analysts generally believe that Africa's current food emergencies are the result of a combination of problems that range from drought and adverse weather patterns and civil conflict, to political-economic crises, HIV/AIDS and poor policy decisions. No single factor is uniquely responsible.

1. **S Maxwell, The evolution of thinking about food security, in S Devereux and S Maxwell (eds.) *Food security in sub-Saharan Africa*, 2000, p 17.**
2. **J Madeley, *Food for all: The need for a new agriculture*, 2002, p 34.**

Source: Jenny clover 2003 "Food Security In Sub-Saharan Africa" African Security Review Vol 12 No 1, 2003

Appendix 2; Terms of Reference

A comprehensive study and operational analysis for the establishment of an emergency food reserve in Zanzibar, Tanzania

The United Nations (UN), in collaboration with the Government of the United Republic of Tanzania, are implementing the United Nations Development Assistance Plan (UNDAP) 2011-2015. The Food and Agriculture Organization of the United Nations (FAO) is participating in five Programme Working Groups (PWG) of which Emergency Preparedness and Response is one. As part of this PWG on Emergency Preparedness and Response, FAO intends to support the Revolutionary Government of Zanzibar (RGoZ) to conduct a comprehensive study and operational analysis to establish emergency stocks in Zanzibar. Provision 25(1) of the 2011 Food Security and Nutrition Act establishes a strategic grain reserve (SGR). Provision 14(1)(d) confers the responsibility of the management of the SGR on the National Food Security and Nutrition Department, The RGoZ has decided that the stock will be composed of rice. The study and operational analysis will be carried out by an international consultant who will work under the supervision of Lead Technical Unit at FAO HQ in Rome and the FAO Representative in Tanzania.

The objective of the study: -

(a) To establish the nature and scope of vulnerability to food insecurity in Zanzibar, in order to make concrete recommendations on how the SGR can be an effective food emergency response
(b) To recommend on the location(s) of stock(s), their management and operational modalities.
(c) To determine the costs for the establishment and maintenance of the SGR.

Specifically, the consultant will:

2. Review food supply (internal and external) and availability in Zanzibar, existing marketing and supply arrangements and stocking policies (if any) over the past 5 years;
3. Determine the size and best location(s) of the SGR, taking into account domestic production, consumption, procurement and storage capacity and an assessment of food supply risks;
4. Determine the finances required for the establishment and maintenance of the SGR;
5. Recommend the institutional structure for management and operation for the SGR identifying initial establishment procedures, stock recycling, replenishment operations, staffing required and fixed operating and maintenance costs;
6. Establish information requirements for the operation and monitoring of the SGR
7. Organize a half day workshop to present the main findings and recommendations to the relevant stakeholders;
8. Produce final report highlighting main findings and recommendations;
9. Develop an Operational Procedures Manual based on the Report findings and recommendations and the half day workshop, covering, but not limited to, the following:
    - Management structure, authority and responsibilities of all bodies involved in decision making, financing, operation and maintenance of the reserve;
    - Role and responsibilities of the agency administering the reserve and its financing;
    - Conditions for triggering release of grain from the reserve and release procedures;
    - Procedures for procurement, storage, recycling, quality control and financing.

Methodology: Should include, but not limited to literature review (including studies from other countries with similar socio-economic situation), review of data on food security (food supply, availability and accessibility), meetings with key stakeholders (e.g. Ministry of Agriculture and Natural Resources, Zanzibar Food Security and Nutrition Department, Second Vice President's Office – Disaster Management Department), mainland institutions which are involved in food supply to Zanzibar, mainland National Food Reserve Authority (NFRA), NGOs and private sector.

Coverage: Zanzibar (Unguja and Pemba)

Duty Station: Zanzibar with missions to Dar-es-Salaam

Language: English

Duration: 5 weeks starting as soon as possible

Qualifications: An advanced degree in one of the following disciplines agricultural economics, Food Science and Technology, Post Harvest Crop management, Engineering or a related discipline with at least seven years of progressively responsible experience in agriculture development preferably including experience in food grain marketing and storage or emergency preparedness and response. Ability to write well in English. Knowledge of Kiswahili an asset.

Appendix 3:
See below

Appendix 3: Key Informants Interviewed

Department	Name and Dates	Position	Contact Details
1. Office of the Second Vice President. Disaster Management Department	Mr Ali Juma Hamad 6th March 2012	Director of Disaster Management Department	+255 777 429 269 doe_znz@yahoo.com
2. Office of the Second Vice President. Disaster Management Department	Mr Ameir M Ussi 6th March 2012	Head of Planning and Research Unit	+255 773 510 914 ameiriussi@yahoo.com
3. Ministry of Agriculture and Natural Resources	Mr Affan O. Maalim 21st February 2012	Principal Secretary	+255 777 420 186 aomaalim@gmail.com or a.maalim@zantel.com
4. Ministry of Agriculture and Natural Resources	Mr. Juma Ali Juma 21st February 2012	Deputry Principal Secretary Agriculture	+255 777 414 573 J_alsaady@ yahoo.com J_juma@hotmail.com
5. Ministry of Agriculture and Natural Resources	Ms Mansura Kassim 22nd February 2012	Director National Food Security and Nutrition Department	+225 777 277 747 almansura@yahoo.com or almasala@gmail.com
6. Ministry of Agriculture and Natural Resources	Mzee Mohamed Mzee 24th March 2012	Head Statistical Unit	+255 777 470 446 mzeemohamed@hotmail.com
7. Ministry of Agriculture and Natural Resources	Dr Juma Malik Akil 23rd February 2012	Director Planning, Policy and Research Department	+255 777 417 929 Juma.akil@gmail.com or j.m.akil@zanlink.com
8. Ministry of Agriculture and Natural Resources	Mr Mberik Kashid Said 27th February 2012	Director Agricultural Extension Department	+255 777 424 578
9. Office of the Chief Government Statistician Zanzibar	Mr Mohamed H,Rajab 5th March 2012	Chief Government Statistician	+255 777 415 764 hafidh_tz@yahoo.co,
10. Ministry of Trade,	Mr.Said Khamis	Trade Officer	+255 773 318 368

Tourism and Investment	23rd February 2011		sideakh@yahoo.com
11. Ministry of Trade, Tourism and Investment	Mr Shereke Haji Nassor 23rd February 2012	Trade Officer	+255 777 872 437 hammar45@hotmail.com or hammar45@gmail.com
12. Ministry of Trade, Tourism and Investment	Mr. Hamza A. Hamza 21st March 2012	Statistician Officer	+ 255 774 127 214
13. Tanzania Red Cross Society	Mr. Ubwa S. J. Suleiman 12th March 2012	Zanzibar Coordinator – Zanzibar office	+255 777 463 198 ubwas@hotmail.com ubwasuleiman@tres.or.tz
14. National Food Reserve Agency – Tanzania Mainland	Mr Charles Walwa 2nd March 2012	Chief Executive Officer	+ 255 22 2864069 + 255 754 478 165 cwalwa@gmail.com
15. National Food Reserve Agency – Tanzania mainland	Mr Joseph Peter Ogonga 2nd March 2012	Principal Economist	+255 717 377 192 peter_ogonga@yahoo.co.uk
16. Zanzibar State Trading Corporation	Mr. Amri Mmanga 21st March 2012	Estate Manager	+255 733 724 504
17. Investment Promotion Authority (ZIPA)	Mr. Shariff A. Shariff 13th March 2012	Director, Investment Facilitation & Development	+255 773 131 818 sharriffsharrif@hotmail.com
FOOD AND AGRICULTURE ORGANISATION			
18. FAO Tanzania	Ms Diana E, Tempelman 20th February 2012	FAO Representative in Tanzania	+255 754 250 350 Diana.Tempelman@fao.org
19. FAO Tanzania	Ms Aisja Frenken 20th February 2012	Emergency Response and DRR/DRM Officer	+255 718 111 177 Aisja.Frenken@fao.org
20. FAO Zanzibar	Mr. Ali Haji Ramadhan 21st February 2012	National Coordinator Zanzibar Sub Office	+ 255 777 434 058 AliHaji.Ramadhan@fao.org alihaji124@hotmail.com
21. FAO HQ Rome	Dr Suffyan Koroma 27th March 2012	Senior Economist – Marketing Division (EST)	Suffyan.Koroma@fao.rg +393480828833 + 255 789 869 191

Appendix 4 : Focus Group Discussions and Travel itinerary

Table1. Focus Group Discussion in Pemba: Ministry of Agriculture and Natural Resources Senior Staff met on 8th May 2012

Name	Position and Department	Contact Details
1. Dr Suleiman S Mohamed	Officer- in – Charge	+255 744 277 681 suleshehe@yahoo.com
2. Mr. Rubea Mohamed Ali	Head, National Food Security and Nutrition Department	+255 777 453 224 rubea67@yahoo.com
3. Mr. Abdalla Juma Khamis	Head, Department of Planning Policy and Research	+ 255 773 186 448
4. Mr. Mbarouk Ali Mgau	Head, Department of Irrigation	+255 773 711 214 mgau_69@yahoo.com
5. Mr . Amour Juma Mohammed	Head, Department of Agriculture	+255 777 454 937 amour_mohammed@yahoo.com
6. Mr Issa Masour Bakar	Head, Department of Human Resources Management	+255 773 865 017 Issa.bakar@yahoo.com
7. Mr Suleiman Atik Suleiman	District Multi- sectoral Coordinator Food Security and Nutrition Department	+255 777 500 626 aticsule@yahoo.com

Table2. Focus Group Discussion in Unguja with Private Rice Importers and Traders , met on 12th March 2012

Company Name	Contact person	Location and Contact
1. Bombay Bazaar Company ltd	Mr. Abdul-Ghafur Ismail	+255 777410 960 MLANDEGE
2. Bopar Enterprises Ltd	Mr. Said Nassir	+255 774 245 555 MALINDI
3. Gago Store	Mr Ali Shaibu	+ 255 777 412 452 DARAJANI
4. Zanzibar National Chamber of Commerce Industry and Agriculture (ZNCCIA)	Mr Iddi Othman Iddi Membership Service Manager	+ 255 24 223 4713 + 255 777 418 205

Table 3 Travel Itinerary

Date	Travel	Purpose
19 th February 2012	Harare to Dar es Salaam via Nairobi	Report for assignment
20th February 2012	Dar es Salaam	Briefing at FAO office Tanzania
21st February 2012	Dar es Salaam to Zanzibar	Report to assignment
2nd March 2012	Zanzibar to Dar es Salaam Dar es Salaam to Zanzibar	Key informant interviews at the National Food Reserve Agency Tanzania
7th March 2012	Zanzibar (Unguja) to Pemba	Key informant interviews and tour of storage facilities and port facilities at Wete and Mkoani
8th March 2012	Pemba to (Unguja) Zanzibar	Key informant interviews and tour of storage facilities and port facilities at Wete and Mkoani
11th March 2012	Visit to Kizimkazi	Farms tours and Food Security awareness launch by Department of Food Security and Nutrition
13th March 2012	Visit to ZIPA	Inspection of storage facilities
15th March 2012	Zanzibar Seaport Bandarini	Inspection of Storage Facilities
16th March 2012	Unguja Districts	Inspection of Storage facilities in Mwanda Kibokwa, Kilombero, Bambi Cheju
21st March 2012	Malindi and Saateni	Visit to ZSTC warehouses in Zanzibar urban
30th March 2012	Zanzibar to Dar es Salaam	Report back
31st March 2012	Dar Es Salaam to Harare via Nairobi	Return to Home base

NB. The days when I was not travelling I was working on literature review, analysis of data, report writing, preparing for the workshop and compiling workshop presentation

Appendix 5: Description of Livelihood Profiles in Zanzibar

Livelihood Group	Percentage of Total	Description based on average characteristics of the group
Agriculturalists	32	Depend on agriculture for nearly 60% of their livelihood and other activities like livestock production, fishing and small business contributing less than 10% individually
Fisherfolk	15.7	Build their livelihood on a combination of fishing 45% and agriculture 37% and others
Small business	12.7	Depends on the mix of small business activities 52%and agricultural activities 34.6%
Salaried	10.8	Depend on a mix of civil servants 37.7% agricultural work 34.3% Others are salary earning 7.4% small business 7.2% and livestock production 5.4%
Casual labour	8.3	Depend on a mix of agricultural work 32.3% daily work 29.9% daily work paid in kind 22.6% small business activities 7.5%
Commerce	3.9	Depend on business and entrepreneur work for 54% of their livelihood and agriculture is also important 31.8%
Aid	4.5	Depend on a mix of aid/gifts in kind or food 42.7% non food 11.1% and agriculture 31%
Agro- pastoralists	8.2	Depend on an equal mix of agricultural 38.4% and livestock production 39.2% with small business contributing 7%
Others	3.9	These are not easily classified as they depend on agriculture 26.8% on "other" work 22.9% artisan work 18.2% and others like small business, transport.

Appendix 6: Crop Supply and Vulnerability data

Table 1; Zanzibar food crops supply situation over 5years

CROPS	2007		2008		2009		2010		2011	
	Production	**Imports**	**Production**	**Imports**	**Production**	**Imports**	**Production**	**Imports**	**Production**	**Imports**
Maize	1930.50	3000.00	1920.16	2000.00	3253.75	1000.00	2937.72	1000.00	3,112.00	
Sorghum	794.00	0	483.55	0	575.32		565.44		565.44	
Rice	8000.00	53000.00	8000.84	45000.00	12000.00	20000.00	14000.00	21000.00	23575.00	
Cassava	76482.00	0	149162.40	0	113892.80		287955.20		284617.00	
Banana	50000.00	0	98616.90	0	85741.20		68542.00		68,657.00	
Sweet Potatoes	9231.00	0	27143.10	0	12615.75		28680.00		28,680.00	
Yams	2274.00	0	6247.45	0	6448.16		5608.14		5,575.40	

Table 2: National food production and deficits in Kcal & MT (2004)

Product	National Production (MT)	**FEV in Kcal	National Production Kcal per year	***National Requirement (per year) (MT)	***National Food Deficit/ Surplus (MT)	***National Food Deficit/ Surplus%
Paddy	20 404	3540	72230	383250	-87859	-81
Cassava	166 266	1530	254387	191625	41021	33
Maize	2515	3650	9180	38325	-7985	-76
Other staples*	77 707	1213	94259	76650	14 517	23
Fish	21 864	950	20771	76650	-58820	-77
	288756	10883	450826	766500	-99126	-41

* Banana, Sweet Potatoes, Yams – average FEV used

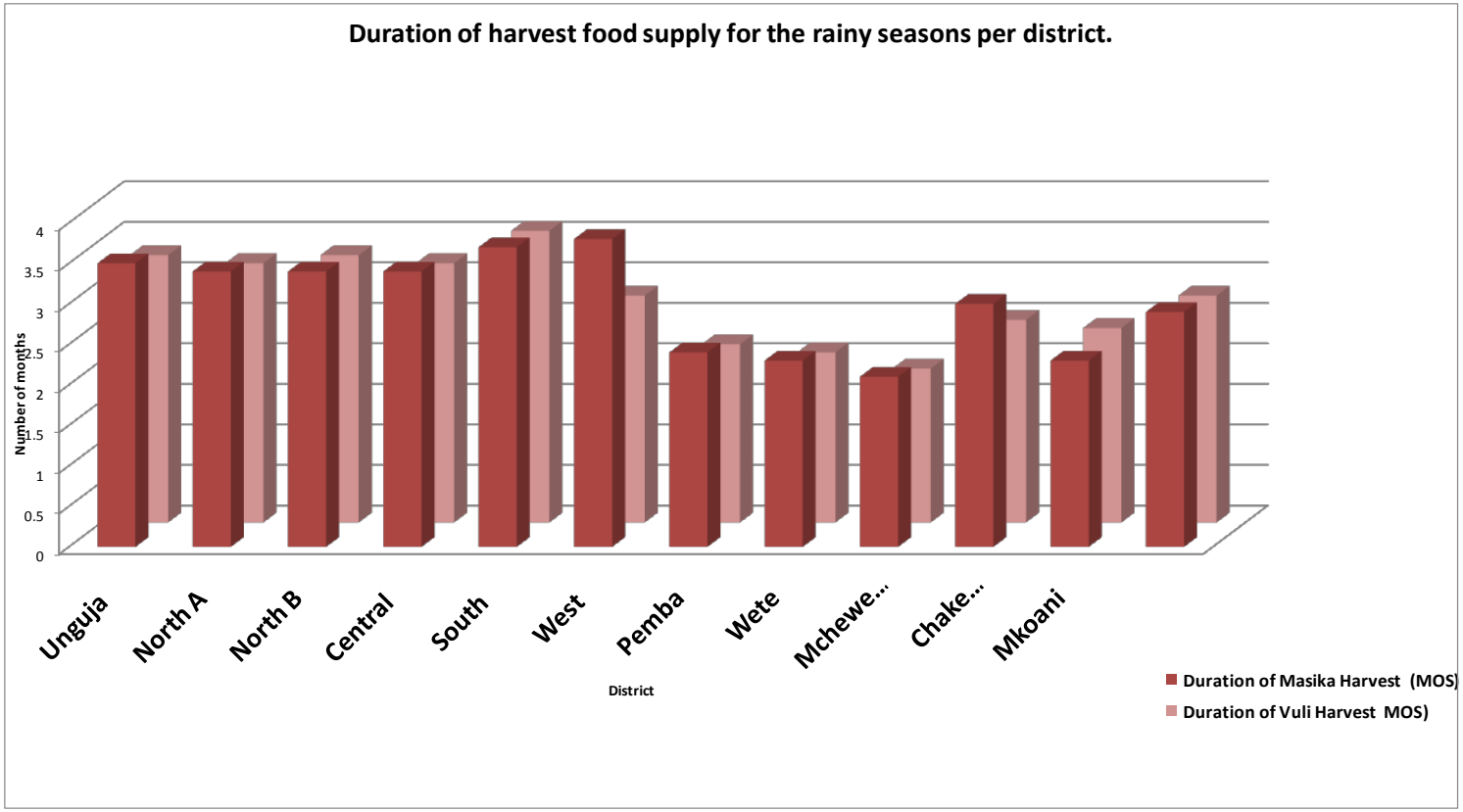
** Extracted from Tables of Representative Values of Foods Commonly used in Tropical Countries (Platt,1985)

*** 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%.

FEV = Food Energy Values

Source; Zanzibar Food Security & Nutrition Situational Analysis June 2006, Ministry of Agriculture, Livestock and Environment RGoZ

Figure 1; Duration of harvests



Appendix 7: Factors that make up the Vulnerability Context

The factors that make up the *Vulnerability Context* are important because they have a direct impact upon people's asset status and the options that are open to them in pursuit of beneficial livelihood outcomes.

• **Shocks** can destroy assets directly (in the case of floods, storms, civil conflict, etc.). They can also force people to abandon their home areas and dispose of assets (such as land) prematurely as part of coping strategies. Recent events have highlighted the impact that international economic shocks, including rapid changes in exchange rates and terms of trade, can have on the very poor.
• **Trends** may (or may not) be more benign, though they are more predictable. They have a particularly important influence on rates of return (economic or otherwise) to chosen livelihood strategies.
• **Seasonal shifts** in prices, employment opportunities and food availability are one of the greatest and most enduring sources of hardship for poor people in developing countries.

Trends	**Shocks**	**Seasonality**
• Population trends • Resource trends (including conflict) • National/international economic trends • Trends in governance (including politics) • Technological trends	• Human health shocks • Natural shocks • Economic shocks • Conflict • Crop/livestock health shocks	• Of prices • Of production • Of health • Of employment opportunities

Source DFID (1999) Sustainable Livelihoods Guidance Sheet, Section 2. Department of International Development

Appendix 8; Grain Reserve Quantities in selected Sub Saharan Countries

Countries	Grain Reserve Size	Current Population Size	Vulnerable Population
ETHIOPIA	1979 = 60 000 1983 = 180 000 1987 = 204 600 2004 =407 000 2010 = 407 000	90 873 739	5 200 000 - 6 300 000 in 2008 in addition to 8 000 000 chronically food insecure and on government safety net programs (2011) Somali Refugees – 150 -200 000
KENYA	1997 = 225000 2008 = 270 000 2010 = 360 000 2011 = 540 000 2012 = 720 000	41 070 934	2 400 000 to 3 700 000 in 2011 drought Refugees 482 000 – 500 0000
TANZANIA	1991= 150 000 1999 = 150 000 2010 =180 000 2011 = 200 000 2015= 400 000	44 841 226	1 000 000 – 1 800 000 Estimates are that 47% of rural population are poor
MALAWI	1987 = 80 000 1997 =180 000 1999 =160 000 2003 = 60 000	15 879 252	500 000 – 2 800 000 2001 drought – 5 000 000 people affected
ZAMBIA	1980s =180 000 1997= 225 000 2011=1 300 000	13 881 336	2 600 000 – 3 000 000 2001 drought 4 700 000 affected

ZIMBABWE	1997 = 936 000 500 000 physical stock 436 000 Fund	12 084 304	1 300 000 – 3,000 000 2001 drought 6 700 000

Sources of information

1. Doctors without Borders Appeal 2010 Ethiopia; Material relief assistance and services (072010): 100%
2. Oxfam Canada Appeal 2010 Ethiopia; Material relief assistance and services (072010): 100%
3. IFPRI DP 01054 2010
4. USAID fact sheet on Kenya Drought 23 June 2011
5. Famine Early Warning Systems Network Report Kenya Dekadal Food Security Monitoring 22 August 2011
6. International Federation of Red Cross Emergency Appeal n° MDRTZ012 Tanzania: Drought and Food Insecurity 28 September 2011
7. Famine Early Warning Systems Network Report : Malawi Food Security Outlook April – September 2010.
8. World Food Summit November 1996 Rome Italy Malawi address by The Right Honourable Justin C. Malewezi Vice – President of the Republic of Malawi
9. Anandita Philipose 2007 Policy Implications of Drought and Food Insecurity in Malawi and Zambia Case Study# 7-3 of The Program " Food Policy for Developing Countries; The role of Government in the Global Food System
10. A. Mukhebi, S. Mbogoh and K. Matungulu (2011) An Overview Of The Food Security Situation In Eastern Africa; ECONOMIC COMMISSION FOR AFRICA SUB-REGIONAL OFFICE FOR EASTERN AFRICA

Appendix 9; Summary of Food Reserve Agencies in different countries and how they operate.

ETHIOPIA

The government of Ethiopia decided to establish a strategic grain reserve in the 1980s and continues to maintain to date having gone through a number of administrations and substantial market liberalization since 1991. The current Emergency Food Security Reserve Administration (EFSRA) was established in 1982. Studies carried out by the Food and Agriculture Organization since the 1970s and subsequent studies by the World Food Program in conjunction with the Overseas Development Administration in the 1987 have led to revisions over time on the stock levels and management of the reserve. Over the years EFSRA has been very effective in responding to a number of droughts and emergencies from the 1980 upto the 2003. The strategic reserve study in 1979 carried out by FAO recommended the building up of 60 000 tons in one year and increasing this upto 180 000 tons over four years. The ODA study in 1987 used a ration of 400gram per person for 95% of the vulnerable population to recommend a revision of the stock to 204 600 tons The latest revision on the quantity was carried out in 2004 when the government decided to increase the stock to 407 000 after the 2000-2003 drought. There is unofficial stated policy discussion started in 2011 to raise this to 1.5million tons in coming. The Institute of Food Policy Research Institution carried out recent studies in Ethiopia to assess the institutional designs and operational efficiency of the reserve. The findings of the study are meant provide the Ethiopian government with an important review of the reserve operation which would also be relevant to other initiatives in the region and form a reference base. The increase to 1.5 million is combined with an establishment of an enhanced mandate for the EFRA

of which includes the agency's larger contribution to price stabilization on the market. However the IFPRI study shows that given the current institutional settings and logistics the decision to increase the reserve can lead to substantial loss of efficiency, an increase in subsidy bills and along with the potential disruptive impacts on the grain market.
The study has shown that consistent to its mandate EFRSA has proved to be successful in addressing emergencies in several instances since the 1990s. The success of EFRSA has resulted from three key factors of the design of the program as reported by the study;

1. The organizational structure and management of EFSRA reflects a high level of government commitment, participation of key stakeholders and clearly defined rules of procurement and distribution
2. EFSRA does not engage in the buying and selling of cereal like in similar programs in other countries. It only serves as a custodian of the grain with key responsibility of lending grain to the relevant government and non- governmental agencies following the well defined official guidelines.
3. EFSRA has maintained a reasonably smaller stock with very little impact on the market prices. However, this will change if the stock level is increased significantly. The study results suggest that increasing the stock for price stabilization purposes will depress the domestic prices, increase the costs and adversely affect the evolving private sector in the cereal value chain where millions of people make their living.

EFSRA has also performed well in terms of its stock management and hence maintenance of quality. The study found out that 62-70% of EFSRA stocks were less than three months old during the 2005 -2006 and 2007-2008, with associated costs of $34.84 per metric ton. This is a level of stock management efficiency that is better than that in several countries in Africa and Asia where similar analysis were carried out

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Sources;

1. Shahidur Rashid and Solomon Lemma (2011) Strategic Grain Reserve in Ethiopia Institutional Design and Operational Performance. International Food Policy Research Institute (IFPRI) discussion paper No. 01054 Markets, Trade and Institutions Division
2. John Lynton – Evans 1997 "Strategic Grain Reserves – Guidelines for their establishment, management and operation. FAO Agricultural Services Bulleting -126.

KENYA

In Kenya the Strategic Grain Reserve was established legally in 2002 through the Exchequer and Audit Act CAP 412 Strategic Grain Reserve Fund). The fund was expected to purchase and maintain upto 8 million bags of grains for National Food Security. The stock was supposed to cushion the nation against severe food shortages as well as to assist in stabilization of local prices of grain. The SGR Trustees are the executive managers of the SGR. These were drawn to include the Permanent Secretaries for Ministry of State for Special programmes (MOSSP), Agriculture, Finance, Livestock, Cooperative and Marketing and the Managing Director, National Cereal and Produce Board. The Permanent Secretary of MOSSP chairs the Trustee meetings. A Fund Management Unit was also set up to be the technical arm of the SGR management. The National Cereals and Produce Board manage the operational modalities of the SGR procurement and distribution of the SGR besides managing its commercial stocks. The Fund Management

Unit and the Trustee ensure the separation of activities of the SGR from that of the Commercial entity.

The Kenya Strategic Reserve was set up in 2002 and the quantities that were set up then have been steadily increasing over the years due to increased number of the food insecure people in the population and the added influx of refugees from the Northern neighbours of Sudan and Somalia. The SGR stocks limit rose from the original 3million 90kg bags to the current 8 million 90kg bags. This is the maximum quantity required and set by government to cover its social obligations. In early 2011 due to the drought that occurred the available stocks fell to 3million 90kg bags and the government made initiatives to build back the In reality Kenya maintains a buffer stock which also serves as a reserve because the National Cereals and Produce Board manages the SGR but it also stocks its own commercial stocks although separation of activities are enforced the arrangements presents complications since the stocks are combined. Whatever is instituted on the commercial stock has an impact on the national reserve unintentionally or intentionally.In Kenya, withdrawal decisions are made by the NCPB's Fund management unit, but there is no clear guidelines as to how much can be withdrawn under various circumstances.[3]

Source;

1. Ministry of State for Special Programmes Website. The Government of Kenya. http://www.sprogrammes.go.ke
2. TradeMark Southern Africa website Daily Nation January 2011 publication http://www.trademarksa.org/news/kenya-grain-reserves-fall-three-million-bags
3. Shahidur Rashid. Grain Reserves, Social Safety Nets, and Productivity Linkages: Conceptual Issues and Some Empirics from Africa; International Food Policy Research Institute; Paper Prepared for the seminar, *Increasing Agricultural Productivity and Enhancing Food Security in Africa,2011 Addis Abba Ethiopia*

TANZANIA

The Tanzania National Food Reserve Agency (NFRA) was established through a Ministerial Order in 2008 with its headquarters in Dar es Salaam. The establishment of NFRA originated from the transformation of the Strategic Grain Reserve (SGR). The main role of the Agency is to procure, reserve food stocks and respond to food shortages as opposed to roles of the SGR which only focused on maize grain. The Agency still remains a public organization which strives to work for the public interest and to satisfy customers' needs and tax payer's interest. The Agency manages its funds properties and business. The main function of the Agency is to procure and maintain an adequate food stock to enable the Government to respond to food shortages in draught and other calamities that may befall the population. Annually about a third of the SGR is recycled base on previous experience. The infrastructure storage capacity is 240 000 tons but on average since 2008 the stocks have been 150 000 to 180 000 tonnes. The Agency have been given a mandate by government to increase the SGR maximum stock to 400 000 by 2015 in responds to population growth, increase frequency of natural Disasters and increasing proportion of the vulnerable and the food insecure of the population. At the market share proportion of about 200 000 tons per season the agency feels it does not have enough impact on the market prices and therefore by and large the market determines the producer

and selling prices. An early warning system is used to estimate the recycling and procurement plans for the coming season and the release of the SGR is determined by a National Committee that is chaired by the Prime Minister. The Committee receives information and recommendations from the early warning unit and management at the agency. The Authority to release the SGR is given by the Prime Minister. The main customers Government for the provision of food aid to the vulnerable, small scale millers and government Institution like prisons. Bigger Millers and other processors participate directly on the market and buy their own stocks and turn to the SGR when they run out of their stock. However, the SGR cannot be drawn below 100 000 tons at any given time.

Source of information;
1. Key Informant interview with the Chief Executive Officer (NFRA) 2nd March 2012.
2. The Executive Agency (The National Food Reserve Agency) (Establishment) Order 2008.Tanzania Government Notice No. 81 published 13/06/2008.

ZAMBIA

Food Reserve Agency (FRA) was established as the implementing arm of the Food Reserve Act of April 1995 with its headquarters in Lusaka. The Agency became active on the Zambian maize market in July 1996.The Agency was formed to be the organization that efficiently manages sustainable National Strategic Food Reserves, ensuring National Food Security and Income through the provision of complementary and high quality marketing and storage services, in line with international standards. At the outset the FRA purchased grain at the beginning of the marketing season for release at market value under the circumstances that the private sector was unable to meet the demand for grain. The total quantity to be purchased each year was determined by the FRA on the basis of the country's food outlook and the financial resources it commanded at the time. All purchases and releases were made at the prevailing market paces with the full participation of the private sector through open tender. The understanding was that the FRA was not a buyer of last resort neither did it buy commodities at guaranteed prices, there was no floor or ceiling prices and it had no mandate to operate a system of price stabilization. However this seems to have changed over the years and other factors have been reconsidered and a different scenario operates currently.

The FRA buys maize at pan-territorial prices in major maize producing areas. It then exports the maize or sells it domestically at prices determined by tender, at auction, or administratively. In deficit production years, the Agency often imports maize and sells it to local millers, local communities and Disaster Management and Mitigation Unit (DMMU) for relief distribution purposes. The FRA is a major player in the Zambian maize market and substantial public sector resources are devoted to its activities. A study carried out recently by the Food Security Project – Policy Synthesis (2011) in Zambia on the effects of the FRA on the Zambian market show that some of the decision made on prices have tended to stabilize market prices but to the detriment of the poor and vulnerable groups especially in urban areas. Below are some **key points** to come out of the study which maybe relevant to other SGRs' operations.

1. The Food Reserve Agency's (FRA's) presence in the domestic maize market increased considerably over the last decade. The FRA is currently the dominant buyer of smallholder maize

in Zambia. For example, during the 2010/11 marketing year, the FRA purchased 83% of smallholders' marketed maize.

2. Since 2002/03, the FRA pan-territorial maize buy price has consistently exceeded average wholesale prices, particularly in major maize-producing areas such as Choma, Kabwe, Chipata, and Kasama. The above-market buy price makes it difficult for the FRA to export maize unless treasury funds are available to subsidize exports. For example, FRA exports in 2007/08 and 2010/11 generated a trading loss.

3. Estimation results suggest that between July 2003 and December 2008 the FRA's activities raised mean maize market prices by 19% in Choma (which represents a major maize production area) and 17% in Lusaka (which represents a major maize consumption area).

4. FRA activities stabilized maize market prices throughout the July 1996-December 2008 study period. For example, between July 2003 and December 2008, the Agency's activities are estimated to have reduced the coefficient of variation of maize market prices by 34-36%.

5. The maize market price raising and stabilizing effects of FRA policies are regressive.Higher maize prices harm urban consumers and the nearly 50% of smallholders that are net buyers of maize. Higher maize prices help large-scale farmers and a small number of relatively better off smallholders. The more stable maize prices brought about by FRA activities also disproportionately benefit relatively wealthy households.

This above report however, does not give the impact the food reserve has had on the other aspects of food security in term of food supply, access and utilization for the vulnerable section of the population. It just concentrated mostly on the marketing effects and the operational inefficiencies of the Food Reserve Agency. It must also be noted that at its inception the FRA had a clear mandate that would have prevented it partaking in the issue of price stabilization but due to changes in governments and also the different perceptions brought about by these changes the mandate of FRA changed and along with these changes are the consequences.

Source;

1. Nicole M. Mason and Robert J. Myers (2011) The Effects of the Food Reserve Agency on Maize Market Prices in Zambia. POLICY SYNTHESIS: FOOD SECURITY RESEARCH PROJECT – ZAMBIA. *Ministry of Agriculture & Cooperatives, Agricultural Consultative Forum, Michigan State University – Lusaka, Zambia*No.50 (Downloadable at http://wwwaec.msu.edu/agecon/fs2/zambia/index.htm) December 2011
2. John Lynton – Evans 1997 "Strategic Grain Reserves – Guidelines for their establishment, management and operation. FAO Agricultural Services Bulletin -126.

MALAWI

In 1981 the government of Malawi asked the Agricultural Development and Marketing Cooperation (ADMARC) to establish a Strategic Grain Reserve (SGR). This was part of the government's strategy to end costly interventions in the maize market while providing targeted food subsidies to the poor. Historically besides being costly, intervention through the ADMRC distorted prices and other market signals and this impeded the development of the market. The government bore the costs of these interventions by repeatedly bailing out the ADMARC. In 1998 the government eliminated the price support operation of ADMARC and mandated it to

operate strictly on a commercial basis. The government also instituted the SGR into the National Food Reserve Agency (NFRA) to handle disaster relief involving the management of the SGR in place of ADMARC. This was done with a clear delineation of the responsibilities of the two agencies

However in 1999 the NFRA engaged in substantial price stabilization activities takeover the price support operations that ADMARC had relinquished. The Strategic Grain reserve at inception and between 1987 and 1999 held stocks that peaked at around 80 000 tons but in 1999 due to engagement on price stabilization the quantity was raised to 167 000 tons. This had serious implications on the costs as the major part of the money used to purchase the grain was from commercial bank loans. Advice from development partners to the government encouraged development of a transparent, rule – based and cost effective food security policy. This led government to commission a study in 2000 to establish the appropriate stock level and the efficient operation procedures for the reserve stock. The study concluded that the maize buffer stock of between 30 000 and 60 000 tons would be sufficient to respond to a localized disaster. The NFRA's deed of trust also changed and its mandate eliminates the possibility of price support and focuses only on disaster relief and

Throughout the 1990s Malawi managed to respond to its natural emergencies but in 2000 - 2003 due to a number of contributing factors that included the inadequate early warning information and depletion of the stocks to levels that were not adequate to respond to drought effect throughout the period. Delays in importation resulted in food crisis in the country in that period. A number of policy lessons can be learnt from the Malawi experience for other countries trying to set up SGRs and these are;

1. The appropriate stock level needs to be carefully established to be able to meet national food security objectives. In Malawi opinion ranged from ranged from 60 000 to 180 000 until a comprehensive study was able to establish the range.
2. Clear guidelines on the operation of the SGR need to be spelt out and enforced right at the beginning with clarity on the exact functions of the reserve, whether it will function for relief activities or include supporting prices. Experience has shown that dual function if not handled in a pragmatic way it can lead to unmanageable costs to the government and at the same time impedes market development in the country.
3. The funding of SGR function should be adequate to support the food security functions mandated to the agency managing the reserve. A clear policy on whether it operates at cost or subsidized is critical to the efficient management of the reserve
4. SGR must be managed in a transparent and efficient manner and should be subjected to regular independent audits[3]

Sources;

1. "Malawi – The Food Crisis, the Strategic Grain Reserve and the IMF", Fact Sheet July 2003 International Monetary Fund, External Relations Department, Public Affairs and Media Relation
2. Paul Thaghata and Solomon Lemma (2010) Price Stabilization and the Strategic Grain Reserves – The Case of Malawi. African Agriculture Market Programme(AAMP) International Food Policy Research Institute(IFPRI)

3. Stephen Devereux 2003 "Policy Lessons from Malawi" Ennonline Issue 18 March 2003

Zimbabwe

In Zimbabwe the Grain Marketing Board (GMB) was established in 1931 under the Maize Control act. The GMB is the country's leading grain trade and marketing organization and historical had the monopoly to handle most grain commodities produced in the country. In the 1980s soon after independence the country embarked on the procuction promotion particularly for small scale farmers. By 1986 the small holder farmers where producing 60% of the maize produce and this boosted the stocks to a point GMB was a net exporter of the maize and became food self sufficient at the time. However the drought of 1992 government realized the need for setting aside emergency and security stocks and discussions to set aside a Strategic Grain Reserve started. In mid 1990s it was decided that the SGR will hold a total of 936 000 tons. Part of the reserve is held as physical stock of 500 000 tons while the remainder is to be held in form of cash. This was set to include both people and livestock needs. Although the GMB is responsible for the SGR it also trades in grains commercially and at times there is not clear distinction between SGR stocks and commercial stocks and this presented a number of challenges during the drought years when deficits were experienced as a result of continued sales that depleted the stocks. During the drought of 2001 the SGR had 390 000 tonnes and this declined to 150 000 tons in 2002. Extreme food shortages started in the 1999 season, and peaked in 2002 when about 6,700 000 where at risk of food insecurity. For the past 10 years Zimbabwe has failed to achieve the strategic grain reserve quantity due to successive droughts and other political challenges that resulted from the land reform of 2000. In 2011 the SGR was holding about 450 000 tons and the forecast for the coming season indicates that there will be a serious food shortages as a third of the crop has been written off due to erratic rains. The means Zimbabwe needs to import about 1,500,000 tons to replenish the SGR and meet its social obligations.

Sources

1. Strategic Food Reserves; Desk Review January 2011 Project Report:- Wageningen UR Center for Development Innovation CDI
2. P. Golob, Rick Hodges, Graham Farrel Crop Post Harvest; Durables
3. Grain Marketing Board Zimbabwe ; Website

Examples of Successfully Run SGRs in Africa

Mali and Ethiopia are examples of successful "food governance" systems in Africa, both of which face highly variable rainfall patterns and rely on rain-fed grain production. Mali, the more arid of the two, has held strategic reserves through the Programme de Restructuration du Marché Céréalier [Program for Restructuring the Cereal Market] or PRMC since 1981. The PRMC successfully mitigated the 2004-2005 drought and subsequent locust invasion that devastated neighboring Niger. PRMC phased out its role as an intervener in the grain market and bolstered its role as a provider of market information and social safety nets via emergency grain stock. After the 2004-2005 period of drought, PRMC adjusted their reserves from 35,000 metric tons

to hold 69,000 metric tons of cereals, rice, and coarse grains. This adjustment was made in order to keep supplies low enough to avoid distorting grain market prices, but large enough to cover food shortages as experienced during the 2004-2005 drought. However, it is important to note that currently the Sahel region is going through serious food shortages as a result of successive droughts and Mali has been equally affected.

Similarly in Ethiopia the Emergency Food Security Reserve Administration (EFRSA), an independent government agency, handles emergency food reserves and has mitigated several scenarios since the severe crisis of the 1970s. Recent efforts to extend social safety net features, via the Productive Safety Net Programme (PSNP), have met considerable success using combinations of cash and work transfers. Separating the strategic reserves from the grain marketing board has been credited as a primary reason for the success of PRMC and EFRSA.

Source

1.Mwangi S. Kimenyi, Nelipher Moyo, A Jessica Smith, 2011, Regional Approach to Managing Africa's Food Shocks; The Brookings Institution

2.IRIN humanitarian news and analysis January 2008 GLOBAL: An Ethiopian solution to costly food aid http://www.irinnews.org/Report/77118/GLOBAL-An-Ethiopian-solution-to-costly-food-aid

Appendix 10; Calculation for the Size of the Emergency Food Reserve

A standard food ration is that which covers the daily per capita energy requirement (2,100 kcal) and is adjusted for the population under consideration.[1] FAO in its 1997 guidelines for establishment, management and operation of SGRs states that a total of 160 -175 kg of cereals is required to meet this energy requirement.[2] This converts to 480grams per day for the 175kg per person per year. The UNICEF/UNHCR/WFP/WHO guidelines give a range of possible combination and the cereal recommended range from 350-450 grams depending on the other contributing food items included in the ration (See table 7 above). An average of 400grams was used in the calculations. The ration of 400g was also used in Ethiopia for the SGR calculations The Disaster Management Department in the 2nd Vice President's Office in Zanzibar working together with the Red Cross during the 2008 drought used 500g per person per day as their ration size. However for calculating the EFR quantities the above rations have to be adjusted according to other sources of energy like cassava, yams and bananas which the population might be relying on. For Zanzibar these three crops are used concurrently with rice in the daily consumption by both urban and rural populations. Therefore the following assumptions were made for the calculations;

1. **That the population of Zanzibar now stands at 1 358 792 based on the 2002 censors and at a growth rate of 3.1%**
2. **That the vulnerable proportion of the population in Zanzibar is 30% which converts to 407,638**
3. **That rice as one of the staple foods in Zanzibar contributes 50% of the cereal foods consumed**
4. **That rice is the most preferred staple food by the population and has already been chosen as the choice crop for the food reserve through the Act**
5. **That the nutrition requirement are based on Internationally accepted standard of -2100kcal/person/day**

-10 percent of total energy provided by protein
-17 percent of total energy provided by fat
-Adequate micronutrient intake

6. **That the lead time allowable for importation of food is 90days**
7. **Practical guidelines from organizations like UNHCR, UNICEF, WFP , FAO,WHO and the SPHERE Project : Human Charter and Minimum Standards in Humanitarian Response 2011.on the ration quantities to achieve the nutrition requirements.**

Table1. Calculations assuming rice contributing only 50% to other cereals and starchy foods and 30% population (407 638)

Reference used	Ration in grams	50% Rice contribution	Total requirement for 90 days in Kg /person	Total for 30% pop In Tons
ZDMD	500	250	22.5	9 172
FAO	480	240	21.6	8805
UNHCR, UNICEF /Ethiopia	400	200	18.0	7337
Total				25314
Mean				8438

Table 2. Calculations assuming only rice is available as the main cereal source and 30% population (407 638)

Reference used	Ration in grams	Total requirement for 90 days in Kg/person	Total for 30% pop In Tons
ZDMD	500	45.00	18344
FAO	480	43.20	17610
UNHCR, UNICEF/ Ethiopia	400	36.00	14675
Total			50629
Mean			16876

However, when one considera the most recent shock that affected Zanzibar in 2008 and created food shortages, the population at risk rose to 700 000 people which is 51% of the population. From studies carried out it is also estimated that 49% of the people in Zanzibar are considered poor which supports what happened in 2008. It is safe to assume that in a worst case scenario 51% of people being vulnerable is a reality.

Table3. Calculations assuming rice contributing only 50% to other cereals and starchy foods and 51% population (700,000)

Reference used	Ration in grams	50% Rice contribution	Total requirement for 90 days in Kg	Total for 51% pop In Tons
ZDMD	500	250	22.5	15750
FAO	480	240	21.6	15120
UNHCR,UNICEF/Ethiopia	400	200	18.0	12600
Total				43470
Mean				14490

Table 4 Calculations assuming rice is the only available as the main cereal source and 51% of the population (700 000)

Reference used	Ration in grams	Total requirement for 90 days in Kg	Total for 51% pop In Tons
ZDMD	500	45.00	31500
FAO	480	43.20	30240
UNHCR, UNICEF/ Ethiopia	400	36.00	25200
Total			86940
Mean			28980

Table 5. Summary of Calculations

Proportion of Population	Minimum Amount At 50%	Maximum Amount 100%	Mean
407 638 = (30%)	8,438	16,876	12,657
700 000 = (51%)	14,490	28,980	21,735

Based on the calculation above the recommendations I would give to government is that for now the minimum requirement for the Emergency Food Reserve should be the mean for the minimum and maximum for 30% of the population which is 12,000 tons and its maximum be the mean of the minimum and maximum for 51% of the population at 22,000 tons. When operating the SGR it should never go below 8000 tons and not above 30,000 tons. In the first year of operation the quantity should reach 12 000 tons and build up to 22 000 by 2016 when local production has surplus to support the EFR quantities.

Pemba has a higher level of vulnerability and poverty than Unguja and it is recommended that 60 percent of the SGR be stored in Pemba and 40 percent in Unguja

1. Human Charter and Minimum Standards in Humanitarian Response Handbook 2011 edition – The Sphere Project , United Kingdom
2. John Lynton – Evans 1997 "Strategic Grain Reserves – Guidelines for their establishment, management and operation. FAO Agricultural Services Bulleting -126.
3. Graeme A Clugston UNICEF/UNHCR/WFP/WHO guidelines on food rations and nutrition in emergency

Appendix 11: Condition of Warehouses and Sea port

Photo 1; Warehouse in Wete by the seaport

Photo 2; A warehouse in the Kilombero area

Photo 3 & 4; Sea Port at Wete; (Only small cargo ships can offload)


ARAFAT
高圧ガス

Appendix 12; EFR Management Responsibilities and Major Job responsibilities and requisite qualifications of Staff

The National Food Security and Nutrition Council as per the Act;

- The Council shall be responsible for overseeing the implementation of the Food Security and Nutrition Policy and programme to achieve the stated goals by performing the following functions
    1. Ensure availability and equitable distribution of resources for effective implementation of food security and nutrition policy and programme;
    2. Monitor progressive realization of right to food as specified in the act;
    3. Guide the Steering Committee on the best was of attaining the object of the Act;
    4. Ensure accountability of key Ministries in the implementation of the Act;
    5. Decide on behalf of the Government a crisis situation warranting Zanzibar Food Reserve release , and to what level thereof;

The National Food Security and Nutrition Steering Committee: Meets four times a year

The Steering Committee shall be an advisory body to the Council and the Department of Food Security and Nutrition and its function as given in the act are;

1. Safe guard effective communication and policy coordination;
2. Guide, direct, approve and supervise activities of the Council as provided by the provisions of the Act;
3. Provide guidance on the implementation of the Policy according to defined priorities and implementation strategies and on developing key food security and nutrition strategies;
4. Advice the Council and provide expert opinion on matters related with and incidental to the implementation of the policy and programme;
5. Approve food security and nutritional annual work plans and budget proposals from key Ministries;
6. Promote efficient allocation and utilization of resources for the achievement of policy goals and targets and provide guidance on resources mobilization;
7. Monitor the implementation of the Zanzibar Food Security and Nutrition Policy and Programme and make adjustments if necessary;
8. Make recommendations on future prospect of food security and Nutrition interventions , and identify areas that need special attention;
9. Prepare agenda for the meetings of the Council; and
10. Invite any person on an ad- hoc basis to assist it in carrying out its functions

Director of Department of Food Security and Nutrititon

The Director shall be a Chief Executive Officer of the Department and shall be responsible for:-

1. Management of the day to day activities subject to the direction of the Steering Committee as the case may be .
2. Determine supporting staff for the Department as deemed necessary
3. Day to day coordination of Departmental activities.
4. Serve as Secretary to the Steering Committee.
5. Keep and maintain records on the location of food storage centers or zones in Zanzibar under the department's ownership or custody.
6. Keep and maintain all statistical data concerning food security and nutrition situation, weather and other early warning facilities.
7. Keep and maintain any other documents or data which help to facilitate the functions of the reserve.

Establishment of the Emergency Food Reserve

According to the Act in Section 25 (1) the Zanzibar Food Reserve to be administered by the Department will be established and its purpose is stated as follows;

- Ensure reliable supply of food in Zanzibar
- Meet local shortfalls in the supply of food
- Meet any other food emergencies caused by drought or floods or by any other natural disaster, as may be determined by the council; and
- Solve problems relating to supply of food in Zanzibar

This leads to the recommended structure of the actual day to day management of the Emergency Food Reserve having seen the decision making bodies indicated above. Fig 8 in the report gives a schematic representation of how the reserve will be managed.

A. <u>EFR Manager: Job description</u>

Qualifications

- MSc degree in Agricultural Economics, Business or Operations Research.
- BSc Agriculture (Hons).
- Relevant Post graduate diploma will be an added advantage.

Core Competencies

- Good organizational and coordination skills
- Knowledge of grain reserve business and processes
- Strategic management skills
- Risk management Skills
- Innovative and Results oriented
- Good written communication and interpersonal skills

- Can work with minimum supervision
- Willingness to learn new things

Experience

Not less than 5 years experience in a managerial position 3 of which should be in senior management.

Major Job Responsibilities

1. Efficient management of the Strategic Grain Reserve.
2. Provide leadership to all staff in line with the Department's Policy.
3. Design the SGR policies and ensuring their implementation in line with the Department's goals.
4. Develop quality standard for the SGR commodities and ensuring maintenance of these standards.
5. Discharge services to clients through the depots in the most efficient and economical manner and in accordance with the laid down standard and procedures.
6. Coordinate the importation of grains and ensuring adherence to the relief distribution plans/schedules.
7. Plan grain release programs in the most cost effective way ensuring minimum interference with local markets.
8. Prepare and administer a cost effective handling plan taking cognizance of the vulnerability assessment and crop production forecasts.
9. Ensure capital developments and maintenance and repair on all buildings and mechanical assets as directed in the respective manuals.
10. Ensure adherence to tender procedures at the procurement stage as laid down by the Steering Committee.
11. Formulate, and Monitor loss control policy for the SGR with assistance of the Director and the Risk and Management manager.
12. Attends to national, regional and international strategic meeting and workshop as and when deemed necessary.
13. Prepare weekly, monthly and annual reports for the SGR in consultation with all the SGR departments.
14. Prepare an EFR budget annually for approval by the Director.
15. Conduct annual staff appraisal as per department policy.
16. Participate and provide technical input in the out sourcing of the following services in collaboration with tender board and the finance and administration officer;
    - Fumigation Services
    - Machinery, Installations and Building maintenance
    - Canteen Services
    - Office Cleaning Services
17. Perform any other duties as directed by superior.

B. Depot Managers: - (Unguja and Pemba) Job description

Qualifications

- 5 'O' Levels including English and Maths
- Degree or Higher National Diploma in Agriculture, Business Studies, Marketing or equivalent.
- Full CIS or any other relevant qualification
- Possession of a valid driver's license

Core Competencies

- Excellent grain handling skills
- Knowledge of the grain reserve business and processes
- Good with figure and risk management skills
- Good team management and supervisory skills
- High Self drive and good business sense
- Good communication and interpersonal skills

Experience

- At least 5years experience working in management, storage and handling of grain

Major Job Responsibilities

1. Provide leadership to all depot staff permanent and seasonal as per Department policy
2. Plan the depot's annual grain handling plan.
3. Prepare the depot's annual budget in collaboration with the finance and administration officer.
4. Prepare monthly depot income and expenditure accounts in liaison with the Finance and Administration Officer.
5. Participate in the importation planning and scheduling taking considering the distribution and timing requirements.
6. Carry out physical checks of the number of bags in a stack once during the course of building and again on completion of stacks.
7. Ensure physical stock count daily and weekly as well as handover/ takeover formalities at the end of each day by the Depot Supervisor and the Security Guard.
8. Ensure the weekly completion and submission of infestation report to the Quality Assurance Officer.
9. During release of grain for relief visit district distribution points once weekly to check on procedures, books , physical stock and accuracy of scales
10. During release programs follow up on all depot transfers receipts with receiving district distribution points 24hrs after dispatch telephonically or in writing.
11. Developing and maintaining sound relations with importers and buyers of tendered grains and the general population interacting with the depot and receiving points.

12. Ensure proper administration of personnel records for all depot staff as per the laid down procedures.
13. Set performance targets for all depot staff adhering to laid down procedures
14. Submit monthly staff returns to the Personnel and Salaries Officer.
15. Conduct daily roll calls for staff and disseminate information on all circulars and set daily plans.
16. Check time sheets, attendance register and all payroll calculations to prevent over payment.
17. Ensure total compliance on the ERF Safety Policy as determined by the Security and Risk Manager.
18. Ensure weekly session on safety for all staff and depot hygiene are held and implementation is done to standard required.
19. Compile and submit timely weekly, monthly and annual reports to the ERF manager
20. Ensure provision of acceptable canteen facilities and feeding of all at depot level.
21. Perform any other duties as directed by superior.

C. Security and Risk Manager; Job Description

Qualification;

- Degree in Security Risk Management/Human Resources/Accounting

Core Competencies;

- Excellent knowledge of statutory and criminal laws including labour law.
- Wide knowledge of criminal and disciplinary cases investigations.
- Knowledgeable in Integrated Risk Management (IRM/ERM).
- Knowledge of grain reserve business and processes.
- Strategic management skills
- Risk management skills
- Good written communication and interpersonal skills.
- Excellent analytical skills.
- Good report writing skills.

Experience;

- Minimum of Five years experience in a related field e.g. Police Service or crime investigations.

Major Job Responsibilities

1. Research, design, develop and manage the reserve's loss control systems and programmes.
2. Recommend a suitable structure for the security employees of the reserve.
3. Ensure adequate security guards are allocated per shift and are properly supervised.
4. Supervises and develops subordinates through setting performance targets and identifying training needs on an ongoing basis.

5. Establish, monitor and evaluate a disaster recovery programme for the reserve in case of an emergency.
6. Investigate all potential risk bearing activities and making recommendations to prevent and reduce losses resulting from identified risks.
7. Develop and implement measures and policies that prevent thefts, fraud, waste, accidents, errors, conflict of interest and unethical business practice.
8. Initiates measures to ensure the proper use of reserve resources and reduce their abuse, e.g. monitoring vehicle mileage, water bills and telephone bills as when necessary.
9. Liaise with district authorities to collect intelligence on the vulnerability situation in the Shehias, assess the severity and report on a weekly basis.
10. Assist in monitoring changes on the market in terms of food shortages and price rise intelligence and report on a weekly basis.
11. Check activities at depots through weekly review of gate books.
12. Perform any other duties as directed by superior.

D. Finance and Administration Officer; Job Description

Qualifications and Experience

- 5 'O' Levels including English and Mathematics/ Accounts
- Bachelor of Accounting. B. Commerce or equivalent accountancy degree
- CIS, ACCA, IAC, SAA, Higher National Diploma or equivalent
- Diploma in public administration
- 3 years accounting and administration experience 2 years at a senior level

Core Competencies

- Accuracy at figure
- An analytical Mind
- Computer Literacy a prerequisite
- Good administration skills
- Good with sales accounting
- Good asset accounting skills
- Good interpersonal skills
- Knowledge of tender procedures
- Knowledge of contract designing

Major Job Responsibilities

1. Prepares management accounts for the reserve operations and consolidate thereof on a monthly basis.
2. Administer inventory control by carrying out stock reconciliations, physical stock verification and updating the stocks ledger on an ongoing basis.

3. Implement and monitor accounting system and internal controls by maintaining and checking existing accounting systems on a daily basis.
4. Prepares and consolidates reserve annual Budgets.
5. Carries out budgetary control and variance analysis by checking actual expenditure against budgeted monthly expenditure.
6. Administer payments for the reserve activities on an ongoing basis.
7. Manage Bank Accounts for the reserve by monitoring reconciliations and following up on unreconciled items.
8. Provide advice on all finance issues to do with reserve operations for efficient use of resources on an ongoing basis.
9. Facilitates payment for all suppliers to the reserve operation on monthly bases.
10. Administer all tender contracts for imports during build up of reserve and procurement by traders at recycling stage.
11. Administer government relief and distribution payments at release stage of the reserve stocks.
12. Control all cash floats and cash resources within the reserve operations at depots and all distribution points.
13. Develop and maintains physical Asset Registers for the reserve.
14. Effects all assets distribution and transfers for the reserve.
15. Monitor temporary and permanent transfers of all assets for the reserve.
16. Recommend on the disposal of reserve assets.
17. Administers all lease agreements all leased property by the reserve.
18. Effects and monitors the purchasing of items by the reserve following departmental procedures.
19. Perform any other duties as directed by superior.

E. Personnel Officer; Job Description

Qualifications

- 5 "O" levels including English Language and Mathematics/Accounts.
- A Social Science Degree/Bachelor of Management Degree in Human Resources or Higher National Diploma in Personnel Management.
- Diploma in Personnel Management and or Industrial Relations.
- Basic Bookkeeping or Basic Accounting will be an added advantage.
- Proficiency in Microsoft Word, Excel, PowerPoint and Access.

Experience

- 3 years post qualification experience in personnel and Industrial Relations

Core Competencies

- Being able to implement Human Resources policies,
- Skills to maintain standards, procedures and strategies
- Skills to maintain a cohesive working environment.

Major Job Responsibilities;

1. Implements staff welfare policies and ensure compliance as per the official labour regulations.
2. Maintain and update all personnel records as per the department's regulations.
3. Assist the EFR manager in the recruitment and selection of staff.
4. Assist in the implementation of a performance management system for the reserve
5. Implement a payroll system in conjunction with the finance section and the department
6. Maintain a harmonious Industrial Relation Climate at work through regular counseling of staff.
7. Handle employee grievances and disciplinary cases in liaison with the respective line supervisors.
8. Ensure availability of protective clothing for both permanent and casual/contract staff.
9. Assist in the Contracting out of Canteen services for depot staff.
10. Ensure Canteen facilities are available to staff and maintain a high degree of cleanliness in the ablution blocks.
11. Perform any other duties as directed by superior.

F. Quality Control Officer; Job Description

Qualification

- 5 'O' levels including Mathematics and English
- Bachelors degree in Agriculture Crop Science , Biological Sciences or equivalent
- Diploma in crop protection and pesticides management or equivalent

Experience;

- **3years experience in grain storage quality control**

Core Competencies;

- An analytical mind
- Inspection Skills
- Insect identification skills
- Good with figures
- Pesticides application skills
- Knowledge of grain storage

Major Job Responsibilities;

1. Develop and implement intake grading standards for the polished and paddy rice for use during intake.
2. Provide technical input in the selection of service provider for fumigation.
3. Ensuring quality management in grain handling and storage through conducting monthly inspections for infestation and moisture content for grain on stacks as stated in the operations manual.
4. Receive and consolidate weekly reports on depots infestations and prepare reports.
5. Carry out monthly sampling inspection of stacks at depots to assess readiness for fumigation.
6. Schedule fumigation for the depots in liaison with the service provider.
7. Carry out post fumigation inspection to ensure effectiveness and prepare the necessary reports.
8. Ensure preparation for the fumigation by the fumigation assistant is in place.
9. Ensure depot hygiene is maintained at high standards and stacks are regularly sprayed to avoid re infestation.
10. Inspect roofs and floors on a monthly basis for war ingress onto stacks and take corrective measures where necessary.
11. Train graders in the proper application of the grading standard and the correct use of equipment e.g. moisture meters, grinding utensils. Sieves, weighing scales and test density cups in the grading room.
12. Ensure proper labeling and storage of samples for the specified period as per operations manual.
13. Receive disposed samples in liaison with the depot assistant using the appropriate document to for gains received.
14. Calibrate all grading equipment as per recommended international standards.
15. Ensure each depot has enough equipment and pesticides to carry out spot fumigation as necessary.
16. Perform any other duties as directed by superior.

G. Depot Assistant ; Job Description

Qualifications

- 5 'O' level including English and Mathematics/ Accounts
- A Certificate in Supervisory Management or equivalent

Experience

- At least one year experience in a supervisory position

Core Competencies

- Excellent grain handling skills
- Knowledge of the grain reserve business and processes
- Good with figures
- High level of safety conscience
- Good supervisory skills
- Good communication skills

Major Job Responsibilities

1. Participate in the planning of the depot's annual grain handling.
2. Account for grain stocks at the depot daily.
3. Compile depot requirements as and when need arises according to laid down procedures.
4. Monitor quality of stocks in line with set standards daily.
5. Conduct depot inspections for infestations to assess risk to the stored grain weekly.
6. Complete and submit of pest infestation report to the Depot manager weekly.
7. Receive all incoming grain and dispatch all grains as per instructions from the Depot Manager.
8. Check all documentation in receiving and dispatching of grain ensuring accuracy in weighing of consignments.
9. Conduct physical stock count daily and weekly as well as ensuring handover/ takeover formalities at the end of each day with the Security Guard under the supervision of the Depot Manager.
10. Perform any other duties as directed by superior.

H. Handy Man/Weighbridge Clerk ; Job Description

Qualifications

A minimum of 5 'O' levels including English Language and Mathematics/Accounts

Experience

At least 1 year work experience in a clerical job

Core Competencies

- Good communication skills
- Ability to work under pressure
- Good weighing skills

Major Job Responsibilities

1. Weigh trucks for intake and dispatch of grain.
2. Complete customer control sheets.
3. Raises credit and cash dispatch vouchers.
4. Raises grain receipts.
5. Maintain and update intake control books.
6. Attends to customer queries.
7. Assist in small maintenance jobs on equipment daily used.
8. Ensure proper storage and upkeep of all equipment used.
9. Maintain and control the maintenance schedules for equipment ensuring they are followed and records are kept.
10. Perform any other duties as directed by superior.

I. Handy Man /Warehouse Clerk; Job Description

Qualifications

- 5 'O' Levels including English Language and Mathematics/Accounts.
- A Certificate in Supervisory Management or equivalent.

Experience

- At least one year experience in supervisory position.

Core Competencies

- Excellent grain handling skills.
- Knowledge of grain reserve business and processes
- Good with figures.
- High level of safety conscience.
- Good supervisory skills

- Good communication skills

1. Supervising preparation of stacking area.
2. Supervising the building of stacks.
3. Submitting plan for adequate gum poles to the Depot Assistant.
4. Prepare and maintain Stack Record sheet and Stack History Sheet
5. Physically check quantity and quality of stocks being dispatched and received.
6. Inspecting grain for infestation weekly and reporting findings to the Depot Assistant
7. Complete fumigation returns and submit to the Depot Assistant fortnightly
8. Receiving and dispatching of stocks.
9. Ensuring mending of damaged bags to prevent spillage.
10. Create awareness and monitor employees on safety rules in grain handling.
11. Supervise the loading and dispatching of trucks.
12. Ensuring proper maintenance and usage of Protective Clothing by subordinates.
13. Reconciling physical stock balances against book balances daily.
14. Ensuring handover/takeover of stocks with the Depot Assistant and the Security Guard daily.
15. Supervising Contract workers (Stack builders, Carriers and General Workers.)
16. Ensuring Housekeeping and depot hygiene.
17. Assist in small maintenance jobs on equipment daily used
18. Ensure proper storage and upkeep of all equipment used
19. Maintain and control the maintenance schedules for equipment ensuring they are followed and records are kept
20. Perform any other duties as directed by superior

J. Handy Man / Fumigation Assistant ; Job Description

Qualifications

- Class one Journeyman in Mechanical Engineering.
- A National Certificate in Mechanical Engineering.

Experience

- One year experience in the same field.

Core Competencies

- Familiarity with workshop safety procedures.
- Good interpersonal skills an added advantage
- Knowledge of pest control in grain storage

Major Job Responsibilities

1. Assists in carrying out fumigation with the service provider as and when necessary.
2. Maintain and control spot fumigation of intake as necessary.

3. Prepares fumigation equipment prior to fumigation on a cyclical basis.
4. Maintains fumigation equipment on an ongoing basis.
5. Conducts housekeeping of the pesticide store and ensure proper storage under lock and key on an ongoing basis.
6. Monitor and ensure stacks are sealed all the time during fumigation as and when necessary.
7. Handles pesticides i.e. insecticides, grain protectants and termiticides.
8. Loads and off-loads all pest control equipment and setting up of the representative equipment.
9. Attends to minor mechanical breakdowns/ repairs of plant, machinery and equipment as and when necessary.
10. Trains users of plants, machinery and equipment on proper use as and when necessary.
11. Any other work related duties as assigned by the superior.
12. Perform any other duties as directed by superior.

K. Handy Man /Grader

Qualifications

- 5 "O" levels including English language, Maths and Science.
- Certificate in City and Guilds Quality Control an added advantage

Core competences

- Accuracy with figures and calculation
- Integrity
- Interpersonal skills
- Grain grading skills a must
- Ability to work independently

Experience;

- At least one year experience in a similar position

Major Job Responsibilities

1. Sample grain from delivering trucks as instructed in the operations manual.
2. Perform grading function and allocate grade to delivered and dispatched grain, complete grading slip and submit to weighbridge clerk and depot assistant.
3. Label samples and their grades for and store for the recommended time for future reference.
4. At disposal aggregate samples to the recommended wait for receiving at the warehouse as gains using appropriate documents.
5. Ensure proper maintenance and storage of grading equipment.
6. Carry out any other duties as instructed by.
7. Perform any other duties as directed by superior.

L. Security Guards; Job Description

Qualification

- 5 'o'levels including English language and Mathematics

Experience

- One year experience in a similar position

Major Job responsibilities

1. Ensure the security of the reserve stocks, assets and infrastructure.
2. Guard depot and office premises 24hrs a day on a roaster fomat.
3. Checks depot security for break ins and lighting on a daily basis.
4. Record in gate book all incoming and outgoing persons, vehicles and other forms of transportation.
5. Record all incoming and outgoing grain using issued documents.
6. Inspect all incoming and outgoing vehicles and ensure no theft happens.
7. Inspect staff to ensure no theft of assets or grain.
8. Reconcile daily activities with Depot assistant, warehouse clerk and weighbridge clerk.
9. Perform any other duties as directed by superior.

Appendix 13; Estimated Capital Development Costs and Staff Costs

Table 1; Cost estimates for construction of two New Depots (USD)

Item	**Zanzibar**	**Pemba**
1.New Warehouses	1,530,000	1,020,000
2.Repair of existing warehouse	0	150,000
3.Depot office block/facilities	220,000	220,000
4.Other construction works, drainage, perimeter fences, gates, etc	300,000	300,000
5.Equipment (Weighbridges, Platform weigh scales, bag Stackers, lab equipment etc	140,000	140,000
TOTAL	**2,190,000**	**1,830,000**
Grand Total	**4,020,000**	

NB Source; Input from Mr. Manoah Mushira the International Consultant who worked on the Storage Analysis aspect of this study

Table 2; Staff Compliment Costs for the Emergency Food Reserve – Permanent

Position	Qualification	Grade	Monthly Salary *	Monthly benefits	Total Annual Cost	USD Equivalent ** Total
SGR Manager	Masters Degree	ZPSI-03	460,000	230,000	8,280,000	5,175.00
Depot Manager x2	Post Graduate	ZPSH - 03	772,000	386,000	13,896,000	8,686.00
Finance and Admin officer	Degree	ZPSG- 09	352,000	176,000	6,336,000	3,960.00
Personnel and Salaries Officer	Degree	ZPSG - 09	352,000	176,000	6,336,000	3,960.00
Quality Assurance Officer	Degree	ZPSG - 09	352,000	176,000	6,336,000	3,960.00
Security and Risk Manager	Degree	ZPSG - 09	352,000	176,000	6,336,000	3,960.00
Depot Assistant x 2	Degree	ZPSG - 09	704,000	352,000	12,672,000	7,920.00
Depot handyman x 4	FTC	ZPSC - 03	620,000	310,000	11,160,000	6,976.00
Security Guards x 16	FORM VI	ZPSC - 01	2,168,000	1,084,000	39,024,000	24,390.00
Total			**6,132,000**	**3,066,000**	**11,0376,000**	**68,987.00**

*__based on October 2011 government scale__

__** Exchange rate at /-Tsh 1600 = $1.00 (USD__)

Appendix 14. Studies, Policies and Acts bearing on food security

Studies carried out to assess food security situation in the country since 2002

- Household Economy Analysis for Zanzibar. May 2003.
- Comprehensive Food Security and Vulnerability Analysis (CFSVA) conducted in December 2005 - January 2006
- Zanzibar Food Security & Nutrition Situational Analysis June 2006
- Assessment of Post Harvest Losses of Major Food Crops and Fish in Zanzibar 2009
- Comprehensive Food Security and Vulnerability Analysis (CFSVA) conducted in November 2009 - January 2010
- Household Budget Survey (HBS) January 2011

Selected Policies and Acts

- The Zanzibar Fair Trading and Consumer Protection Act No. 2 of 1995
- The Zanzibar Food and Security and Nutrition Act No. 5 of 2011
- Zanzibar Food Security and Nutrition Policy, April 2008
- Zanzibar Agricultural Marketing Policy October 2010 (draft)
- Zanzibar Disaster Management Policy August 2011