Grain Marketing Expansion Program (GMEP)

End of Project Report

January 2012

ZAMACE Ltd received a grant from USAID/COMPETE to implement the GMEP initiative alongside its core activity of operating a commodity Exchange. The programme was originally designed to run from March 2010 to March 2011 but was extended to end in December 2011.

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GLOSSARY OF TERMS

ASCs	ZNFU Agricultural Service Centres
CFS	Crop Forecast Survey
FRA	Food Reserve Agency
FSRP	Food Security Research Project (now Indaba Agricultural Research Institute)
GMEP	Grain Marketing Expansion Programme
GTAZ	Grain Traders Association of Zambia
IAPRI	Indaba Agricultural Policy Research Institute
ISP	Internet Service Provider
JICA	Japanese International Cooperation Agency
JSE	JSE (Johannesburg Stock Exchange) Limited
LuSE	Lusaka Stock Exchange
MACO	Ministry of Agriculture and Cooperatives (now Ministry of Agriculture and Livestock)
MAL	Ministry of Agriculture and Livestock
MAZ	Millers Association of Zambia
P4P	Purchase for Progress
PaViDIA	JICA supported Participatory Village Development in Isolated Areas project
PAZ	Poultry Association of Zambia
SAFEX	Agricultural derivatives division of the JSE
SEC	Securities and Exchange Commission
ToT	Training of Trainers
USAID/COMPETE	United States Agency for International Development Competitiveness and Trade Expansion Program
WFP	World Food Programme
ZAMACE	ZAMACE (Zambia Agricultural Commodities Exchange) Limited
ZNFU	Zambia National Farmers Union

ACKNOWLEDGEMENTS

GMEP was borne out of a discussion the Management and Staff of ZAMACE had with Maria N. Mullei, the COMPETE Staple Foods Advisor in the last quarter of 2009. We wish to extend our gratitude to the entire Team at USAID/COMPETE for the guidance and support before and during the life Of GMEP. The project could not have existed without the grant support from USAID/COMPETE and neither would we have learnt the valuable lessons which will help the Exchange realign itself to the needs of the market.

We wish to thank Mr Felix Edwards, the WFP P4P Coordinator and his Team for partnering with us to compliment GMEP and for putting in place strategies to continue and enhance the GMEP model through facilitation of smallholder commercialisation.

The Ministry of Agriculture and Livestock was instrumental in facilitating meetings in GMEP areas and in spreading the word on the initiative. We especially wish to thank Mrs Sitwala, Director of Cooperatives at the Ministry for her energetic enthusiastic leadership, endorsement and support to GMEP.

GMEP would not have been implemented without the support of the ZAMACE Board, Management and Staff and the field GMEP Team. Their dedication and guidance helped leave a mark in the market place of what a small step can achieve if continued and supported.

EXECUTIVE SUMMARY

ZAMACE Limited operates Zambia's sole agricultural commodity exchange and was incorporated as a private limited liability company in May 2007. It was initially mainly owned by the major traders in the agricultural commodity sector. The Exchange was established in response to calls by the agricultural sector for a centralised and structured market where transparent trade in agricultural commodities would take place on the basis of standardised contracts and foster the development, use and revision of grades and standards. Currently, ZAMACE is undergoing internal reform to delink shareholding from brokerage membership. This demutualisation is intended to broaden the shareholding, inject fresh capital and realign the Exchange to the changes in its environment to better serve its publics.

ZAMACE alongside its core business focus saw the need to link smallholder producers to its platform and hence the commercial market through raising awareness of grades and standards, grain handling and storage at from the community level and the supporting of organised famer groups. This stemmed from a pilot conducted in Chongwe area in 2008/9 in collaboration with the JICA supported Participatory Village Development in Isolated Areas. The success in marshalling smallholder aggregation of commercially acceptable grain lead to an initiative to extend this to initially three major maize producing areas in the country in the Southern, Central and Eastern Provinces. The Grain Marketing and Expansion Program (GMEP) was born and an application for a cost share allocation in the sum of almost $250,000 was made to USAID/COMPETE and successfully considered. The total revised budget for this initiative came to $454,000 of which ZAMACE's cost share was 54% and USAID/COMPETE 46%.

GMEP was intended to train farmers in quality standards and handling of maize grain, its aggregation in community sheds and through put to district certified warehouses and placement for sale through the ZAMACE trading platform. The improvement of quality was also a key focal point and mitigated through the provision of diesel powered portable maize shellers and moisture meters. Training and information material was developed and also translated in local languages. Information was also disseminated through a series of radio programs.

GMEP like any other initiative was impacted by external and internal factors. Most of the expected results were achieved such as the identification of district warehouses and operators, aggregation by communities and placement of a small parcel of maize on the Exchange although it did not trade on account of the high price demanded by farmers. They stated that since their maize was of known quantity and quality and essentially commercially acceptable they deserved a premium over the Food Reserve Agency offered price. This indicated the distortive impact of the FRA pan-territorial above market pricing. The FRA also bought the entire expected sales in 2011 and crowded out all players and did so at an above market price thereby removing the incentive to locally trade and store maize.

GME, despite the challenges encountered still remains a vivid example of community level aggregation and how intervention at this level in the value chain for maize can also be replicated for other crops such as soya beans, rice and groundnuts. The initiative has attained endorsement by the Ministry of Agriculture and Livestock, Department of Cooperatives and other cooperating partners such as the World Food Program and Musika who are keen on continuing the initiative across the country.

1.0 INTRODUCTION

ZAMACE Limited was incorporated on 30th May 2007 as a private limited liability company in response to demands by stakeholders in the agricultural sector for a centralised and structured market mechanism that addressed the multiple market imperfections that stifle growth in the agricultural sector such as high transaction costs, poor market information and low levels of transparency and trust.

ZAMACE was structured as a mutual exchange in which a successful applicant for brokerage membership is awarded equal shareholding (1,000,000 shares each) as a consequence of the membership. In the period between mid-2008 and late 2009 there was a gradual increase in promotion and trading activity. The membership of the Exchange was also fully subscribed to a total of 15 members as shown in the Table:

Table 1. ZAMACE Members

1	AAI
2	Afgri Corporation
3	Amagrain
4	Cargill Zambia
5	CHC Commodities
6	Dunavant Zambia
7	Export Trading Company (ETC) Zambia
8	Food Reserve Agency (FRA)
9	Olam Zambia
10	Quality Commodities
11	Sakiza Spinning
12	Savanna Commodities
13	Seaboard Commodities
14	Simba Milling
15	Zednakie Commodities

ZAMACE is governed by a Board of Directors headed by an independent chairman, up to 8 members and 3 representatives from the producing (ZNFU), processing (MAZ) and financial sectors (BAZ). There are also 3 ex-officio directors, which include the Executive Director, Finance Director and a cooperating partner representative.

ZAMACE has also been viewed as the successor organisation of the Zambia Agricultural Commodity Agency (ZACA), which was a USAID-supported non-profit company established in 2000 with a mandate to certify and inspect private storage. At its peak in 2005, ZACA certified 26,000mt of storage capacity, and recorded 17,400t of receipted commodity. The company ceased operations in 2006 when donor financing finished. There was limited buy-in from the financial sector which viewed lending against stored commodities as unduly risky, and therefore ZACA faced limited demand for warehouse receipts from the agricultural sector. ZAMACE inherited the service of warehouse inspection and certification and the establishment of quality standards.

ZAMACE is currently undergoing a process of demutualisation in which it seeks to broaden its shareholding and remove the linkage of broking membership to shareholding. So far the local bourse has expressed interest to be part of the restructured ZAMACE as well as other financing houses and farmer organisations. The restructured Exchange is scheduled to be fully reformed and operational by the open of the 2012 marketing season.

2.0 GMEP

The Grain Marketing Expansion Program is a ZAMACE initiative which was supported by USAID/COMPETE through grant financing between 14th March 2010 and 31st December 2011. The project had a total budget $492,400 of which USAID/COMPETE approved a grant to the tune of $249,000 on a cost share basis.

According to Jayne and Burke (2011) Zambia has since 2000 seen a significant growth of small/medium holder farmers engaging in maize production from approximately 1,000,000 to 1,300,000 small/medium farm households. This has resulted in significant maize production growth of over 75% over the same period. However, the current maize marketing system has a number of factors which negatively affect small holder farmers. Some of these factors include; lack of market information, lack of or improper storage facilities leading to crop wastage, low yields from poor crop management at production and pre and post harvesting stages leading to major grain losses. Over the years field agricultural extension services from the Government have largely been non-functional.

GMEP was a result of a pilot initiative conducted in Chongwe district of Zambia in 2008 in collaboration with the Participatory Village Development in Isolated Areas (PaViDIA). ZAMACE worked with communities to utilise PaViDIA sponsored storage facilities for grain storage. Farmers were trained on maize grain grading, handling and storage for linkage to the commercial market. ZAMCE Ltd, with its knowledge of the myriad of factors affecting small holder farmers in accessing a structured commercial maize market, embarked on GMEP with the sole purpose of kick-starting small holder farmers' access to the commercial market in three regions of the country.

2.1 OBJECTIVES

GMEP sought to achieve the following results:

a. Train smallholder farmer groups in grain handling and storage to reduce pre/post-harvest losses
b. Improve yields and grain quality of smallholder farmer groups
c. Introduce and implement smallholder farmers to aggregated storage of Grade A maize
d. Improve market access and income of smallholder farmers
e. Increase the volume of smallholder trades on the Exchange

To measure the achievement of these objectives the Project had a stament of verifiable results as shown in the following table:

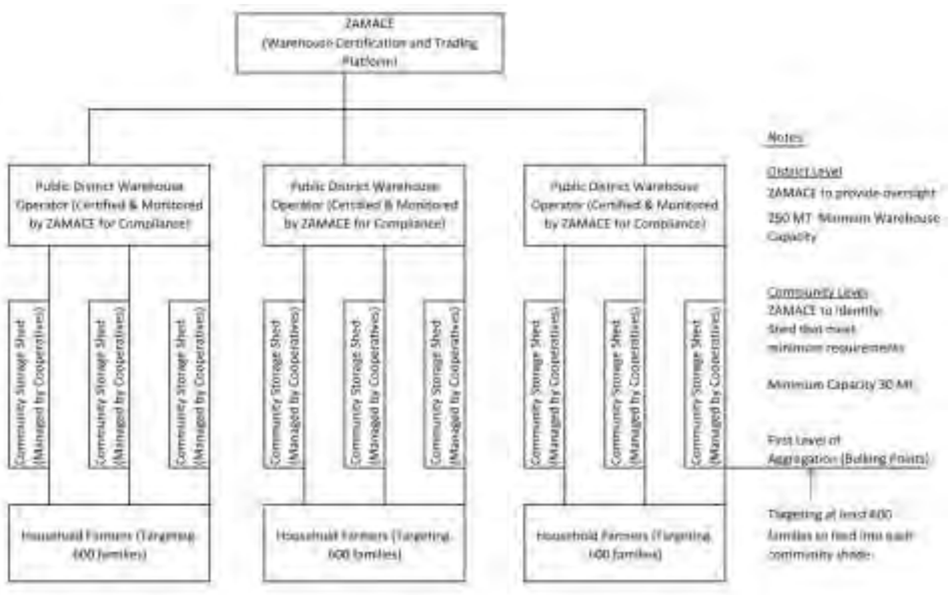
Table 2. GMEP Statement of Verifiable Results

RESULTS	VERIFIABLE INDICATORS
Training of producer (farmer Groups), Trainers and Traders.	Train 30 trainers of farmers Groups and 10 traders in maize grading and stores management
Smallholder Maize Bulking	To ensure 10% of smallholder maize is bulked up in community stores up for onward trading on the Exchange.
Improved quality of smallholder maize	To reduce broken grain to 5% as per ZAMACE Maize Standard.
Community Bulking centers identified and made ready for bulking maize.	A total of 9 community centers in three districts.
Core-talk System Operational	Core-talk system up and running.
Web-based electronic vouchers (Warehouse Receipts) operational.	Electronic Vouchers up and running with all necessary functionalities.
Public Warehouse Operator place maize parcels on Exchange through ZAMACE registered broker.	Contract of Agency signed.

2.2 MODEL

The premise of the GMEP model is the encouraging of aggregation at the community level through community storage and later on through-put into district certified warehouses. The point of intervention is at the community level through training of identified farmer groups. The farmer groups were expected to have a governance structure, membership register, a bank account and storage infrastructure. It was envisaged that the aggregated commodity of known Q&Q would then be brokered and placed on the ZAMACE platform.

Figure 1. GMEP Aggregation Model



2.3 AREAS AND ACTIVITIES

GMEP was operated in some districts in three regional areas: Southern, Central and Eastern provinces.

Figure 2. GMEP Regions

The Project activities included training and capacity building for both trainers (ToT) and farmers. This was done with the involvement of other stakeholders such as the Ministry of Agriculture Cooperatives Department and the WFP/P4P. Training material and ZAMACE information publications were translated into the 7 official local languages; Bemba, Nyanja, Tonga, Lozi, Luvale, Kaonde and Lunda. GMEP also included a component for purchase of maize shellers to reduce the post-harvest losses which characterises many a smallholder farmer arising from shelling maize grain off the cob by thrashing the cobs with sticks. The resultant higher broken grains are easily weeviled. Through the supportive intervention of WFP/P4P some communities were also offered weighing scales.

2.4 BUDGET

GMEP activities were funded through advance requests to COMPETE based on an approved budget.

2.4.1 ORIGINAL BUDGET

The original total Activity Budget for GMEP was in the total sum of $492,440, of which $248,820 was to be financed by CHEMONICS. The following is a summary of the original GMEP Budget:

Table 3. Initial GMEP Approved Budget

EXPENDITURE LINE	ZAMACE	COMPETE	TOTAL
Administration Costs	176,160	105,120	281,280
Training Activities	15,750	57,250	73,000
Technical Assistance	5,000	24,000	29,000
Other Direct Costs	25,660	32,300	57,960
Equipment Purchases	21,050	30,150	51,200
TOTAL	**243,620**	**248,820**	**492,440**
COST SHARE	**49%**	**51%**	**100%**

Upon submissions from management, Compete agreed to an adjustment to the original budget as follows:

Table 4. GMEP Approved Adjusted Budget

EXPENDITURE LINE	ZAMACE	COMPETE	TOTAL
Administration Costs	229,725	87,937	317,662
Training Activities	1,202	78,997	80,199
Technical Assistance	-	13,000	13,000
Other Direct Costs	12,693	39,211	51,904
Equipment Purchases	-	29,675	29,675
TOTAL	**243,620**	**248,820**	**492,440**

2.4.2 NO COST EXTENSION

In March 2011 a No-Cost-Extension was agreed with Compete, for an initial three month period to June 2011, and later to cover the period to December 2011. This extension was necessitated by the slow burn rate on the project funds followings instructions from COMPETE, in April, to all its grantees to “go slow” in implementing technical activities for several months as they were experiencing some critical incremental funding issues that directly affected their grant funding. At the time, COMPETE advised that they were not in a position to predict exactly when USAID would give them their next amount of yearly funding as the process involved

Congressional funding decisions. At the time of the Budget Extension in March 2011, expenditure to date on the Compete budget lines was as follows:

Table 5. GMEPT Expenditure Todate at March 2011 Budget Extension

EXPENDITURE LINE	TOTAL COMPETE BUDGET	EXPENDITURE TO MARCH 2011	COMPETE BUDGET BALANCE
Administration Costs	87,937	47,722	40,215
Training Activities	78,997	9,927	69,070
Technical Assistance	13,000	-	13,000
Other Direct Costs	39,211	11,290	27,921
Equipment Purchases	29,675	12,160	17,515
TOTAL	**248,820**	**81,099**	**167,721**

In the month of August 2011, Compete issued instructions and gave guidance on activities to be completed and those to be discontinued. As a consequence the GMEP budget was recalculated as follows:

Table 6. Recalculated GMEP Budget

EXPENDITURE LINE	ORIGINAL COMPETE BUDGET	(REDUCTION) /INCREASE	REVISED COMPETE BUDGET
Administration Costs	87,937	11,540	99,477
Training Activities	78,997	(41,369)	37,628
Technical Assistance	13,000	(5,000)	8,000
Other Direct Costs	39,211	544	39,755
Equipment Purchases	29,675	(3,963)	25,712
TOTAL	**248,820**	**(38,248)**	**210,572**

Therefore, the total project budget was varied as follows:

Table 7. GMEP Total Varied Budget

COST SHARE	US$	PERCENTAGE
ZAMACE Share	243,620	54%
COMPETE Share	210,572	46%
TOTAL PROJECT FUNDING	**454,192**	**100%**

2.4.3 BUDGET TRACKER

The total budget expenditure to December 2011 amounted to $186,518, translating to 75% and 89% expenditure on the original and final revised budget, respectively. The amount remaining unspent on the revised budget as at 31st December 2011, is $24,052. Of significance from the final budget tracker as shown in ANNEX 1, is the expenditure of $9,026 on With Holding Taxes on External Consultants' fees. This expense was unavoidable as it is a statutory requirement, which if not met, would have had legal implications on the project.

2.5 STAFF

GMEP was operated on the basis of consultant field staff which (Regional Coordinators) who gave the project a regional presence and were the points of contact for the targeted communities. These reported to a Training Coordinator based at the ZAMACE offices in Lusaka. The administrative and directional supportive staff for the project was on a part-time basis and comprised the staff at ZAMACE. Later on in the operation of the project this arrangement was proved as an oversight in the sense that the Project needed full-time staff all around.

Table 8. GMEP Staff

POSITION/FUNCTION	NAME OF PROPOSED STAFF	PART-TIME OR FULL-TIME
Executive Director	Brian Tembo	Part Time
Finance Director	Thomas Kayombo	Part Time
Operations Manager	Newton Samangwe	Part Time
Training Coordinator	Mathew Chisakuta	Full Time
Regional Coordinators • Eastern Province • Southern Province • Central Province	 Josephat Mlewa Lyness Kayumba Arthur Mulenga	Full Time
Trade Coordinator/MIS	Ngozi Daka	Part Time
Laboratory Technician	Kamandisa Sinyinda	Part Time

During the life of the project some staff changes were made. Newton Samangwe and Ngozi Daka left the project due to staff reorganisation at. In mid-2011 the Eastern Province Coordinator contract was not renewed due to low level of activity and the activity was infused in the Training Coordinator role. Delayed funding in August/September 2011 led to the departure of the Southern Province Coordinator. Other changes along the way were the removal of the Laboratory Technician from the project since no commodity was envisaged to be brought to the lab due to the dynamics of maize marketing. These are outlined in the sections to follow in this report.

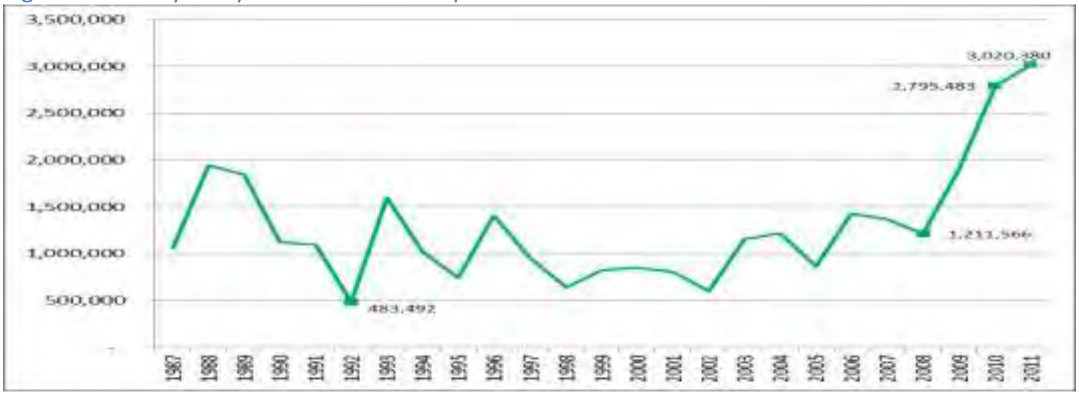
3.0 OVERVIEW OF ZAMBIA'S GRAIN STAPLE – MAIZE

GMEP focused on one key commodity – maize grain. This is the most widely grown and consumed commodity especially by the smallholder sector. Smallholder farmers produce more than 90% of the commodity and yet are not actively involved in the marketing of it. This section gives an overview of the dynamics of the maize market from production, marketing and storage.

3.1 PRODUCTION

Maize is the staple grain grown in Zambia. The Government has had a role to play in its heavy promotion through input support by way of fertiliser and seed and marketing through the FRA. The higher than market prices offered for the subsidised commodity attract more and more small to medium scale farmers to cultivate the crop. This coupled by good weather enjoyed in the last couple of seasons has seen the country record bumper harvests despite the lower average yields among the majority of farmers. It is important to note that small and medium sized farmer grown maize is rain-fed and planted in November/December and harvested around April/June.

Figure 3. Twenty five year national maize production



Source: MACO

The lower production years typically correlate with years of adverse weather conditions, i.e poor or excessive rainfall. The higher production is predominantly due to an increase in area planted/harvested, number of farmers, increased use of hybrid seed and fertilisers.

Figure 4. Maize production by Province

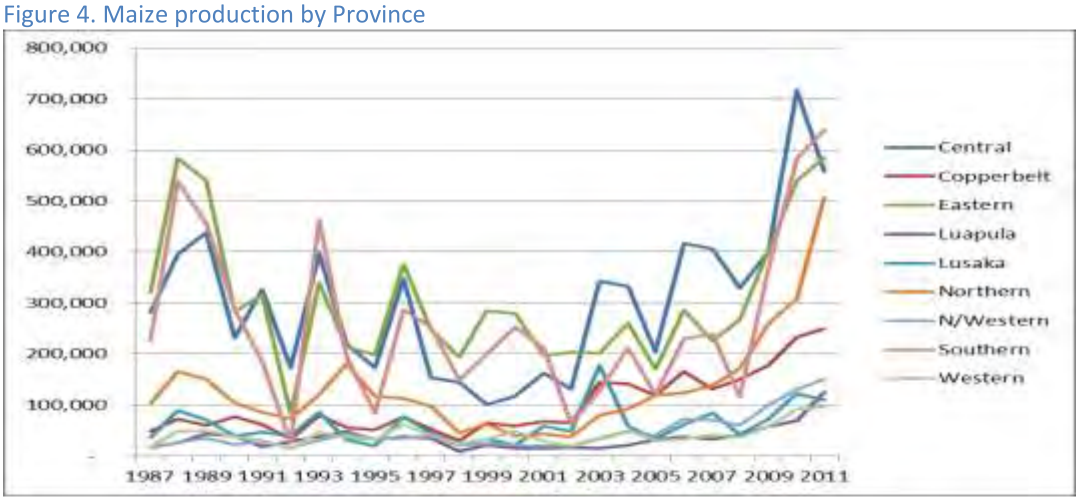
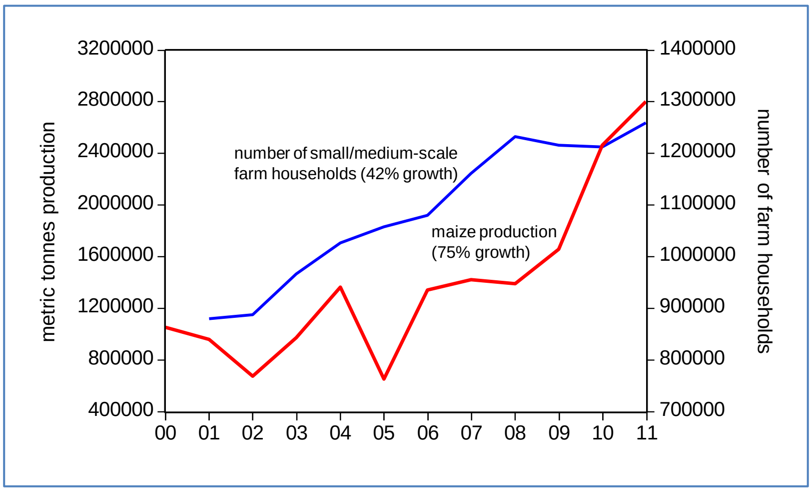
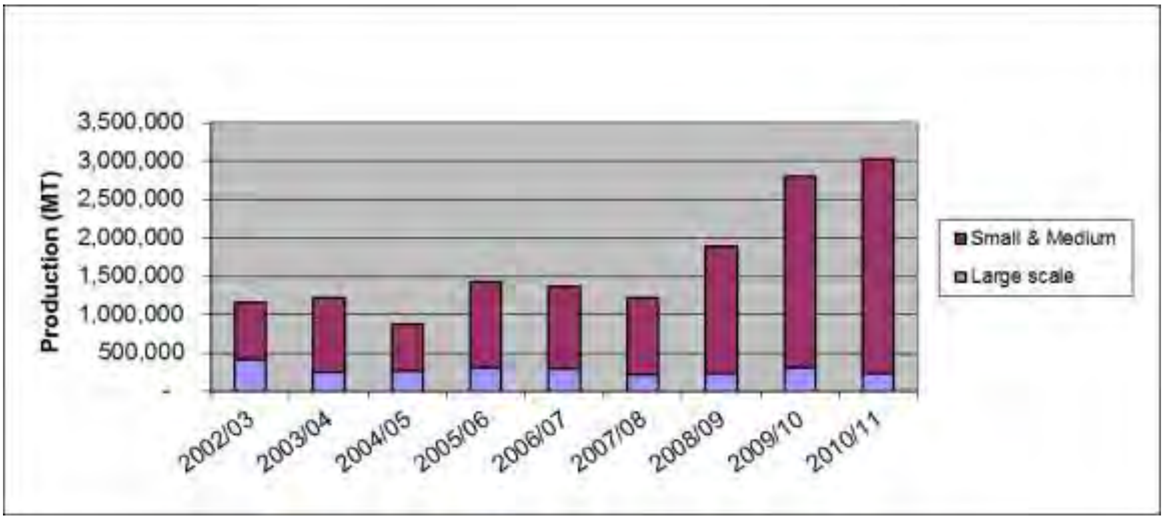


Figure 5. Maize production trends and number of small and medium scale farmers



Source: FSRP

Figure 6. Nine year maize production by farmer type



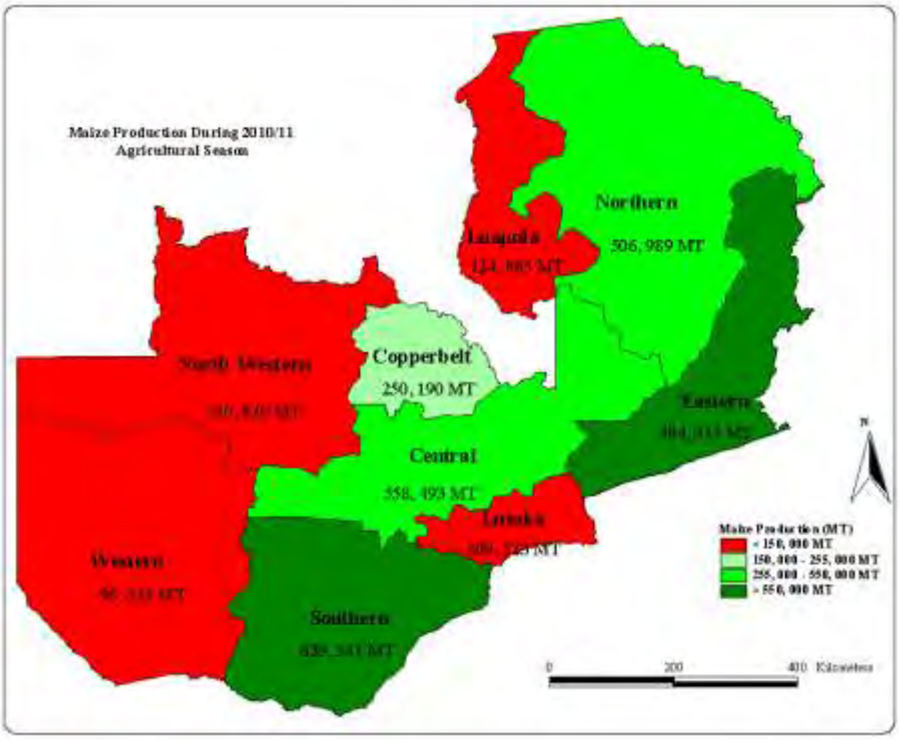
Source: CFS 2011

The disaggregation of production by farmer shows the heavy dominance by smallholder farmers in the production of maize under scoring the heavy involvement of the Government in its promotion. A further examination of trends shows that large scale-farmers contribution to the national production of the staple grain fell from 36% in 2003 to 8% in 2011.

The bulk of the maize which is therefore traded and subsequently exported is smallholder grown. Traders and processors buy it at a lower price and leverage this as they clean it and prepare it for commercial use. In essence the myriad of middle-men commercialise this smallholder grown maize. The FRA of course as a matter of policy only buys from smallholder farmers although there have been a few years when they bought irrigated commercial farmer early maize after heavy lobbying form the ZNFU.

3.1.1 Areas of Maize Production

Figure 7. Maize production by Province



Source: CFS 2011

The CFS 2011 shows that Southern, Eastern, Central and Northern Provinces produced 21%, 19%, 18% and 17%, respectively of the total national production of 3 million tons. Western and Lusaka provinces had the lowest production.

It is therefore justified to have had GMEP areas of focus as the Southern, Central and Eastern provinces as shown in Figure 2.

Figure 8. Maize production by District

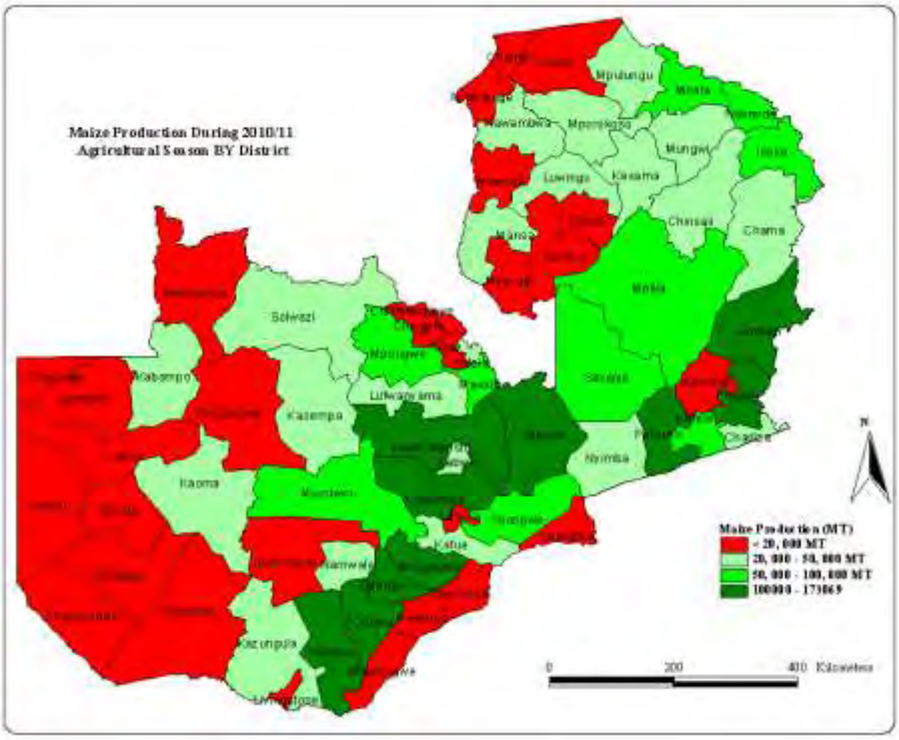
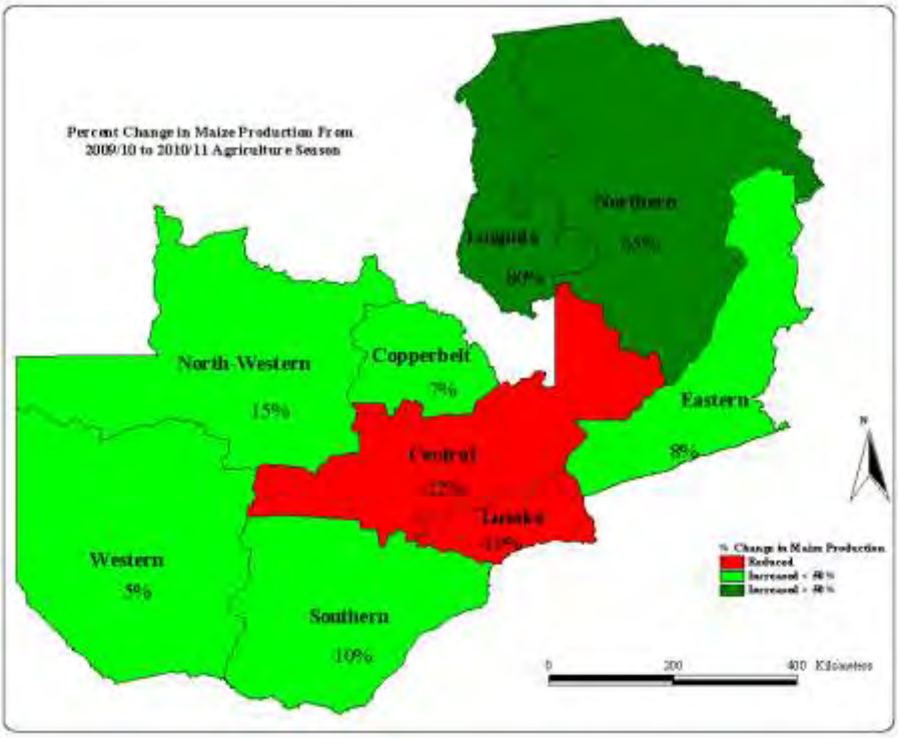


Figure 9. Maize percentage change in production by province 2010/11



Source: CFS 2011

Luapula recorded the highest increase in production over the previous year followed by Northern Province of 80% and 65%, respectively. Central and Lusaka provinces recorded a reduction in production by 22% and 10%, respectively**.** This trend can be attributed to the improved input support, marketing by the FRA in the north and the reduced area planted by commercial farmers concentrated in the central region of the country and the dry spell which affected crops in central and Lusaka provinces, respectively.

3.2 MARKETING AND ROLE OF FRA

Post-independence, Zambia had a comprehensive legal framework for the trade of agricultural commodities - the National Agricultural Marketing Act of 1969. This Act however was implemented under controlled marketing conditions through the National Agricultural Marketing Board (NAMBoard). This body was subsequently dissolved in 1989 as the country embraced economic structural adjustment and movement towards liberalisation of the economy. This saw the creation of the Zambia Cooperative Federation (ZCF) which assumed some of the roles of NAMBoard. However, in 1995 the enactment of the Food Reserve Act established the Food Reserve Agency (FRA). The NAMBoard storage infrastructure which was transferred to ZCF after the dissolution of NAMBoard was then transferred to the FRA.

The Food Reserve Act of 1995 created the FRA but does not encompass all the provisions which were in the National Agricultural Marketing Act such as registration of all producers, millers and traders. The post-NAMBoard Acts therefore only regulated the marketing of designated and specialised commodities including the various actors involved in handling them. The marketing of designated crops is done under the Food Reserve Act and other commodities such as coffee, cotton and tobacco are regulated under stand-alone Acts. This has resulted in grey areas for those crops which do not fall under these Acts. This state of affairs has been recognised by the Government and it therefore seeks to put in place corrective measures.

FRA has not always kept the colossal stocks it keeps today as this was the preserve of the market. However, the food riots in the early 2000 led to the amendment of the Food Reserve Act in 2005 which gave the FRA the mandate to market designated commodities. Maize, rice and cassava are gazetted as designated commodities. The Act further provides for an official marketing season from May to September of each year. FRA can only sell maize locally between October and March. The Act also mandates the FRA to hold strategic reserves which have been at 300,000MT. At the end of December 2011 the Minister of Agriculture announced the doubling of this threshold for the 2012 marketing season.

Marketing of maize has also tended to be used as an appeasement mechanism in the sense that despite the defined role in the market of the FRA it has ended up being used to purchase more maize than it has had capacity to handle and at above market prices only to offload the excess at below purchase prices. In the last three years the Government has maintained the FRA pan-territorial purchase price of maize at K65,000/50Kg bag or K1.3mil/MT ($255 – 260/MT depending on exchange rate fluctuations). Current FRA sale prices are between $135 – 170/MT depending on location. This buy-high and sell-low approach is clearly distortive.

However, mills and traders also tend to be active in the marketing of the commodity. FRA does not offer cash on delivery and typically pays in a couple of weeks to several months after the producer deposits the crop. FRA is also meant to buy only in remote areas which may not be deemed economical by the private sector. The definition of remote is not clear as they buy even within a 50km radius of urban centres. The farmer will however normally deliver to FRA some excess and sell for immediate cash to willing buyers even though the prices may be much lower than the FRA. The Agency also enters the market rather late typically June/July to allow for the moisture to be within the required maximum of 12.5%. Mills will use agents in the field or place adverts on their mill gates and sometimes in the paper indicating what they are willing to pay. Those offering lower than the FRA prices albeit a cash price and at farm gate have earned themselves the unsavoury title of "Briefcase Businessman" or "Unscrupulous Trader".

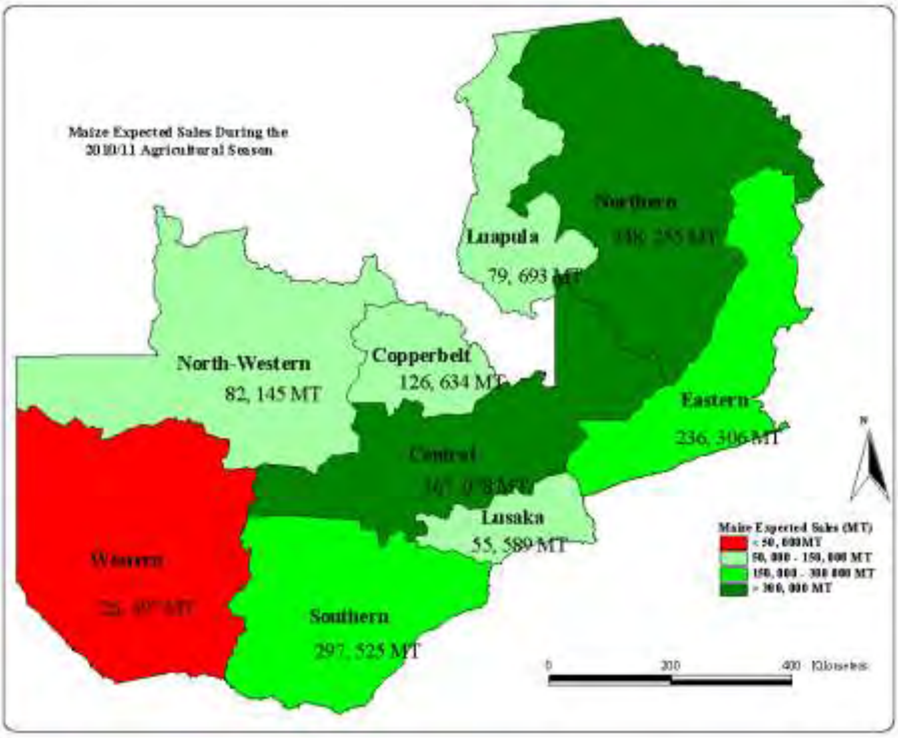
Table 9. Disparities within Small and Medium Farmer Category

CATEGORY	N=	FARM SIZE (HA)	HA FARMED	GROSS REVENUE MAIZE SALES (ZMK MIL.)	GROSS REVENUE CROP SALES (ZMK MIL.)
Top 50% of maize sales	78,384 (5.2%)	4.3	3.0	8.1	8.6
Rest of maize sellers	499,530 (33.2%)	3.4	2.0	1.3	1.7
Households not selling maize	927,971 (61.6%)	2.2	1.2	0	0.2

Source: FSRP

However, an examination of the expected sales shows that in 2011 only 5% of small and medium scale farmers accounted for more than 50% of the tradable maize. 33% of small and medium scale farmers accounted for the balance. The majority 62% did not sell any maize at all.

Figure 10. Expected maize sales by province



Source: CFS 2011

Figure 10 above shows that Central and Northern provinces had the highest number of expected sales followed by Southern and Eastern provinces. This covers all the GMEP regions.

The capacity of smallholder farmers to store and access the market has a direct impediment on their ability to produce surplus maize. The national statistics seem to suggest that some farmers sell to other farmers who are themselves also small traders who have the ability to aggregate and take the bags to either FRA satellite depots or to mill gate. The premise of GMEP was to encourage community level storage where not only aggregation is encouraged but quality standards are also adhered to. Training of farmers and farmer groups was therefore key to raise awareness on the importance of quality.

The major buyer of maize, FRA, is said to buy Grade A maize. However, it has been a subject of much debate as to whether they actually check each and every delivery looking at the way they purchase the maize. A farmer drops off the bags at a satellite depot and in recent years the Agency has allowed farmers to supply their maize in their own bags. FRA rebags into their branded bags. The issue of quality has not been deliberately emphasised by the Agency in the public domain. Processors on the other hand are mainly concerned about moisture content and discount smallholder maize to the disadvantage of those farmers who have better quality maize.

Table 10. FRA Purchases from Inception against Expected Sales

Year	CFS Expected Sales	Purchases (MT)	%
2011	1,619,622	1,751,660	108%
2010	1,352,015	1,147,900	85%
2009	820,318	258,200	31%
2008	534,294	70,600	13%
2007	662,470	316,100	48%
2006	0	288,200	
2005	349,734	56,600	16%
2004	481,183	75,800	16%
2003	591,300	32,900	6%
2002	228,181	21,800	10%
2001	292,401	-	-
2000	187,783	-	-
1999	250,001	-	-
1998	175,136	900	1%
1997	311,662	2,500	1%
1996	668,123	0	-

Source: MACO/FRA

Table 10 shows the expected sales as determined by the CFS for the respective year. This is what farmers were expected to sell for the respective year in total. The purchases are what the FRA actually purchased in the respective year. The FRA has not been an active player in the purchase of the commodity until after the 2005 amendment to the Food Reserve Act when it became an active participant. 2008 was a unique year in which the private sector offered a price higher than the FRA and therefore the private sector bought most of the tradable maize. Things changed under the Banda administration from 2009 to 2011 as the FRA bought the largest tonnages of maize in the country's history without the commensurate increase in effective storage capacity. In the 2011 election year more than 100% of expected sales of maize were bought. According to the FRA, the 1.7 mil MT purchases represent 35% purchases over their target of 1.3mil MT. This state of affairs has resulted in processors adopting a wait and see approach. They have opted not to tie-in resources in stocks and this has generally led to the crowding out of the private sector from trading in maize.

3.3 QUALITY STANDARDS

The principal body charged with the preparation and revision of Zambian standards is the Zambia Bureau of Standards (ZBS) under the Standards Act of 1994. However, in terms of agricultural commodities, not all of them have standards prescribed by the ZBS. Among the three core commodities which ZAMACE initially trades in; maize, wheat and soya beans only maize has a standard prescribed by ZBS. This is under ZS 186:2004, 2nd Revision. The revision of this Zambian standard for maize was necessitating by complaints received from producers and consumers on the quality of the grain for seed and consumption purposes, respectively. The standard is used to assess the quality of locally produced and imported maize grain. ANNEX 3 shows the Zambian maize standard.

However, for internal private sector trade, the maize standard used has been determined by industry stakeholders through ZAMACE. Some of the specifications are slightly higher than the ZBS one. This standard is shown in ANNEX 4.

4.0 STORAGE INDUSTRY

The majority of storage infrastructure in Zambia is under FRA. The FRA has in total about 458 units of storage facilities with a capacity of 2 million tons. According to the FRA only just over half of this capacity is serviceable. The scenario of Government owning the storage infrastructure is historical as post-independence and for 27 years the economy was state controlled. After 1991 the transfer of state owned storage infrastructure from the then National Agricultural Marketing Board – NAMBOARD to the 1995 established FRA made it possible for the private sector who required storage infrastructure to lease the excess space. The private sector therefore became the demand for FRA storage.

The FRA has concrete silos which are not in service excerpt for the Lusaka Mungwi-Road depot silos which were recently renovated in a partnership with the Grain Marketing Board of Zimbabwe. The Zambian storage infrastructure was mainly designed for storage of maize and farming inputs such as fertiliser.

4.1 FRA Storage Infrastructure Locations

Table 11. FRA Storage by Province, Type and Capacity

PROVINCE	SILO LOCATIONS	SHED (WAREHOUSE) LOCATIONS	CAPACITY (MT)
CENTRAL	2	56	202,714
COPPERBELT	2	35	112,208
EASTERN		56	156,950
LUAPULA		8	17,575
LUSAKA	1	26	157,352
N/WESTERN		49	31,945
NORTHERN		53	137,486
SOUTHERN	1	130	388,521
WESTERN		27	34,826
GRAND TOTAL	**6**	**440**	**1,239,577**

Source: FRA

An examination of FRA storage infrastructure locations shows that they have 6 silo complexes which are spread across four provinces as shown in Table 11 above. 118,000MT of the Lusaka sheds are listed as used for storing fertiliser and not grain. Most of the FRA storage is in the southern region as this was the major grain production region. However, due to changing weather patterns favouring the central and northern regions of the country there are considerations to boost storage infrastructure. The full details of the FRA storage infrastructure listings are in ANNEX 2.

The increased demand for the FRA to use its own storage over the years has motivated the private sector to start looking at investing in their own storage assets. The signal to establish a regulatory environment for the storage industry was also a driving force for the private sector to establish their own storage infrastructure. It is still an area with extremely high potential as a handful of players have established this infrastructure. These include AgriOptions (owned by about 16 Mkushi farmers and previously managed by Afgri Corporation), Afgri Corporation (which is setting up storage infrastructure which was expected to be ready in 2011) and Grain Storage Solutions (GSS) in Lusaka. GSS is a partnership between CHC Commodities and Zdenakie Commodities.

Table 12. Other Storage Infrastructure

OPERATOR	PROVINCE	DISTRICT	TYPE	CAPACITY (MT)
Afgri Corporation (under construction)	Central	Mkushi	Silo	~70,000
AgriOptions	Central	Mkushi	Silo	60,000
Grain Storage Solutions	Lusaka	Lusaka	Sheds	63,000
				119,000

5.0 GMEP ACHIEVEMENT OF OBJECTIVES AND CHALLENGES

The intents of GMEP are outlined in 2.1. This section outlines the achievement or lack thereof of these based on the statement of verifiable results.

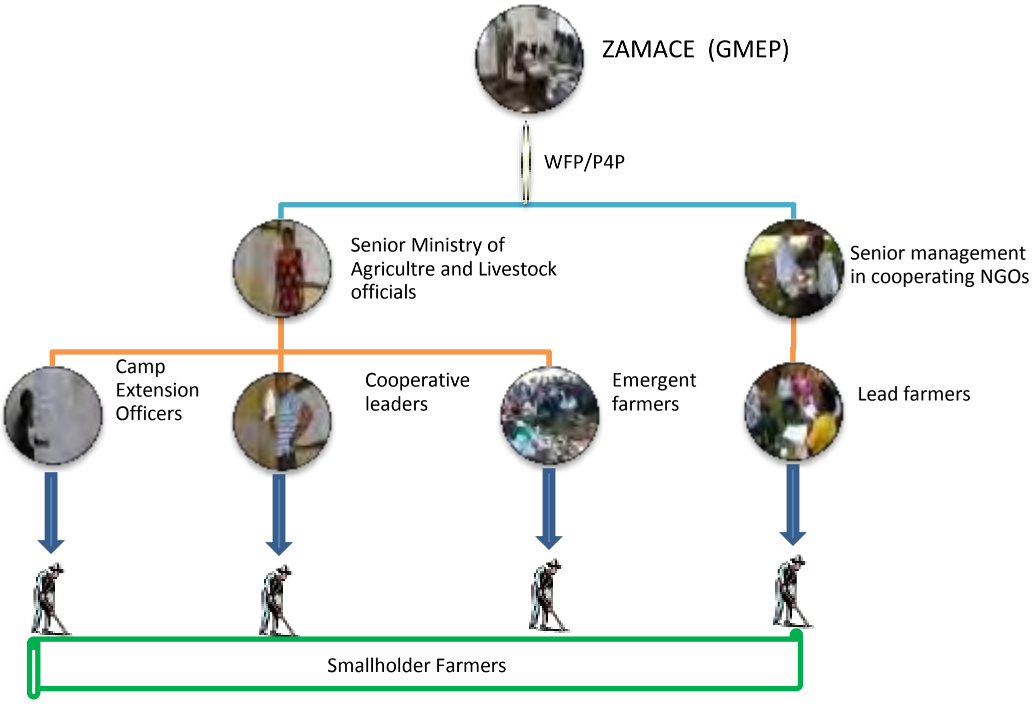
5.1 Training Smallholder Farmer Groups and ToT

This was GMEP's major component as it became a critical activity to change the mind-set and raise awareness on the "new" way of handling, storing, marketing and trading the maize. It encompassed several components such as Training of producers (smallholder farmers), Ministry of Agricultural and livestock officials, warehouse operators and other related stakeholders. Collaborative work with cooperating partners such as WFP/P4P and MAL was essential.

GMEP adopted a three tier training regime in order to effectively achieve its objectives. The first involved the training of senior MAL officials and senior members of management from other cooperating NGOs such as WFP. The second tier was to train MAL Field Camp Extension Officers, Cooperative leaders and emergent farmers (positive deviants). Thirdly, the trained ToTs engage the smallholder farmers.

Training programmes where successfully conducted in 6 districts. The GMEP concept was accepted by small holder farmers as exhibited by their willingness to participate in the grain aggregation exercise. However, the GMEP concept was relatively new therefore farmers took longer to buy-in as they viewed the concept initially with suspicion due to crop losses farmers incurred through unscrupulous businessmen. Some of the smallholder Farmers were risk averse and opted to prove the outcome first. Continuous training was also required to capture new entrants who came on board every year.

Figure 11. GMEP 3-Tier Training



ZAMACE Communication materials where translated from English into seven local languages in order to help small holder farmer comprehend the GMEP concept and the training material.

According to Rubicon (2011), the predominant source of information on market information was mainly obtained through radio. Therefore, Community radio awareness and sensitization programmes were also aired on regional community radio stations in the GMEP regions. Cooperating partners such as Celim and communities such as Basanje participated in the awareness radio programmes.

5.2 Improved quality of smallholder maize:

Grain quality improvement equipment where procured under the project to help farmers reduce on the post-harvest grain losses. Two Moisture testing meters and Five Maize shellers were procured under the project for this purpose.

Through collaboration with WFP a total forty eight smallholder maize shellers were distributed to the three regions. The equipment did not only improve grain quality but also freed the women to doing other farm related activities.

5.3 Community Bulking Centres

GMEP exceeded its target by establishing a total of 8 certified district warehouses in the 3 regions. GMEP went ahead to identified initially 21 community first level aggregation centres which were later reduced to 14 aggregation centres due to impending maize marketing environment at the time.

Regions	Warehouse operators	Warehouse capacity (MT)	Community sheds/first level community aggregation points	Capacity (MT)
Southern Province	Moomba Investments (Monze & Kalomo Districts)	300	Basanje cooperative shed	30
			Mujika cooperative shed	30
			Chiyobola shed	40
			Njola shed	30
			Tendi coop(Monze urban)	30
	AFGRI Choma Districts	5000	Kanchele	300
			Mpangwe	60
			Siamaluba shed	300
Central Province	AFGRI/Citron (Kabwe & Mkushi districts)	270 10000	Kalwelwe shed	60
			Mulonga farm shed (Kangomba coop)	70
			Masansa cooperative shed	1000
			Tamutasha cooperative	30
			Libeya cooperative	60
			Chaloba cooperative	40
Eastern Province	COMACO (Nyimba,Lundazi & Mfuwe districts)	1000	Lundazi	500
			Nyimba	400
			Mfuwe	250

5.1 Placement of Maize Parcels through ZAMACE Broker

Grain aggregation at all first level community points was successfully demonstrated and two smallholder maize parcels from the Southern province were placed on ZAMACE trading platform through Savanna Commodities as selling broker. However, the parcel did not trade on account of above market price. The communities felt that since their maize was Grade A they deserved a premium price over and above the price offered by the FRA which was not as strict on quality.

Larger warehouse operators leased their storage facilities from FRA which were later reclaimed. Ultimately, all smallholder farmers sold their maize to the FRA.

5.2 CoreTalk System Operational

This system was integrated into the ZAMACE website by the developer, Mobile Transactions Zambia Limited (MTZL). Its implementation was based on the quasi-automated trading platform which would allow brokers to trade on-line. The system was not embraced by the brokers due to its slow latency rate as well as the higher cost for appropriate bandwidth by local ISPs. Further, CoreTalk was an SMS based platform which would push and allow for pulling of information from the web-based trading engine. It also required a short code whose generation required an application to the ZICTA, the regulatory authority. The developer also shifted its focus to its money transfer core activity and stopped offering dedicated support. These factors made implementation of CoreTalk challenging.

There was also miscommunication between the Exchange and the ISP providing the domain in that they did not renew it and it was subsequently bought by another party. Attempts to retrieve the domain proved futile and as a consequence the Exchange had to register another domain; zamace.org which is currently in use and content transfer from the old to the new domain is in progress.

5.3 Web-based Warehouse Receipts Operational

The Agricultural Credits Act of 1995 was repealed and replaced by the 2010 Act. This new Act effectively criminalised the activities of ZAMACE in developing the WRS as explained in 6.1.1.

6.0 GMEP LIMITATIONS AND LESSONS LEARNT

GMEP was impacted by some external and internal environment factors. These are discussed in this section.

6.1 LEGAL FRAMEWORK

ZAMACE embarked on pioneering activity in establishing a commodities exchange in an environment which was not ready for this. As such some legal framework bottlenecks impacted the Exchange and ultimately GMEP.

6.1.1 Agricultural Credits and Warehousing

This was the 35th Act of 2010 which repealed the 1995 Act of the same name. The Memorandum of the Act defines the objective of the Act as follows:

a) establish the Warehousing Licensing Authority and provide for its functions and powers;
b) Facilitate for the borrowing of money on the security of charges created on farming stock and other agricultural assets;
c) provide for the registration of charges;
d) provide for the certification of warehouses;
e) provide for the issuance and negotiation of warehouse receipts and the rights conferred by warehouse receipts;
f) provide for the rights and obligations of warehouse operators;
g) repeal and replace the Agricultural Credits Act, 1995; and
h) provide for the matters connected with, or incidental to the foregoing.

A key element of the Act is in Part II Section 3(1) which creates the Warehousing Licensing Authority which shall be a body corporate with perpetual succession. 5(1) provides for the functions of the Authority <u>which are to certify warehouses, approve negotiable warehouse receipts books</u> and any other functions as a result of the law or any other law. 5(2) outlines the actual operative functions of the Authority and these are all consistent with what ZAMACE has been doing such as warehouse inspection, classification, requirements for certification, formulation of standards, collect fees for inspection and issue of warehouse receipts.

Section 6(1) provides that the Minister may by statutory instrument appoint an authorized agency to perform such functions of the Authority as the Minister may specify. Subsection 2 empowers the Minister to revoke such appointment but gives a requirement for a 14 days' notice period and an opportunity for the agency to be heard. In July 2011 at a Ministry of Agriculture stakeholders meeting supported by ZAMACE GMEP, the Exchange was recommended by stakeholders to be appointed as the Agent to perform the functions of the Warehouse Licensing Authority. This process is still work in progress in the Ministry of Agriculture and they are considering establishment of a regulatory body – Warehouse Licensing Authority in the long-run.

The Act recognises the Warehouse Receipt (WR) as a document of title. This is important as the basis for the discounting of WRs and the establishment of a derivatives market since the Q&Q of the underlying commodity would be guaranteed through the WRS. It also presents opportunities for the private sector to invest in storage infrastructure. It also facilitates the involvement of the smallholder sector in the commercial trade of commodities through aggregation of produce in certified warehouses. However, the key limitation of the Act is that as much as it creates a legal framework for the WRS, its lack of implementation also stops anyone from certifying warehouses and issuing warehouse receipts if not appointed by the Licensing Authority.

6.1.2 Proposed Marketing Act 2012

In March 2010, stakeholders met at Kabwe's Tuckers Hotel in a stakeholders meeting hosted by the Ministry of Agriculture to give input into the Marketing Bill drafted by a consultant engaged by the Ministry. The draft was unanimously adopted with some changes by stakeholders for onward transmission to Parliament for enactment. However, due to the full Parliament schedule only the Agricultural Credits Bill was submitted in 2010. The Marketing Bill 2010 is scheduled for presentation to Parliament in 2012.

The Memorandum of the Bill provides the following as the objectives of the Bill:

(a) enhance the viability and sustainability of the agriculture sector;

(b) increase access to markets by persons in the agriculture sector;

(c) establish the Zambia Agricultural Marketing Agency and provide for its functions and powers;

(d) promote the efficiency of the marketing of agricultural commodities;

(e) optimise export earnings from agricultural commodities;

(f) enhance the competitiveness of agricultural commodities in the regional and international market;

(g) facilitate an efficient private sector driven agricultural marketing system; and

(h) provide for matters incidental and connected to the foregoing. The purpose of this Bill other than to provide for a comprehensive legal framework for the sector, is also to encourage maximum participation of the private sector alongside minimal involvement by the Government. To ensure that this is done, section 5 of the Marketing Bill established the Zambia Agricultural Marketing Agency and expressly stress in Section 7(1) as follows, "The Agency shall promote and facilitate an efficient and competitive private sector driven agricultural marketing system." The functions are provided in section 7(2) as follows:

(a) advise the Minister on the development of effective policies related to agricultural marketing taking into account other national economic, social and development policies and international trends and developments;

(b) advise the Minister on the strategic positioning of the agricultural sector in regional and international markets:

(c) monitor and analyse the performance of the market to ensure that the objectives specified under section <u>four</u> are being achieved;

(d) co-ordinate agricultural marketing activities to ensure a smooth, healthy and robust market;

(d) prepare and submit to the Minister for consideration measures or changes to statutory measures that are required as interventions in the market or as the Minister may direct it to investigate and advise on;

(e) monitor the application of statutory measures and make a report on the efficacy and impact of the measures on the market to the Minister; and

(e) Implement, monitor and evaluate the general implementation of, this Act;

This Bill once passed into law will streamline the agricultural sector and especially on the involvement of the State in agric trade.

6.1.3 Proposed Commodity Exchanges Act 2012

The Zambian Cabinet directed the SEC to develop a legal framework for the operation and regulation of commodity exchanges for both hard and soft commodities. ZAMACE has been lobbying for this law and has been actively involved in its development. Considerable work has since been done in drafting the Commodities Exchanges Bill which was scheduled to be enacted at the end of 2011. However, due to budgetary constraints the proposed Regulator put it off to 2012. This draft law is designed to provide for the licensing of commodities exchanges and the various players on the Exchange such as brokers. The Bill once enacted into law would also give ZAMACE clout and confer on it the role of SRO and allow it to regulate its own broking members instilling confidence in the trading public.

The SEC at the ZAMACE stakeholders' consultative lunch meeting announced its commitment to the development of ZAMACE and revealed that there would be a stakeholder's consultation in early February 2012. This is a necessary step towards the presentation of the Bill for Parliamentary approval. In the current situation the absence of this law makes some actors shun the Exchange as they are not sure how their interests are protected if there is no regulatory oversight on ZAMACE.

6.2 GOVERNMENT POLICY

At best the Government policy on involvement in the marketing of agricultural commodities especially maize has been unpredictable. For instance in the 2011 marketing season the Government has bought 34% more maize than they projected to buy. They have bought 108% of the expected sales indicated in the CFS. This means that for maize the Government through the FRA was the market. These turn of events disincentives the active participation of the private sector. For instance mills bought significantly less maize from their traditional suppliers as they know that FRA will tie-in liquidity in stocks on their behalf and still sell at discounted prices. The private sector is therefore crowded out in the financial market as FRA carries a 30% Government guarantee when they intend to borrow to finance their purchases, to some extent the input market and marketing of the commodity.

Some stakeholders feel that the FRA does not strictly adhere to its quality standard as it lacks the capacity to test each and every bag of maize purchased. Ironically, it takes longer to remit payment to depositors of maize to them.

6.3 DEVELOPMENT OF ZAMACE

ZAMACE came to early for the Zambian market place although needed. The low awareness on the operations and benefits of a commodity exchange and the misconceptions about it which arise from this low awareness has led to some of the challenges faced by the Exchange in its development. IAPRI in its paper on the Challenges in the Development of Stock Exchanges in Africa – The Case of ZAMACE outlines these environmental and internal factors.

At inception ZAMACE was buoyed by interest from largely the trading industry and it was no surprise therefore that its membership comprised mainly the larger traders. This unfortunately over time earned the Exchange the view of it being a “Traders Club”. The dual brokerage role of broker for the public and own-account trader, although provided for in the Rules and a general practice in markets globally, however gave the public an impression that the brokers would trade ahead of their clients especially that this though not allowed in the ZAMACE Rules was not outlawed due to the lack of a legal framework.

The foregoing and other factors brought out by IAPRI in its paper was also used as part of the motivation for the reforms at the Exchange to delink ownership from broking membership in a bid to broaden the shareholding of the Exchange and remove the negative tag of it being for traders only, inject fresh capital in the entity and balance both the supply and demand sides for a more vibrant Exchange. In so doing ZAMACE suspended trading activity in August 2011 and embarked on this process which is scheduled to be concluded by the second quarter of 2012.

6.4 GMEP BUDGET UTILISATION

The scope of work and the associated time requirements were underestimated especially when it came to the administrative component and reporting. This was noted during the life of the project. ZAMACE staff were envisaged in the design to be part-time and commit 10% of their time to GMEP. This proved to be challenging as GMEP demanded more time. This state of affairs coupled with internal reform within ZAMACE resulted in delays in the budget burn-rate. There were also some funding delays from COMPETE and miscommunication with ZAMACE at some point which also further delayed the ability to utilise the entire budget.

These combined factors saw the utilisation of only 75% of the original budget and 89% of the revised budget. $24,000 of the revised budget remained unclaimed and unspent as of project end in December 2011.

7.0 CONCLUSION AND WAY FORWARD

GMEP is a worthwhile initiative which we believe will continue beyond USAID/COMPETE funding. Smallholder linkage to the commercial market though not the core business activity of the Exchange, has attracted the attention of the wider stakeholders as it is the key to the successful commercialisation of smallholder farmers in crops which they are the majority producer such as maize and other crops they can diversify into such as soya beans, barley (currently in pilot phase by the Zambian Breweries Group), ground nuts, rice, sunflower and sorghum. Aggregation at the community level with associated training on quality and handling is an important first step to accessing the market. GMEP demonstrated that the smallholder can attain the quality that the commercial producer is associated with and in some cases even surpass it. This was shown when GMEP communities were also encouraged to aggregate other crops other than maize. In Southern and Central provinces some farmer groups aggregated cowpeas and soya beans which were subsequently bought by WFP and private traders, respectively.

The entirety of the results which GMEP sought to achieve may not have been achieved but GMEP stands out as the vivid demonstration of what encouraging community level aggregation with market linkage can achieve. The Ministry of Agriculture and Livestock Department of Cooperatives has endorsed the GMEP initiative and has been approached by a bank to see how they can pilot WR based production and financing once the legal framework grey areas are resolved. The Ministry has contacted ZAMACE to see if it can use the GMEP target areas for this. The WFP is also considering the GMEP model as a way of satisfying their procurement from traceable smallholder farming communities.

Some cooperating partners have pledged their support to continuing and expanding the Exchange engagement with the smallholder sector as a key driver to stimulating pockets of smallholder commercialisation alongside general commercial activity. The ZNFU has since put up Agricultural Service Centres (ASC) in the Southern and Central Provinces and wants ZAMACE to operate the on-sight laboratories and grades and standards. These ACS are also meant to be replicated in partnership with the private sector across the country and become focal points for not only community aggregation and storage but input support and BDS access. GMEP has therefore started a revolution which has the potential to transform Zambian smallholder agriculture into the commercial activity it is meant to be generating sound Q&Q. The initiative will not end with the funding but continue and grow.

ANNEX 1. GMEP BUDGET TRACKER

ZAMACE LIMITED							
FINAL REVISED BUDGET							
EXPENSE PROJECTIONS	Zamace Cost Share	Compete Share	Total GMEP	Balance Compete 01-12-11	Expenditure December 2011	Balance Compete 31-12-11	Total Compete Expenditure
Administration							
Executive Director	106,175	11,550	117,725	550	550	-	11,550
Finance Director	70,484	8,925	79,409	425	425	-	8,925
Operations Manager	23,924	3,465	27,389	-	-	-	3,465
National Coordinator	-	8,286	8,286	2,175	1,275	900	7,386
Regional Coordinator - Eastern	1,200	14,732	15,932	-	-	-	14,732
Regional Coordinator - Southern	1,200	17,971	19,171	2,760	(1,006)	3,766	14,205
Regional Coordinator - Central	1,200	18,458	19,658	2,760	2,040	720	17,738
Trade Coordinator / MIS	13,297	11,700	24,997	-	-	-	11,700
Support Project Close-out	-	650	650	650	640	10	640
Laboratory Technician	12,245	3,740	15,985	-	-	-	3,740
WHT for External Consultants				-	9,026	(9,026)	9,026
Total Administration	**229,725**	**99,477**	**329,202**	**9,320**	**12,950**	**(3,630)**	**103,107**
Training Activities							
Community Radio Programmes	-	1,750	1,750	1,320	-	1,320	430
Printing of Seven local language leaflets	-	9,500	9,500	9,500	7,171	2,329	7,171
Printing of information Posters	-	600	600	600	-	600	-
Printing of Communication Training Manuals	-	3,720	3,720	3,720	-	3,720	-
Training of Trainers Grain Handling	91	1,927	2,018	-	-	-	1,927
Training of Trainers - Regional Coordinators	-	131	131	-	-	-	131
Lobbying Training of Ministry Agriculture Coordinators	-	-	-	-	-	-	-
Training of Other Stakeholders	-	-	-	-	-	-	-
Warehouse Operator Rules Training	1,111	-	1,111	-	-	-	-
Documentaries - TV & Radio	-	-	-	-	-	-	-
Baseline survey - Pre	-	20,000	20,000	-	-	-	20,000
Baseline survey - Post	-	-	-	-	-	-	-
Total Training Activities	**1,202**	**37,628**	**38,830**	**15,140**	**7,171**	**7,969**	**29,659**
Technical Assistance							
Consultant - WOs & WRs Rules & Requirements Review	-	2,000	2,000	-	-	-	2,000
Consultant - Translation of leaflets/Training aids into seven local languages	-	3,000	3,000	283	-	283	2,717
Stakeholders Consultative Meetings	-	3,000	3,000	2,558	797	1,761	1,239
Resource Persons - Stakeholder/MACO Training	-	-	-	-	-	-	-
Resource Persons - WO Training	-	-	-	-	-	-	-
Total Technical Assistance	**-**	**8,000**	**8,000**	**2,841**	**797**	**2,044**	**5,956**
Other Direct Costs							
Rent - Coordinating Office	3,768	5,760	9,528	276	276	-	5,760
Office Running Costs - Regional Offices	51	4,685	4,736	1,111	110	1,002	3,683
Motorcycle Running Expenses	-	2,290	2,290	1,167	944	223	2,067
Internet, Web Service and Communication - Regions and Communities	1,298	1,984	3,282	853	605	249	1,735
Rehabilitation of 3 bulking centres	-	6,000	6,000	6,000	-	6,000	-
Oversight District and Community Visits	7,576	19,037	26,613	7,587	-	7,587	11,450
Total Direct Costs	**12,693**	**39,756**	**52,449**	**16,995**	**1,934**	**15,061**	**24,695**
Equipment							
Improved Quality:							
Shore 920 Moisture metres	-	6,075	6,075	1,754	-	1,754	4,321
Maize Shellers	-	7,477	7,477	855	-	855	6,622
Regional Offices Furniture - Eastern	-	184	184	-	-	-	184
Cleaning Sieves	-	2,400	2,400	-	-	-	2,400
Other Equipment:	-		-	-	-	-	-
Computers and Printers for Regions	-	6,449	6,449	-	-	-	6,449
Projector	-	1,558	1,558	-	-	-	1,558
Scanner and copier	-	1,568	1,568	-	-	-	1,568
Total Equipment	**-**	**25,711**	**25,711**	**2,608**	**-**	**2,608**	**23,103**
Programme Total	**243,620**	**210,572**	**454,192**	**46,904**	**22,853**	**24,052**	**186,520**
Original Grant Budget		**248,820**					
Expenditure as percentage of Original Budget							**75%**
Expenditure as percentage of Revised Budget							**89%**

ANNEX 2. LIST OF FRA STORAGE INFRASTRUCTURE

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	AUSTRALIAN		SH	1680	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	AUSTRALIAN		SH	1680	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	AUSTRALIAN		SH	1680	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	CIDA (M)		SH	5000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	DMC		SH	38000	
LUSAKA	LUSAKA	FERT. COMPLEX	URBAN	DMC		SH	25000	
LUSAKA	LUSAKA	GRAINS DEPOT	URBAN	AUSTRALIAN		SH	1680	
LUSAKA	LUSAKA	GRAINS DEPOT	URBAN	DMC-A		SH	3075	
LUSAKA	LUSAKA	GRAINS DEPOT	URBAN	DMC - B		SH	3075	
LUSAKA	LUSAKA	GRAINS DEPOT	URBAN	GMB		SH	6150	
LUSAKA	LUSAKA	GRAINS DEPOT	URBAN	EEC		SH	6200	
LUSAKA	LUSAKA	GRAINS DEPOT	URBAN		SILOS		15000	
LUSAKA	KAFUE	CHIAWA	R.RURAL	DMC		SH	27	
LUSAKA	KAFUE	MUNGU	R.RURAL	DMC		SH	45	
LUSAKA	CHONGWE	CHONGWE	URBAN	EEC		SH	1800	
LUSAKA	CHONGWE	RUFUNSA	RURAL	DMC		SH	1080	
LUSAKA	LUANGWA	CHITOPE	R.RURAL	DMC		SH	100	
LUSAKA	LUANGWA	MPUKA	R.RURAL	DMC		SH	1080	
CENTRAL	MUMBWA	MAVULE	P.URBAN	MINESTONE		SH	2250	
CENTRAL	MUMBWA	MUMBWA JUNCT.	URBAN	CIDA (M)		SH	5000	
CENTRAL	MUMBWA	MUMBWA JUNCT.	URBAN	CIDA (M)		SH	5000	
CENTRAL	MUMBWA	MUMBWA JUNCT.	URBAN	EEC		SH	1800	
CENTRAL	MUMBWA	MUMBWA JUNCT.	URBAN	JICA		SH	5000	
CENTRAL	MUMBWA	MUMBWA MAIN	URBAN	OPEN SHED		SH	1800	
CENTRAL	MUMBWA	NAMPUNDWE	P.URBAN	MINESTONE		SH	2250	
CENTRAL	MUMBWA	SHIBUYUNJI	P.URBAN	MINESTONE		SH	2250	
CENTRAL	MUMBWA	SICHIBO	R.RURAL	DMC		SH	450	
CENTRAL	MUMBWA	SICHIBO	R.RURAL	MINESTONE		SH	2250	**185402**
CENTRAL	KABWE	KABWE EAST	RURAL	MINESTONE		SH	2250	
CENTRAL	KABWE	KDCU HQ	URBAN	DMC		SH	7650	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
CENTRAL	KABWE	KDCU HQ	URBAN	DMC		SH	7650	
CENTRAL	CHIBOMBO	MWACHISOMPOLA	P.URBAN	MINESTONE		SH	2250	
CENTRAL	CHIBOMBO	MWACHISOMPOLA	P.URBAN	EEC		SH	900	
CENTRAL	CHIBOMBO	MWACHISOMPOLA	P.URBAN	EEC		SH	1800	
CENTRAL	KABWE	NATUSEKO	URBAN	AUSTRALIAN		SH	1680	
CENTRAL	KABWE	NATUSEKO	URBAN	CIDA(F) A		SH	3500	
CENTRAL	KABWE	NATUSEKO	URBAN	CIDA(F) B		SH	3500	
CENTRAL	KABWE	NATUSEKO	URBAN		SILOS		22500	
CENTRAL	CHIBOMBO	LIFWAMBULA	RURAL	EEC			765	
CENTRAL	CHIBOMBO	KAPOPO	RURAL	EEC			900	
CENTRAL	CHIBOMBO	LITETA	RURAL	EEC			1800	
CENTRAL	KAPIRI MPOSHI	KAPIRI MPOSHI	URBAN	DMC (OPEN)		SH	364	
CENTRAL	KAPIRI MPOSHI	KAPIRI MPOSHI	URBAN	FRA		SH	5000	
CENTRAL	CHIBOMBO	CHISAMBA	URBAN	FRA/CAMCO		SH	5000	
CENTRAL	CHIBOMBO	CHISAMBA	URBAN	DMC SHED (S)			1500	
CENTRAL	CHIBOMBO	CHISAMBA	URBAN	DMC SHED (L)		SH	8500	
CENTRAL	CHIBOMBO	CHISAMBA	URBAN	DMC SHED (L)		SH	1800	
CENTRAL	CHIBOMBO	CHISAMBA	URBAN		SILOS		15000	
CENTRAL	CHIBOMBO	MUCHENJE	URBAN	MINESTONE			2250	
CENTRAL	MKUSHI	CHIBWE	P.URBAN	DMC		SH	765	
CENTRAL	MKUSHI	CHIBWE	P.URBAN	EEC		SH	4500	
CENTRAL	MKUSHI	CHIPULUKA	P.URBAN	MINESTONE		SH	2250	
CENTRAL	MKUSHI	KAKWELESA	P.URBAN	EEC		SH	765	
CENTRAL	MKUSHI	LUNCHU-A	P.URBAN	EEC			765	
CENTRAL	MKUSHI	LIKUMBI	P.URBAN	MINESTONE			2250	
CENTRAL	MKUSHI	LIKUMBI	P.URBAN	MINESTONE			2250	
CENTRAL	MKUSHI	MANSANSA	P.URBAN	AUSTRALIAN		SH	1680	
CENTRAL	MKUSHI	MANSANSA	P.URBAN	AUSTRALIAN		SH	1680	
CENTRAL	MKUSHI	MANSANSA	P.URBAN	AUSTRALIAN		SH	1680	
CENTRAL	MKUSHI	MANSANSA	P.URBAN	JICA		SH	5000	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(F)		SH	3500	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(F)		SH	3500	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(F)		SH	3500	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(F)		SH	3500	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(F)		SH	3500	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(M)		SH	5000	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(M)		SH	5000	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(M)		SH	5000	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(M)		SH	5000	
CENTRAL	MKUSHI	MKUSHI JUNCT.	URBAN	CIDA(M)		SH	5000	
CENTRAL	MKUSHI	MAKAFU	P.URBAN	EEC		SH	765	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
CENTRAL	MKUSHI	MUSOFU	P.URBAN	EEC			765	
CENTRAL	SERENJE	CHALILO	P.URBAN	MINESTONE		SH	2250	
CENTRAL	SERENJE	KANONA	P.URBAN	MINESTONE		SH	2250	
CENTRAL	SERENJE	MULILIMA	RURAL	DMC		SH	990	
CENTRAL	SERENJE	SERENJE MAIN	URBAN	FRA/CAMCO		SH	5000	**174664**
SOUTHERN	CHOMA	CHILUMBWE	RURAL	DMC		SH	3150	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	CHOMA	CHOMA MAIN	URBAN	DMC		SH	4000	
SOUTHERN	CHOMA	KABANJE	R.RURAL	CODECO		SH	2250	
SOUTHERN	CHOMA	MAPANZA	RURAL	DMC		SH	2500	
SOUTHERN	CHOMA	MASUKU	R.RURAL	CODECO		SH	2250	
SOUTHERN	CHOMA	MBABALA	RURAL	LPU SHED			2813	
SOUTHERN	CHOMA	NAMUSWA	R.RURAL	CODECO		SH	2250	
SOUTHERN	CHOMA	PEMBA	P.URBAN	DMC		SH	1800	
SOUTHERN	CHOMA	PEMBA	P.URBAN	DMC		SH	11400	
SOUTHERN	CHOMA	CHIPANDE	RURAL	DMC			49	
SOUTHERN	MAZABUKA	CHAKOLA	R.RURAL	CODECO		SH	2250	
SOUTHERN	MAZABUKA	CHIVUNA	R.RURAL	CODECO		SH	2250	
SOUTHERN	MAZABUKA	KALEYA	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MAZABUKA	KALEYA	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MAZABUKA	KALEYA	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MAZABUKA	KALEYA	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MAZABUKA	MBIYA	P.URBAN	CODECO		SH	2250	
SOUTHERN	MAZABUKA	MALABO	R.RURAL	CODECO		SH	2250	
SOUTHERN	MAZABUKA	MAZABUKA MAIN	URBAN	CIDA (F)		SH	3500	
SOUTHERN	MAZABUKA	MAZABUKA MAIN	URBAN	CIDA (F)		SH	3500	
SOUTHERN	MAZABUKA	MAZABUKA MAIN	URBAN	DMC (IRON SH)		SH	19500	
SOUTHERN	MAZABUKA	MAZABUKA MAIN	URBAN	GREENBELT		SH	2000	
SOUTHERN	MAZABUKA	MAZABUKA MAIN	URBAN	GREENBELT		SH	2000	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
SOUTHERN	MAZABUKA	MAZABUKA MAIN	URBAN	GREENBELT		SH	2000	
SOUTHERN	MAZABUKA	MWANACHINGW.	R.RURAL	CODECO		SH	2250	
SOUTHERN	MAZABUKA	NEGANEGA	R.RURAL	DMC		SH	450	
SOUTHERN	MAZABUKA	MUNENGA	R.RURAL	DMC			97	
SOUTHERN	MAZABUKA	SIYOOWI	R.RURAL	DMC			360	
SOUTHERN	MAZABUKA	KALAMA	R.RURAL	DMC			97	
SOUTHERN	MAZABUKA	NALEZA	R.RURAL	DMC			49	
SOUTHERN	MAZABUKA	MAGOYE	P.URBAN	DMC			97	
SOUTHERN	MAZABUKA	CHIVUNA	R.RURAL	DMC			97	
SOUTHERN	MAZABUKA	MALABO	R.RURAL	DMC			2000	
SOUTHERN	MAZABUKA	CHIKOMBOLA	R.RURAL	L.P.U			5000	
SOUTHERN	MAZABUKA	NAMEEMBO	R.RURAL	L.P.U			5000	
SOUTHERN	MAZABUKA	NAMEEMBO	R.RURAL	DMC			32	
SOUTHERN	MAZABUKA	CHIZIYO	R.RURAL	DMC			32	
SOUTHERN	MAZABUKA	UPPER KALEYA	R.RURAL	L.P.U			5000	
SOUTHERN	MAZABUKA	HANZALA	R.RURAL	L.P.U			5000	
SOUTHERN	MAZABUKA	MUNJILE	R.RURAL	L.P.U			5000	
SOUTHERN	MAZABUKA	SIMOONGA	R.RURAL	L.P.U			5000	
SOUTHERN	MONZE	BWEENGWA	RURAL	CODECO		SH	2250	
SOUTHERN	MONZE	CHIVUNA	RURAL	DMC		SH	720	
SOUTHERN	MONZE	CHISEKESI	P.URBAN	DMC		SH	7626	
SOUTHERN	MONZE	MILELE	RURAL	CODECO		SH	2250	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	CIDA (F)		SH	3500	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	CIDA (M)		SH	5000	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	DMC (ASB)		SH	3500	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	DMC (IRON SH)		SH	3500	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN	DMC (IRON SH)		SH	5400	
SOUTHERN	MONZE	MONZE COMPLEX	URBAN		SILOS		15000	
SOUTHERN	MONZE	NJOLA	RURAL	CODECO		SH	2250	
SOUTHERN	MONZE	TAMBERO	RURAL	DMC		SH	720	
SOUTHERN	MONZE	MUNYENZE	R.RURAL	DMC		SH	3750	
SOUTHERN	MONZE	MUNYENZE	R.RURAL	EEC		SH	2677	
SOUTHERN	MONZE	MUNYENZE	R.RURAL	DMC			360	
SOUTHERN	MONZE	LUCENJE	R.RURAL	DMC			360	
SOUTHERN	MONZE	HAMUSANWA	R.RURAL	DMC			360	
SOUTHERN	MONZE	KATIMBA	R.RURAL	DMC			97	
SOUTHERN	MONZE	BBOMBO	R.RURAL	DMC			49	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
SOUTHERN	MONZE	HAMAPANDE	R.RURAL	DMC			360	
SOUTHERN	MONZE	BASANJE	R.RURAL	DMC			49	
SOUTHERN	MONZE	LWEETA	R.RURAL	LPU			49	
SOUTHERN	MONZE	NAMPEYO	R.RURAL	DMC			292	
SOUTHERN	MONZE	KAYOLA	R.RURAL	DMC			49	
SOUTHERN	MONZE	NTAMBO	R.RURAL	DMC			49	
SOUTHERN	MONZE	CHIPEMBELE	R.RURAL	LPU				
SOUTHERN	KALOMO	KALOMO COMPLEX	URBAN	FRA /CAMCO		SH	19000	
SOUTHERN	KALOMO	KALOMO COMPLEX	URBAN	JICA		SH	5000	
SOUTHERN	KALOMO	KALOMO COMPLEX	URBAN	JICA		SH	5000	
SOUTHERN	KALOMO	KALOMO ST	URBAN	DMC		SH	2500	
SOUTHERN	KALOMO	KAUWE	R.RURAL	CODECO		SH	2250	
SOUTHERN	KALOMO	MAKUNKA	R.RURAL	CODECO		SH	2250	
SOUTHERN	KALOMO	MULANJE	R.RURAL	CODECO		SH	2250	
SOUTHERN	KALOMO	SIAMAGUMBA	R.RURAL	CODECO		SH	2250	
SOUTHERN	KALOMO	MULUNJE (B)	R.RURAL	CODECO			2250	
SOUTHERN	KALOMO	CHOONGA	R.RURAL	CODECO			2250	
SOUTHERN	KALOMO	CHOONGA	R.RURAL	LPU			5000	
SOUTHERN	KALOMO	SIAMAFUMBA	R.RURAL	LPU			5000	
SOUTHERN	KALOMO	MAKUNKA	R.RURAL	CODECO			2250	
SOUTHERN	KALOMO	KASUKWE	R.RURAL	LPU			5000	
SOUTHERN	KALOMO	SIKAANGA	R.RURAL	LPU			5000	
SOUTHERN	KALOMO	NGUBA	R.RURAL	LPU			5000	
SOUTHERN	KALOMO	MWIITA	R.RURAL	LPU			5000	
SOUTHERN	KALOMO	ZIMBA	P.URBAN	LPU			5000	
SOUTHERN	KALOMO	CHILALA	URBAN	CODECO		SH	2250	
SOUTHERN	KALOMO	MULYAMBEBA	R.RURAL	LPU			100	
SOUTHERN	KALOMO	MUYABA	R.RURAL	LPU			100	
SOUTHERN	KALOMO	CHIKANTA	R.RURAL	CODECO			2250	
SOUTHERN	KALOMO	SIACHITEMA	R.RURAL	CODECO			2250	
SOUTHERN	LIVINGSTONE	LIVINGSTONE	URBAN	DMC		SH	1800	
SOUTHERN	LIVINGSTONE	LIVINGSTONE	URBAN	DMC		SH	4500	
SOUTHERN	NAMWALA	CHITONGO	R.RURAL	CODECO		SH	2250	
SOUTHERN	NAMWALA	KABULAMWANDA	R.RURAL	DMC		SH	1500	
SOUTHERN	NAMWALA	MUCHILA	R.RURAL	CODECO		SH	2250	
SOUTHERN	NAMWALA	MUKABA	R.RURAL	CODECO		SH	2250	
SOUTHERN	NAMWALA	NAMWALA MAIN	R.RURAL	DMC		SH	1526	
SOUTHERN	NAMWALA	NAMWALA MAIN	R.RURAL	EEC SHED		SH	2677	
SOUTHERN	NAMWALA	KASIIKA	R.RURAL	DMC OPEN			49	
SOUTHERN	NAMWALA	NTONDWE	R.RURAL	DMC OPEN			49	
SOUTHERN	NAMWALA	MBEZA	R.RURAL	LPU			100	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
SOUTHERN	GWEMBE	MAAMBA	R.RURAL	CODECO		SH	2250	
SOUTHERN	GWEMBE	LUSITU	R.RURAL	CODECO		SH	2250	
SOUTHERN	GWEMBE	MAAMBA	R.RURAL	CODECO		SH	2250	
SOUTHERN	GWEMBE	SINAZEZE	R.RURAL	CODECO		SH	2250	
SOUTHERN	GWEMBE	MUNYUMBWE	R.RURAL	DMC			49	
SOUTHERN	GWEMBE	SINAZEZE	R.RURAL	DMC (LARGE)			49	
SOUTHERN	GWEMBE	SINAZEZE	R.RURAL	DMC (SMALL)			32	
SOUTHERN	GWEMBE	GWEMBE	P.URBAN	LPU			5000	
SOUTHERN	KAZUNGULA	KABUYU	R.RURAL	LPU			100	
SOUTHERN	KAZUNGULA	MUZYA	R.RURAL	LPU			100	
SOUTHERN	KAZUNGULA	NYAWA	R.RURAL	LPU			100	
SOUTHERN	ITEZHI TEZHI	ITEZHI TEZHI	R.RURAL	LPU			100	
SOUTHERN	ITEZHI TEZHI	MBILA	R.RURAL	LPU			100	**388521**
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN		SILOS		15000	
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN	DMC CLOSED		SH	2250	
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN	DMC OPEN SHED		SH	4000	
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN	DMC OPEN SHED		SH	5000	
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN	DMC OPEN SHED		SH	4000	
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN	DMC SHED 1/3		SH	4000	
COPPERBELT	NDOLA	BWANA MKUBWA	URBAN	DMC SHED 1/1		SH	4000	
COPPERBELT	NDOLA	MKULUNGWE	R.RURAL	DMC			102	
COPPERBELT	NDOLA	MUTABA	R.RURAL	DMC			87	
COPPERBELT	NDOLA	MUTABA	R.RURAL	DMC			100	
COPPERBELT	NDOLA	KATUBA	R.RURAL	DMC			120	
COPPERBELT	NDOLA	MUSHIKISHI	R.RURAL	DMC			154	
COPPERBELT	NDOLA	MIYENGWE	R.RURAL	DMC			155	
COPPERBELT	NDOLA	NYENYEZI	R.RURAL	DMC			94	
COPPERBELT	NDOLA	MPONGWE	R.RURAL	DMC			89	
COPPERBELT	NDOLA	NDUBENI	R.RURAL	DMC			89	
COPPERBELT	NDOLA	KASHIBA	R.RURAL	DMC			89	
COPPERBELT	NDOLA	MACHIYA	R.RURAL	DMC			89	
COPPERBELT	NDOLA	MWINUNA	R.RURAL	DMC			89	
COPPERBELT	NDOLA	KALUNKHUMYA	R.RURAL	DMC			89	
COPPERBELT	NDOLA	MASATI	R.RURAL	DMC			89	
COPPERBELT	MPONGWE	MUKUMPU	R.RURAL	DMC			89	
COPPERBELT	MPONGWE	KANYENDA	R.RURAL	DMC			89	
COPPERBELT	MASAITI	KATUBA	R.RURAL	DMC			89	
COPPERBELT	NDOLA	KSFULAFUTA	R.RURAL	DMC			89	
COPPERBELT	NDOLA	KAFUBUBLOCK	R.RURAL	DMC			89	
COPPERBELT	NDOLA	CHINONDO	R.RURAL	DMC			89	
COPPERBELT	NDOLA	KASHITU	R.RURAL	DMC			89	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
COPPERBELT	NDOLA	MIBENGE	URBAN	DMC			100	
COPPERBELT	KITWE	CHAMBESHI	URBAN	AUSTRALIAN		SH	1800	
COPPERBELT	KITWE	CHAMBESHI	URBAN	CIDA (M)		HS	5000	
COPPERBELT	KITWE	CHAMBESHI	URBAN	CIDA (M)		HS	5000	
COPPERBELT	KALULUSHI	CHAMBESHI	URBAN	FRA/CAMCO		SH	15000	
COPPERBELT	KALULUSHI	CHAMBESHI	URBAN	FRA/CAMCO		SH	20000	
COPPERBELT	KITWE	KITWE	URBAN		SILO		15000	
COPPERBELT	CHINGOLA	CHINGOLA	URBAN	JICA		HS	5000	
COPPERBELT	CHINGOLA	CHINGOLA	URBAN	JICA		HS	5000	**112208**
EASTERN	CHIPATA	ALIMI	URBAN	CIDA (F)		SH	3500	
EASTERN	CHIPATA	ALIMI	URBAN	CIDA (F)		SH	3500	
EASTERN	CHIPATA	ALIMI	URBAN	CIDA (M)		SH	5000	
EASTERN	CHIPATA	ALIMI	URBAN	CIDA (M)		SH	5000	
EASTERN	CHIPATA	ALIMI	URBAN	CIDA (M)		SH	5000	
EASTERN	CHIPATA	ALIMI	URBAN	CIDA (M)		SH	5000	
EASTERN	CHIPATA	CHIEF JUMBE	R.RURAL	LIRDP			160	
EASTERN	CHIPATA	CHIEF KAKUMBI	R.RURAL	LIRDP			160	
EASTERN	CHIPATA	CHIEF MALAMA	R.RURAL	LIRDP			160	
EASTERN	CHIPATA	CHIEF MAMBWE	R.RURAL	LIRDP			160	
EASTERN	CHIPATA	CHIEF MSORO	R.RURAL	LIRDP			160	
EASTERN	CHIPATA	CHIWOKO	RURAL	MINESTONE		SH	2250	
EASTERN	CHIPATA	FENI	RURAL	MINESTONE			2250	
EASTERN	CHIPATA	JERUSALEM	RURAL	MINESTONE		SH	2250	
EASTERN	CHIPATA	KALICHELO	RURAL	MINESTONE		SH	2250	
EASTERN	CHIPATA	MGUBUDU	RURAL	MINESTONE		SH	2250	
EASTERN	KATETE	KAGORO	RURAL	MINESTONE		SH	2250	
EASTERN	KATETE	KATETE	URBAN	CIDA (F)		SH	3500	
EASTERN	KATETE	KATETE	URBAN	CIDA (F)		SH	3500	
EASTERN	KATETE	KATETE	URBAN	CIDA (M)		SH	5000	
EASTERN	KATETE	KATETE BOMA	URBAN	DMC		SH	900	
EASTERN	KATETE	KATETE BOMA	URBAN	DMC		SH	900	
EASTERN	KATETE	KATIULU	RURAL	MINESTONE		SH	2250	
EASTERN	KATETE	MUNGOMBA	RURAL	MINESTONE		SH	2250	
EASTERN	KATETE	SINDA	URBAN	CIDA (M)		SH	5000	
EASTERN	KATETE	SINDA	URBAN	CIDA (M)		SH	5000	
EASTERN	KATETE	VULAMOKOKO	RURAL	MINESTONE		SH	2250	
EASTERN	PETAUKE (NYIMBA)	MTILIZI	P.URBAN	JICA		SH	5000	
EASTERN	PETAUKE	PETAUKE COMPL.	URBAN	CIDA (F)		SH	3500	
EASTERN	PETAUKE	PETAUKE COMPL.	URBAN	CIDA (M)		SH	5000	
EASTERN	PETAUKE	PETAUKE	URBAN	FRA/CAMCO		SH	5000	
EASTERN	PETAUKE	PETAUKE MAIN	P.URBAN	DMC		SH	450	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
EASTERN	PETAUKE (NYIMBA)	MANYANI	RURAL	MINESTONE		SH	2250	
EASTERN	PETAUKE (NYIMBA)	MCHIMADZI	RURAL	MINESTONE		SH	2250	
EASTERN	PETAUKE (NYIMBA)	MSANZARA	RURAL	MINESTONE		SH	2250	
EASTERN	PETAUKE (NYIMBA)	NYIMBA	P.URBAN	MINESTONE		SH	2250	
EASTERN	LUNDAZI	EGICHIKENI	RURAL	MINESTONE		SH	2250	
EASTERN	LUNDAZI	EMUSA	RURAL	MINESTONE		SH	2250	
EASTERN	LUNDAZI	HOYA	RURAL	MINESTONE		SH	2250	
EASTERN	LUNDAZI	KABINGA	RURAL	MINESTONE		SH	2250	
EASTERN	LUNDAZI	KATEME	RURAL	MINESTONE		SH	2250	
EASTERN	LUNDAZI	LUMEZI	RURAL	MINESTONE		SH	2250	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	CIDA (F)		SH	3500	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	CIDA (F)		SH	3500	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	CIDA (M)		SH	5000	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	CIDA (M)		SH	5000	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	CIDA (M)		SH	5000	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	DMC		SH	1800	
EASTERN	LUNDAZI	LUND. COMPLEX	URBAN	DMC		SH	1800	
EASTERN	CHADIZA	CHADIZA BOMA	P.URBAN	CIDA (M)		SH	5000	
EASTERN	CHADIZA	GIBSON	RURAL	MINESTONE		SH	2250	
EASTERN	CHADIZA	VUBWI	RURAL	MINESTONE		SH	2250	
EASTERN	CHADIZA	ZEMBA	RURAL	MINESTONE		SH	2250	
EASTERN	CHADIZA	ZOZWE	RURAL	MINESTONE		SH	2250	
EASTERN	CHAMA	CHAMA	R.RURAL	DMC		SH	1800	
EASTERN	CHAMA	CHAMA	R.RURAL	MINESTONE		SH	2250	**156950**
NORTHERN	KASAMA	CHIMBA	R.RURAL	NORAD		SH	3500	
NORTHERN	KASAMA	CHIOMBO	RURAL	MINESTONE		SH	2250	
NORTHERN	KASAMA	ISUKA	RURAL	MINESTONE		SH	2250	
NORTHERN	KASAMA	KAPANDA	RURAL	MINESTONE		SH	2250	
NORTHERN	KASAMA	KASAMA MAIN	URBAN	NORAD		SH	5000	
NORTHERN	KASAMA	KASAMA MAIN	URBAN	NORAD		SH	5000	
NORTHERN	KASAMA	MAKASA	R.RURAL	NORAD		SH	5000	
NORTHERN	KASAMA	MULANSHI	RURAL	MINESTONE		SH	2250	
NORTHERN	KASAMA	KASAMA-CIDA	URBAN	CIDA (F)		SH	3500	
NORTHERN	KASAMA	KASAMA-CIDA	URBAN	CIDA (M)		SH	5000	
NORTHERN	KASAMA	KASAMA-CIDA	URBAN	CIDA (M)		SH	5000	
NORTHERN	MPIKA	MPAMADZI	R.RURAL	MINESTONE		SH	2250	
NORTHERN	MPIKA	MPIKA	P.URBAN	CIDA (F)		SH	3500	
NORTHERN	MPIKA	MPIKA	P.URBAN	DMC		SH	320	
NORTHERN	MPIKA	MPUMBA	RURAL	NORAD		SH	5000	
NORTHERN	MPIKA	CHUNDAPONDE	R.RURAL	MINESTONE			2250	
NORTHERN	MPIKA	KATIBUNGA	R.RURAL	MINESTONE			2250	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
NORTHERN	CHINSALI	CHINSALI	P.URBAN	MINESTONE		SH	2250	
NORTHERN	CHINSALI	ILONDOLA	R.RURAL	MINESTONE		SH	2250	
NORTHERN	CHINSALI	KASU	R.RURAL	MINESTONE		SH	2250	
NORTHERN	ISOKA	ISOKA	P.URBAN	CIDA (M)		SH	5000	
NORTHERN	ISOKA	ISOKA	P.URBAN	DMC		SH	900	
NORTHERN	ISOKA	ISOKA	P.URBAN	DMC		SH	450	
NORTHERN	ISOKA	KAMPWILA	RURAL	NORAD		SH	5000	
NORTHERN	ISOKA	MUYOMBE	RURAL	MINESTONE		SH	2250	
NORTHERN	ISOKA	MUYOMBE	RURAL	MINESTONE		SH	2250	
NORTHERN	ISOKA	THENDERE	RURAL	MINESTONE		SH	2250	
NORTHERN	ISOKA (NAKONDE)	MWENZO	P.URBAN	CIDA (F)		SH	3500	
NORTHERN	ISOKA (NAKONDE)	MWENZO	P.URBAN	CIDA (M)		SH	5000	
NORTHERN	ISOKA (NAKONDE)	MWENZO	P.URBAN	CIDA (M)		SH	5000	
NORTHERN	ISOKA (NAKONDE)	SHEMU	R.RURAL	MINESTONE		SH	2250	
NORTHERN	ISOKA (NAKONDE)	SHEMU	RURAL	NORAD		SH	5000	
NORTHERN	ISOKA	MWENYA	URBAN	DMC			450	
NORTHERN	ISOKA	THENDERE	R.RURAL	DMC			4500	
NORTHERN	ISOKA	MUYOMBE	R.RURAL	DMC			320	
NORTHERN	MBALA	KAKA	R.RURAL	MINESTONE		SH	2250	
NORTHERN	MBALA	MBALA	RURAL	FRA/CAMOC			5000	
NORTHERN	MBALA	MBALA	P.URBAN	CIDA (F)		SH	3500	
NORTHERN	MBALA	MBALA	P.URBAN	DMC		SH	1080	
NORTHERN	MBALA	MBALA	P.URBAN	DMC		SH	450	
NORTHERN	MBALA	MBALA	P.URBAN	DMC		SH	810	
NORTHERN	MBALA	VYAMBA	RURAL	MINESTONE		SH	2250	
NORTHERN	MBALA	MWAMBA	R.RURAL	MINESTONE		SH	2250	
NORTHERN	MPOROKOSO	MPOROKOSO	R.RURAL	DMC		SH	254	
NORTHERN	MPOROKOSO	MPOROKOSO	R.RURAL	MINESTONE		SH	2250	
NORTHERN	LUWINGU	LUWINGU	RURAL	DMC (L)		SH	400	
NORTHERN	LUWINGU	LUWINGU	RURAL	DMC (S)		SH	130	
NORTHERN	LUWINGU	LUWINGU	RURAL	MINESTONE		SH	2250	
NORTHERN	KAPUTA	KAPUTA	R.RURAL	DMC		SH	400	
NORTHERN	KAPUTA	KAPUTA	R.RURAL	MINESTONE		SH	2250	
NORTHERN	CHILUBI	CHILUBI	R.RURAL	MINESTONE		SH	2250	
NORTHERN	LUWINGU	MATIPA	RURAL	MINESTONE		SH	2250	
NORTHERN	CHILUBI	RUMA P.SCHOOL	R.RURAL	DMC		SH	22	**137486**
LUAPULA	MANSA	MANSA	URBAN	CIDA (F)		SH	3500	
LUAPULA	MANSA	MANSA	URBAN	CIDA (M)		SH	5000	
LUAPULA	MANSA	MANSA	URBAN	DMC		SH	1800	
LUAPULA	MANSA	MANSA	URBAN	DMC		SH	1800	
LUAPULA	SAMFYA	SAMFYA	RURAL	DMC		SH	1400	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
LUAPULA	SAMFYA	SAMFYA	RURAL	DMC		SH	925	
LUAPULA	KAWAMBWA	KAWAMBWA	R.RURAL	DMC		SH	1800	
LUAPULA	NCHENGELE	NCHENGELE	R.RURAL	DMC (W/S)		SH	1350	**17575**
N/WESTERN	SOLWEZI	SOLWEZI	P.URBAN	CIDA (M)		SH	3500	
N/WESTERN	SOLWEZI	SOLWEZI	P.URBAN	CIDA (F)		SH	3500	
N/WESTERN	SOLWEZI	SOLWEZI	P.URBAN	DMC		SH	1000	
N/WESTERN	SOLWEZI	MUMENA	R.RURAL	DMC			100	
N/WESTERN	SOLWEZI	MUTANDA	R.RURAL	DMC			125	
N/WESTERN	SOLWEZI	KASASA	R.RURAL	DMC			100	
N/WESTERN	SOLWEZI	LUAMALA	R.RURAL	DMC			100	
N/WESTERN	SOLWEZI	KANGWENA	R.RURAL	DMC			100	
N/WESTERN	SOLWEZI	CHAFUKUMA	R.RURAL	DMC			100	
N/WESTERN	SOLWEZI	ST. FRANCIS	R.RURAL	DMC			100	
N/WESTERN	SOLWEZI	KAPIJIMPANDA	R.RURAL	DMC			100	
N/WESTERN	KASEMPA	KASEMPA	P.URBAN	FRA		SH	3500	
N/WESTERN	KASEMPA	KASEMPA	R.RURAL	DMC		SH	1300	
N/WESTERN	KASEMPA	MPUNGU-B	R.RURAL	DMC			100	
N/WESTERN	KASEMPA	KAMAKOCHI	R.RURAL	DMC			100	
N/WESTERN	KASEMPA	NKANYAUNA	R.RURAL	DMC			100	
N/WESTERN	KASEMPA	KAMAKUKU	R.RURAL	DMC			100	
N/WESTERN	MUFUMBWE	MUFUMBWE MAIN	RURAL	FRA/CAMCO		SH	5000	
N/WESTERN	MUFUMBWE	MAIN	R.RURAL	P/SHED			750	
N/WESTERN	MUFUMBWE	CHIZELA	R.RURAL	P/SHED			200	
N/WESTERN	MUFUMBWE	CHIZELA	R.RURAL	SP/SHED			100	
N/WESTERN	MUFUMBWE	KAWAMA	R.RURAL	P/SHED			100	
N/WESTERN	MUFUMBWE	KASHIMA WEST	R.RURAL	P/SHED			100	
N/WESTERN	MUFUMBWE	KABIPUPU	R.RURAL	SP/SHED			100	
N/WESTERN	MUFUMBWE	MUSHIMA	R.RURAL	SP/SHED			150	
N/WESTERN	MUFUMBWE	KALENGWA	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	MWINILUNGA	RURAL	DMC		HS	1500	
N/WESTERN	MWINILUNGA	CHIWOMA	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	KAMAPANDA	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	NJAMBU	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	TOM-ILUNG'A	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	NYAKASEYA	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	KANYAMA	R.RURAL	DMC			100	
N/WESTERN	MWINILUNGA	NYANGOMBE	R.RURAL	DMC			100	
N/WESTERN	KABOMPO	KABOMPO	R.RURAL	DMC		SH	5000	
N/WESTERN	KABOMPO	KABOMPO	R.RURAL	DMC		SH	1800	
N/WESTERN	KABOMPO	LITOYA	R.RURAL	DMC			120	
N/WESTERN	KABOMPO	NKULWASHI	R.RURAL	DMC			100	

PROVINCE.	DISTRICT	DEPOT	LOCATION	SHEDS	SILOS	CLASS	CAPACITY (MT)	
N/WESTERN	KABOMPO	KABULAMEMA	R.RURAL	DMC			100	
N/WESTERN	KABOMPO	MANYING'A	R.RURAL	DMC			100	
N/WESTERN	KABOMPO	KAWANDA	R.RURAL	DMC			100	
N/WESTERN	KABOMPO	MUMBEJI	R.RURAL	DMC			100	
N/WESTERN	ZAMBEZI	ZAMBEZI	R.RURAL	DMC		SH	1000	
N/WESTERN	ZAMBEZI	CHIVATU	R.RURAL	DMC			175	
N/WESTERN	ZAMBEZI	DIPALATA	R.RURAL	DMC			100	
N/WESTERN	ZAMBEZI	NYAKULENGA	R.RURAL	DMC			100	
N/WESTERN	ZAMBEZI	CHITOKOLOKI	R.RURAL	DMC			100	
N/WESTERN	ZAMBEZI	CHAVUMA	R.RURAL	DMC			100	
N/WESTERN	ZAMBEZI	NYATANDA	R.RURAL	DMC			125	**31945**
WESTERN	MONGU	MONGU GRAINS	P.URBAN	CIDA (M)-A		SH	2500	
WESTERN	MONGU	MONGU GRAINS	P.URBAN	CIDA (M)-B		SH	2500	
WESTERN	MONGU	MONGU GRAINS	P.URBAN	CIDA (M)		SH	5000	
WESTERN	MONGU	MONGU GRAINS	P.URBAN	AUSTRALIAN		SH	1650	
WESTERN	MONGU	MONGU GRAINS	P.URBAN	EEC		SH	2700	
WESTERN	MONGU	MONGU GRAINS	P.URBAN	DMC			49	
WESTERN	MONGU	MONGU FIPS	P.URBAN	DMC		SH	1800	
WESTERN	KAOMA	KAOMA MAIN	P.URBAN	DMC(FIPS)			1800	
WESTERN	KAOMA	KAOMA MAIN	P.URBAN	DMC(LARGE)		SH	1800	
WESTERN	KAOMA	KAOMA MAIN	P.URBAN	DMC(SMALL)		SH	27	
WESTERN	KAOMA	KAOMA MAIN	P.URBAN	EEC		HS	2700	
WESTERN	LUKULU	LUKULU MAIN	R.RURAL	DMC(LARGE)		SH	1800	
WESTERN	LUKULU	LUKULU MAIN	R.RURAL	DMC(SMALL)			27	
WESTERN	LUKULU	KAMILENDE	R.RURAL	DMC(SMALL)			27	
WESTERN	KALABO	KALABO MAIN	R.RURAL	CIDA (M)		SH	5000	
WESTERN	KALABO	KALABO MAIN	R.RURAL	NAMBOARD			30	
WESTERN	SESHEKE	SESHEKE MAIN	R.RURAL	DMC)LARGE)		SH	1800	
WESTERN	SESHEKE	SESHEKE MAIN	R.RURAL	DMC(SMALL)		SH	27	
WESTERN	SESHEKE	KALOBOLELWA	R.RURAL	DMC(SMALL)		SH	27	
WESTERN	SESHEKE	MWANDI	R.RURAL	DMC(SMALL)		SH	27	
WESTERN	SESHEKE	LIMPUPU	R.RURAL	DMC(SMALL)		SH	27	
WESTERN	SESHEKE	LIMPUPU	R.RURAL	DMC(SMALL)		SH	27	
WESTERN	SENANGA	SENANGA MAIN	R.RURAL	DMC(LARGE)			1800	
WESTERN	SENANGA	SENANGA MAIN	R.RURAL	DMC(SMALL)			27	
WESTERN	SENANGA	NANGWESHI	R.RURAL	DMC(SMALL)			27	
WESTERN	SENANGA	SIOMA	R.RURAL	DMC(SMALL)			27	
WESTERN	SESHEKE	SESHEKE	RURAL	FRA (NAKATINDI)		SH	1600	**34826**
							1,239,577.00	

ANNEX 3. ZAMBIAN MAIZE STANDARD

CHARACTERISTIC	UOM	SPECIFICATION		
Grades		A	B	C
Test Density	kg/hl	67.25 min	64.75 min	61.75 min
Moisture	%	12.5 max	12.5 max	12.5 max
Diseased grain	%	2.0 max	2.0 max	2.0 max
Shrivelled grain	%	0.1 max	0.5 max	1.0 max
Insect damaged grains	%	3.0 max	5.0 max	10.0 max
Discoloured grains	%	4.0 max	6.0 max	10.0 max
Other Coloured grains	%	2.0 max	3.0 max	4.0 max
Broken Grains	%	2.0 max	3.0 max	4.0 max
Foreign matters	%	1.0 max	1.5 max	2.0 max
Total other Defectives	%	14.1 max	21.0 max	33.0 max

ANNEX 4. ZAMACE MAIZE STANDARD

PARAMETER	UOM	SPECIFICATION		
Grades		A	B	C
Test Density	kg/hl	67.25 min	64.75 min	61.75 min
Moisture	%	12.5 max	12.5 max	12.5 max
Extraneous matters	%	1.0 max	1.5 max	2.0 max
Broken Grains	%	6.0 max	7.0 max	8.0 max
Other Coloured grains	%	3.0 max	4.0 max	5.0 max
Total other Defective grains of which:	%	11.0 max	18.5 max	26.0 max
a. Discoloured grains	%	3.0 max	6.0 max	9.0 max
b. Insect/pest damaged grains	%	3.0 max	6.0 max	9.0 max
c. Diseased grain	%	2.0 max	2.0 max	2.0 max
d. Immature or Shrivelled grain	%	1.0 max	1.5 max	2.0 max
e. Fugal damaged grains	%	0.5 max	1.0 max	1.5 max
f. Germinated grains	%	NIL	NIL	NIL
g. Pass thru 6.35mm sieve	%	1.5 max	2.0 max	2.5 max
Diplodia	%	NIL	NIL	NIL
Fusarium	%	0.5 max	0.5 max	0.5 max

DEFINITIONS:

Maize: Refers to the seeds of *Zea mays* L.

Moisture Content: The moisture content, expressed on a wet weight basis, shall be determined by an approved moisture meter calibrated according to a method prescribed by the Zambia Bureau of Standards

Extraneous Matter:

a) Anything other than maize grain which will pass through a 4.5 mm sieve.

b) Any animal or mineral or plant matter or grain other than maize, which will not pass through a 6.5 mm sieve.

Damaged Grain: Means grain and pieces of grain which will pass through a 4.5 mm sieve.

Broken Grain: Means maize, which has been broken, cracked or chipped to expose the white interior of the grain. It does not pass through the 4.5 mm sieve and has no other defects.

Other Coloured Grain: Means grain that is coloured or partly coloured maize present in white maize or maize of any colour other than yellow present in yellow maize.

Defective Grain: Means any grain which falls within one or other of the following categories

a) insect/pest damaged grain
b) fungal damaged grain
c) diseased grain
d) immature or shrivelled grain
e) germinated grain
f) discoloured grain

Insect/Pest Damaged Grain: Means maize which has been damaged by any insect or animal pest.

Fungal Damaged Grain: Means maize with visible mycelial/mould growth on its surface.

Diseased Grain: Means maize which is obviously rotted by fungi, bacteria or other organisms of decay.

Immature or Shrivelled Grain: Means immature maize which has indications of lack of maturity or full development and which may be thin and papery (almost see through) in appearance. Means maize which is shrivelled over most of its surface.

Germinated Grain: Means maize grain which shows any signs of germination.

Discoloured Grain: Means grain discoloured by heating, fermentation or weathering.
Sieve: A 6.35 mm grading sieve is a device, the bottom (baseplate) of which is perforated with round-holes 6.35 mm in diameter, and used for the separation of fine extraneous material from grain.

ANNEX 5. ZAMACE SOYA BEAN STANDARD

PARAMETER	UOM	SPECIFICATION		
Grades		**A**	B	**C**
Moisture	%	12.0 max	12.0 max	12.0 max
Extraneous matters	%	1.0 max	2.0 max	3.0 max
Total other Defective grains of which:	%	9.0 max	11.5 max	14.0 max
a. Split Beans	%	6.0 max	8.0 max	10.0 max
b. Green Beans	%	2.0 max	2.0 max	2.0 max
c. Immature or Shriveled beans	%	1.0 max	1.5 max	2.0 max
Oil	%	18.0 min	16.0 min	14.0 min
Protein	%	36.0 min	33.0 min	30.0 min

DEFINITIONS

Soyabeans:

Means the seeds of *Glycine max*.

Moisture Content: The moisture content expressed on a wet weight basis shall be determined by an approved moisture meter calibrated according to a method prescribed by the Zambia Bureau of Standards

Extraneous Matter:

a) All matter, including soyabeans and pieces of soyabeans, which will pass through a 3.35 mm sieve.

b) All matter, other than soyabeans and pieces of soyabeans, which will not pass through a 3.35 mm sieve.

Defective Soyabeans: Means soyabeans or pieces of soyabeans retained on a 3.5 mm sieve after sieving, which fall within one or other of the following categories:

a) Discoloured Soyabeans: Means soyabeans discoloured by heat due to fermentation.

b) Germinated Soyabeans: Means sprouted soyabeans or soyabeans in which the process of germination is visible within the embryo.

c) Weather-damaged Soyabeans: Means soyabeans and pieces of soyabeans in which the seed coats are discoloured by weather damage on one side or both sides.

d) Infected Soyabeans: Means soyabeans and pieces of soyabeans which show any sign of disease, fungus or virus infection.

e) Immature Soyabeans: Means soyabeans and pieces of soyabeans which are markedly shrivelled over more than half their area or which, in cross section, show an intense green colour.

f) Pest-damaged Soyabeans: Means soyabeans and pieces of soyabeans which are visibly damaged by insects, birds or rodents.

Split Soyabeans: Means pieces of soyabeans remaining on a 3.35 mm sieve after sieving, which are not defective, and include mechanically damaged soyabeans that are likely to split in handling.

Sieve: A 3.35 mm grading sieve is a device, the bottom (baseplate) of which is perforated with round-holes 3.35 mm in diameter, and used for the separation of fine extraneous material from soyabeans.

ANNEX 6. ZAMACE SUNFLOWER STANDARD

Quality Parameter	UOM	ZAMACE Sunflower Grades		
		A	B	**C**
Moisture	%	12.0 max	12.0 max	12.0 max
Extraneous matters	%	2.0 max	3.0 max	4.0 max
Total other Defective grains of which:	%	6.0 max	12.0 max	15.0 max
a. Heat Damaged	%	1.0 max	2.0 max	3.0 max
b. Pest Damaged	%	1.0 max	2.0 max	3.0 max
c. Head rot/other fugal damaged	%	1.0 max	2.0 max	3.0 max
d. Immature or Shriveled beans	%	1.0 max	2.0 max	4.0 max
e. Germinated seed		1.0 max	2.0 max	4.0 max
f. Weather damaged seed		1.0 max	2.0 max	4.0 max
Oil	%	38.0 min	32.0 min	26.0 min
Protein	%	18.0 min	15.0 min	12.0 min

DEFINITIONS:

Sunflower seed: means the achene (kernel and hull) of plants of *Helianthus annuus* L.

Shells (Hull, Husk): means the ovary wall of the sunflower seed.

Kernel means the interior contents (the 'meat') of the sunflower seed that are surrounded by the hull.

Moisture content: means the moisture content, expressed on a wet weight basis, as determined by an approved moisture meter calibrated according to a method prescribed by the Zambia Bureau of Standards.

Extraneous matter: means glass, metal, stones, coal, excreta and anything else other than sunflower seed, and includes loose and empty shells (hulls, husks) that occur in the assignment.

De-hulled sunflower seed: means sunflower seed that has the hull completely removed from the sunflower kernel.

Defective sunflower seed: means any sunflower seed or portions of sunflower seed that falls within one or other of the following categories:

(a) heat-damaged seed
(b) insect/pest-damaged seed

(c) head rot and other fungal-damaged seed
(d) weather-damaged seed
(e) immature or shriveled seed
(f) germinated seed

Heat-damaged seed: means sunflower seed or portions of sunflower seed of which the nucleus is visibly discoloured as a result of external heat or heating due to internal fermentation.

Heating: means excessive respiration due to internal fermentation resulting in the development of a high temperature. Heating sunflower seed, in its final stages, usually produces a sour or musty odour.

Pest-damaged seed means sunflower seed or portions of sunflower seed which has been damaged by any insect or animal pest (birds, rodents).

Head rot damage: means damage most frequently caused by sclerotinia head rot disease (*Sclerotinia sclerotiorum)*, and includes hulls with 50% or more of the surface covered by white patches, seeds that are off colour, e.g. tan to dark brown, and seeds that may contain small dark black sclerotia.

Fungal-damaged seed: means sunflower seed or portions of sunflower seed with visible mycelial (fungal, mould) growth on its surface.

Immature or shriveled seed: means sunflower seed or portions of sunflower seed that has indications of lack of maturity or full development or is shriveled over its entire surface.

Germinated seed: means sunflower seed or portions of sunflower seed that shows any signs of germination.

Weather-damaged seed: means sunflower seed or portions of sunflower seed that are discoloured