Agriculture Development and Food Security in Sub-Saharan Africa: Building a Case for More Support

A Case Study of Zambia

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Acronyms

ACP	Agriculture Commercialisation Programme
ASCA	Accumulated Savings and Credit Associations
ASIP	Agriculture Sector Investment Programme
BOZ	Bank of Zambia
CSO	Central Statistical Office
DAC	District Development Committees
DMMU	Disaster Management and Mitigation Unit
FAO	Food and Agriculture Organisation
FHANIS	Food Security, Health and Nutrition Information System
FRA	Food Reserve Agency
GART	Golden Valley Agricultural Research Trust
GDP	Gross Domestic Product
GMO	Genetically Modified Organisms
GRZ	Government of the Republic of Zambia
INESOR	Institute of Economical and Social Research
LCMS	Living Conditions Monitoring Survey
MACO	Ministry of Agriculture and Co-operatives
MAFF	Ministry of Agriculture, Food and Fisheries
MMD	Movement for Multi-Party
MTEF	Medium Term Expenditure Framework
NAMBoard	National Agricultural Marketing Board
NGO	Non-governmental Organisation
NTE	Non-traditional exports
PAM	Programme Against Malnutrition
PPM	Programme to Prevent Malnutrition
PRSP	Poverty Reduction Strategy Paper
TNDP	Transitional National Development Plan
UNDP	United Nations Development Programme
UNZA	University of Zambia
VAC	Vulnerability Assessment Committee
WFP	World Food Programme
ZAM	Zambia Association of Millers
ZCF	Zambia Cooperative Federation
ZNFU	Zambia National Farmers Union

EXECUTIVE SUMMARY

Introduction

This study explores Zambia's state of food import dependency as a means for mitigating her failure to meet food requirements from domestic sources. It asks and seeks to answer three main questions. The first is why the trend of food import dependency exists. This question is explored by examining trends in food security indicators and the underlying factors giving rise to this situation. In this context, the performance and constraints of the agriculture sector are examined. The second is what the impact of food import dependence on food security and agriculture development has been. The third is are the possible directions for an exit strategy to ensure sustainable food security and agriculture development.

These issues are examined through analysis of various variables that necessitated collection of data from various sources. The study takes 1990 as the base year because most data goes up to that date although in a few cases trends have been built up for dates earlier than 1990. Personal interviews and use of other studies supplement the data collected.

Food Security and Import Dependency

Various indicators show that Zambia is consistently failing to meet her food needs from her domestic production. Even in a good year such as 2003/04 when a bumper harvest was being expected, the Zambia Vulnerability Assessment Committee (VAC) expected that 60,960 people in six districts would fail to have adequate access to their staple food and would need food relief. The situation in four other districts is being monitored which could raise the number of people that would need food relief in 2004. In a drought year, figures can dramatically go up. In 2001/02 when Zambia experienced a drought, between 2.3 and 2.8 million people were expected to need food relief. Besides commercial cereal imports, it was estimated that Zambia would need 240,000 metric tonnes in food aid. Between 1999 and 2003, Zambia had an annual average of 311,000 metric tones domestic cereal gap partially met by 111,000 metric tones commercial food imports and 71,000 metric tones food aid imports. This left an uncovered gap of 129,000 metric tonnes.

The domestic cereal gap on the ground translates in food shortages for many households. More than 50% of rural households expected to run out of their staple food by September 2003, despite the fact that 2002/03 was a good harvest year. With food stocks running low just at the start of the agricultural season when disease prevalence is also very high, household food insecurity becomes self re-enforcing. Hungry and sick, household's farm productivity goes down which builds up the situation for food shortages in subsequent months.

This situation of food shortages has translated into an unacceptably high incidence of malnutrition. The Living Conditions Monitoring Survey (LCMS) found that 53% children under five years in 1998 were stunted, 25% were underweight and 5% were wasted. The Food Security, Health and Nutrition Information System (FHANIS) survey conducted in August 2003 found similar results which could indicate that the situation has not improved over time. Stunting is a good indicator of long-term exposure to food insecurity and thus illustrates the fact that Zambia has consistently failed to meet her food needs.

The vulnerability context producing the high levels of food insecurity is complex and is attributable to long term and seasonal factors as well as occasional shocks. The immediate direct causes are the decline in incomes in both urban and rural areas and the failure of the agriculture sector to produce enough food to meet national and household food requirements. Many other factors underlie these identified causes and include Zambia's economic crisis traced to the fall of copper prices and production starting the mid-1970s, severe agronomic

difficulties in some areas of the country, the devastating consequences of HIV/AIDS, droughts and floods and the rise in disease prevalence during the agriculture season. All these factors combine to undermine people's livelihoods in both urban and rural areas such that many people increasingly have a declining resilience to withstand the impact of shocks such as a crop failure or a sudden rise in food prices.

In an attempt to overcome the chronic food deficits she suffers, Zambia has become dependent on food imports. In all the years between 1986 and 2002, Zambia imported cereals in the hope of closing the gap arising from inadequate domestic production but this fluctuated from year to year. The biggest amount of food imports was in 1992 after Zambia suffered one of the worst droughts leading to a maize deficit of 584,000 metric tonnes. A total of 680,000 metric tonnes of food was imported in 1992 of which 92.2% was maize. In addition, 366,000 metric tonnes of food was imported the following year in 1993 with maize accounting for 83.3% despite Zambia recording a maize surplus of 340,000 metric tonnes. After this is the importation of 230,000 metric tonnes of food in 2002 following another drought season. Commercial food imports made up 60.4% of total food imports while 39.6% came in as food aid between 1992 and 2002.

The indicators in food insecurity presented above are serious and require urgent intervention measures to rectify the situation. Initiatives will need to focus on building the agricultural sector by raising production that matches its potential. However, exposure to food insecurity has gone on for a long time now that targeted interventions aimed at reducing vulnerability in the short term are also required particularly targeted measures to rebuild people's livelihoods. Although the vulnerability context giving rise to food insecurity is complex, long term and seasonal factors as well as occasional shocks have worked to devastate people's livelihoods. Therefore, measures should be taken to help people rebuild these livelihoods. The support systems should be diverse enough to encompass all livelihoods, including non-farm activities and not just those that are agriculture based.

Support to the Agriculture Sector

The national and household food insecurity and the high levels of malnutrition described above is paradoxical when Zambia's agricultural potential is considered. Although agronomic conditions are harsh in some areas, for most of the country the climate and soils are supportive of production of a diverse range of crops and livestock. Only 14% of Zambia's land with agricultural potential is currently being utilized while only 50,000 hectares out of the 423,000 hectares of known irrigation potential has been tapped. Zambia has potential both to feed herself and produce surplus for export to other countries. It is recognized that agriculture has special merits for broad based and equitable growth that could facilitate the tackling of some of Zambia's greatest economic challenges including high levels of poverty and food insecurity.

However, agriculture's performance belies its great potential. In the last 15 years, agriculture has faced various constraints that has made it difficult to establish a more sustainable growth path in the sector. Some of these factors include the uncertainties caused by the change in policies at the beginning of the 1990s, particularly the removal of subsidies and the dismantling of marketing institutions that had served rural farmers, and the unfavourable agricultural prices in more remote areas that followed the removal of the uniform price policy. Labour constraints especially given the rising impact of HIV/AIDS and declining farm power mechanization and the climatic variability are some of the other constraints.

Whereas government in its policy documents recognises agriculture as important, particularly in its role as the engine for broad based and equitable growth, its support to the sector has not matched this stated position. As a share of total expenditure, agriculture received an average of 3% between 1994 and 2002. What is more is the consistent shortfall of disbursement amounts compared to the budgeted expenditure. This factor has undermined the budget as a

tool for planning. Both the Agriculture Sector Investment Programme and the Agriculture Commercialisation Programme have not redressed the under-funding of the sector, particularly when compared to the funding of the social sectors.

The liberalization of the agricultural sector in the 1990s, undertaken without carrying out a core functions analysis to determine the roles of the private and public sectors, may have instigated a mindset within government that the sector could be largely funded outside public resources. Therefore, whereas liberal policies are now irreversible, there is an urgent need for government to carry out a core functions analysis to determine the functions that would be carried out by the public sector, those that should be left to the private sector and those in which the public sector would retain a role but which could be commercialised. A core functions analysis would also lessen the confusion in allocation of roles and the conflicting policy signals that characterised the past 10 to 15 years and worked to undermine policy actions of the government.

The importance of agriculture to Zambia's economy, to meeting food security and to the reduction of poverty calls for increased support by government to the sector. An effective expenditure system for agriculture needs to be established. Not only should the level of public sector expenditure be increased, a framework for expenditure effectiveness and efficiency should be established. And because agriculture is a productive sector, the private sector and civil society have a significant role in the funding of sector activities. The environment should be created to enable them play this role. With this in view, the necessary actions required to effectively support the sector would constitute the following elements:

1. **Achieve a stable macroeconomic environment.** This is important to allow long-term investments in agriculture to take place. Given the fact that both producers and intermediaries are private sector players, most expenditure would occur outside public sector sources and can only take place if these players are assured that their investments would not be wiped out by high rates of inflation. Further, the extent to which these players are able to mobilise investments is dependent on a stable macro-economy particularly low and stable interest rates. As the economy has been stabilising in the last two years and interests rates have been dropping, commercial banks are exploring ways in which they can resume their lending to the agricultural sector which hitherto had almost stopped. Therefore, the GRZ should consolidate actions for a stable macroeconomic environment.

2. **Strengthen the regulatory framework.** A weak regulatory environment makes players like the marketing and financial intermediaries tentative in making investments that would expand their activities. It blocks off critical services that could be provided by the private sector leaving only the public sector as the only alternative. Because the public sector is ill suited to carry out these roles, resources tend to be wasted as they are inefficiently applied.

3. **Obtain clarity in the allocation of roles and functions.** This will be aided by a core functions analysis to establish what should be undertaken by the public sector, what should be left to the private sector and what roles the public sector should commercialise. Government should stick to its core functions which it should then properly fund.

4. **Undertake an analysis of expenditure efficiency and effectiveness.** This should examine the functions preformed and identify opportunities for cost saving, including options for contracting out.

5. **Resolve problems of policy inconsistence.** A core functions analysis should help in this regard. Adoption of the National Agricultural Policy by Cabinet would go a long way in ensuring that public actions and pronouncements are consistent.

6. **Move towards a medium-term approach in the allocation of resources within government.** The recent adoption of a Medium Term Expenditure Framework (MTEF) may help in this regard. This should lead to a replacement of the cash release approach that has undermined the credibility of the budgetary system. It should also allow for a periodic assessment of the expenditure requirements of each sector including agriculture. However, MTEF needs to be accompanied by an overhaul in the public expenditure management system to enhance accountability

Although there may be difficulties in presenting a causal relationship between food imports and agriculture development in Zambia, the failure of the policy of reliance on food imports is clear from the results shown above. In particular, the high malnutrition levels in the population have indicated that an import food policy has failed to mitigate the failure of domestic cereal supply to meet Zambia's cereal requirements. The difficulties of relying on food imports arise from three factors. The *first* is that the Zambian economy does not generate sufficient foreign exchange to assure timely and adequate food imports. Even if the non-traditional exports have been on the rise, the slump in mineral revenue has been too drastic and will not be compensated for in a long time to come. The s*econd* is that people's livelihoods have been devastated by a series of shocks, seasonal factors and long term trends including the negative effects of HIV/AIDS and economic decline that they are unable rely largely on purchased foods. Particularly in rural areas, the consumption of own produce will remain the only meaningful option for a long time to come. This undermines their access to commercially imported foods. The *third* is the unreliability of food aid given that the country cannot adequately determine the amount, type and timing of food aid she receives. Food aid, like all types of aid, is subject to Zambia's relations with other countries which can easily deteriorate when circumstances not favourably perceived by these countries arise.

Given this situation, there is a strong case for the Zambian Government to increase support to the agriculture sector for the production of food. This assertion is based on the widespread difficulty a very big proportion of the population has in accessing adequate food as seen above. It is also based on the fact that food insecurity vulnerability is deepening due to a variety of factors. Increased support to agriculture rather than relying on food imports also makes sense when it is considered that agriculture holds the most viable key to the reduction of the high levels of poverty. In addition, agriculture has very high potential to contribute to sustainable economic growth as well as help to resolve the country's trade balance problems through generating of exports to regional and international markets and by helping the country reduce on food imports. Therefore, the question of increased support to agriculture transcends the issue of food security, which in itself is very firm ground, and encompasses broader considerations. There are no viable alternatives other than the developing of the agricultural sector to its full potential for Zambia to make progress in human and economic development.

The Impact of Food Imports

Measuring the impact of food imports on various variables in the economy has not been easy because of the difficulty in getting quality and consistent data to provide the direction of a causality effect. However, the direction of the impact can be established even if it may not be conclusively resolved. Four main impacts are highlighted below.

First, although the magnitude of the direct impact on both food production and nutrition is small because food imports relative to a set of key variables is small, it is significant for those areas that have been declared vulnerable where food aid is distributed consistently. This is the case in particular in the areas of Agro-ecological Zone I consisting of the Luangwa, Gwembe and Zambezi Valleys that are prone to floods and some parts of the flood plains in Western Province. In these areas, because food relief compared to food requirements is high, the impact of food relief on production decisions both as a result of psychological or price effects seems high even though there is little evidence to resolve the issue conclusively. This is

heightened by the fact that the effectiveness of targeting of food aid to vulnerable households is questioned on grounds of how to actually identify these households. The 2001/02 experience after Zambia rejected GMO maize and only 121,000 metric tonnes food relief was brought in rather than the estimated 240,000 metric tonnes has raised the additional issue of overestimating the food relief requirements. The ability of people to cope with food shortages, the role of small grains and tubers, the role of other starch such as potatoes in urban areas and the functioning of social networks are not properly factored in when estimating food requirements.

Second, food aid seems to be perpetuating the situation of maize dependency given that it is mainly maize that is imported and distributed as food relief even in areas where cassava has been remerging strongly as the staple and main production crop. The distribution of maize in Western Province where cassava is the main staple is a case in point.

Third, the timing of food imports which go through until shortly after harvest of the local produce begin to get to the markets, could be undermining long-term investments in agriculture. The Zambia National Farmers Union stresses this fact. Specifically farmers irrigating their maize crop to time peak prices in March/April are uncertain of the outcome because of the importation of food. At times this is worsened by the fact that there is an export ban at the same time. Based on what farmers themselves have stated, the uncertainty that food importation induces among local producers is perhaps one of the strongest negative direct effects.

Fourth, the less direct effects are perhaps much more compelling. It is observed that the importation of food which exists as an implicit policy to supplement domestic food supply has failed to meet the nutritional requirements of the country. The high incidence of malnutrition cited above points to this fact. Although the food aid being brought into the country may not be as significant, it nevertheless could be undermining the urgency to stimulate increased support for a more diversified and well performing agriculture. It has introduced a complacency in the policy making process because it exists as an alternative to domestic food production and agriculture does not receive the necessary support as a result. Given the importance of the sector in affecting many other important economic parameters such as poverty reduction, export revenue and economic growth, food imports turn out to be a big cost to the economy in the end.

Policy Actions for Sustainable Agricultural Development and Food Security

The high levels of food insecurity are neither inevitable nor irreversible and with properly implemented actions can be overcome to allow Zambia meet her food requirements and probably be an exporter of food to other countries. Any exit strategy from the current situation must build on emerging opportunities in the sector which include the following: (i) increased diversification away from maize which is creating a stronger base for coping with rainfall failure at critical times of the season; (ii) the rising share of roots and tubers and small grains in total area cultivated which require low inputs and for which farmers ***have*** a long history of cultivating; (iii) the rising entry of traditional crops into markets which is helping to consolidate what has been stated in the last two points; (iii) rising agricultural exports through contract farming which is important in raising farm incomes in rural areas and thus giving farmers the ability to purchase food when food crops fail; (iv) some change in farming practices especially the adoption of conservation farming; and, (v) improvements in the macro-economy which is necessary for increased investments in the sector. The challenge is finding strategies that would help to scale up what is already working to obtain greater impact. Five action areas are proposed below.

Creating a Conducive Environment for Agriculture Development and Food Security. This has a number of aspects to it. *First*, the high rates of inflation must be brought down to single

digits to encourage long term investments in the sector particularly through a reduction of government domestic borrowing. *Second*, there must be increased funding to the agriculture sector. However, there is a dilemma in this from agriculture's point of view. For government to achieve this, it must firstly rationalise its overall spending which should take place within the context of better priority setting and then great fiscal discipline to spend according to the set priorities. Experience with the PRSP has shown that government has not abided by the priorities set with the estimated PRSP cost only receiving 50% funding. Then the spending within the agriculture sector itself must be rationalised and focused on areas where government intervention would have greatest impact. *Third*, government must invest in good sector policies including on food security which must be properly implemented to send a consistent signal to other players in the sector. In particular, a well functioning regulatory framework must be put in place. *Fourth*, rural infrastructure such roads, electricity and telecommunication should be improved. *Fifth*, is the need for improving access to agriculture finance, providing frameworks that would support such access by small farmers and yet addressing the problems that undermine rural credit in the past.

Improving Livelihoods Security for the Vulnerable Groups. Increasingly issues of food security are being seen in the context of the sustainability of people's livelihoods. From this viewpoint, food security exists alongside other livelihood outcomes that may include increased incomes, reduced vulnerability to various shocks and better and more sustainable utilisation of the natural resource base. The whole vulnerability context must be taken into account in devising actions to improve livelihoods security. The search is for policies, institutions and processes that help to augment people's livelihoods taking into account the different levels of vulnerability. There are at least three aspects of rebuilding people's livelihoods each of which requires its own specific policy actions as presented below:

1. **Helping households cope with hunger.** This could be a response to an immediate crisis. It could also apply to those groups that have found themselves in a situation of chronic hunger who cannot reasonably come out of the vulnerability trap. In this phase the preoccupation is to help households overcome the hunger situation, preventing them from falling further into vulnerability. Food relief could play an important role. Actions such as the Food Security Pack which help the vulnerable to produce some food in the following season can be considered as part of this component but should ensure that these actions are well targeted and are not extended to households who are not as deserving.

2. **Raising the productivity of available assets in the face of persisting constraints.** The greatest challenge of Zambian agriculture is to institute a technological revolution that would raise both labour and land productivity. In the face of a severe depletion of physical assets, such a revolution will only come about with the change in the coefficient of production of the same level of technology as is available. For most households this means that they should produce more with hand hoes. An example of a technology helping to address this is conservation farming which seems to meet this requirement as farmers are able raise their labour productivity (i.e. expand area cultivated) and improve yields with the same low levels of technology. With an improved production base, farmer would then invest in other technologies.

3. **Increased integration into markets.** Actions to address this are further discussed under commercialisation.

Increased Diversification of Agriculture. A drawback to the observed trends in increased diversification is that it is partly being accounted for by the stagnation in maize production. There is room for diversification to occur even in the context where maize production is increasing such as through the promotion of irrigation. Irrigation, of which there is great and yet untapped potential, would smoothen out the seasonality effects of agriculture, help farmers produce crops other than maize, for example, on the same land and raise the yields

through supplementary irrigation. Zambia needs to place great priority on the promotion of irrigation given its great advantages in facilitating increased farm incomes, food security and a diversified agricultural base. It has been shown that Zambia that, expanding the area under irrigation, can make Zambia meet her cereal requirements as well as produce surplus for exports within the regional markets. At the same time, actions to consolidate the rising production of roots and tubers and small grains for food security must be adopted. Such actions would need to focus a lot on raising consumption of these food crops in urban areas so that their market base expands.

Greater Commercialisation of Smallholder Agriculture. Results of actions to raise food security will be easily reversed if production does not rise high enough to generate a substantial surplus that can be absorbed by the market. Where there is a surplus, shocks are more likely, at least in the medium term, to cut production to levels still enough to satisfy household food security. Helping farmers to take a more commercial approach to their activities is important and this must be deliberately promoted. This will require raising the entrepreneurship skills of small farmers and reorienting their mindset of small producers towards markets as well as adopting policy actions that help the markets to work for the poor. In addition, contract farming should be facilitated even further as it is important in raising linkages of small farmers to the markets.

CHAPTER 1

BACKGROUND TO THE STUDY

1.1 Study Questions and Approach

This study asks why Zambia finds herself in a situation of long-term high exposure to food insecurity at both household and national levels. It also examines the desirability of the country's dependency on food aid and commercial food importance as means for long-term mitigation of failure to meet Zambia's food requirements from domestic production. The study further examines the strategies that might be required for Zambia to come out of the situation of chronic food imports dependency. The study thus responds to three main questions as determined by the terms of reference (see **Annex 1**):

1. ***Why does this trend exist?*** This asks and tries to answer questions related to why Zambia's agriculture has performed so poorly and failed to meet the country's food needs. It examines the status of the food security situation and how it has developed over time to create an appreciation of the gravity of the situation. The main constraints that agriculture faces are also examined. Further, analysis is made of the support that agriculture has received since the mid-1990s focusing on agricultural policies and programmes as well as sector financing from government and donors and the reasons for inadequate funding.

2. ***What has been the impact on food security, agricultural development, and economic growth of food imports dependency?*** This seeks to examine impacts of persisting dependency on food imports on household food security, domestic production and markets, the macroeconomy and, human and psychological effects.

3. ***What are the possible directions for an exit option to ensure sustainable food security, agricultural development and economic growth in these countries?*** This leads to a menu of policy options required to overcome the current food imports dependency situation.

The study has taken 1990 as the base year because most of the information obtained can only go back to that year. The year is also a watershed regarding agricultural policy and development in the country besides the acceleration of Zambia's economic and social problems that had been building up for sometime before then. Therefore, attempt has been made to build trends from 1990 where this has been possible. In a few cases, trends have been built for years before 1990. Data collected is from secondary sources and includes.

- Food balance sheets for maize, wheat, rice, sorghum, millet and cassava (1990 – 2003);
- Central Statistical Office Food Security, Health and Nutrition Information System (FHANIS) Survey of August 2003 providing information on child health and nutrition, food security and consumption and coping strategies of households;
- Crop production figures (1987 – 2003);
- Grain prices (1996 – 2003);
- Central Statistical Office and Bank of Zambia grain imports (1993 – 2003);
- World Food Programme food imports and local purchases including distribution and operational costs;
- Vulnerability maps;
- Food calendars, labour calendars, disease prevalence from a socio-economic survey in three areas of the Kafue river basin;
- Central Statistical Office social indicators including malnutrition and hunger;

- Balance of payments and movements in foreign exchange (1992 – 2003);
- Contribution to GDP by sector;
- GRZ budgeted and actual disbursements to different sectors (1994 – 2003);
- Consumer price indices (1994 – 2003); and,
- Macroeconomic indicators (1992 – 2003).

In Zambia, the Ministry of Agriculture and Co-operatives (MACO), and the Central Statistical Office (CSO) collects jointly data pertaining to agricultural production and trade. Most of the data are collected from primary sources through agricultural surveys. Some of the data was obtained from secondary sources through reports and other published documents.

Two main types of agricultural surveys are conducted each agricultural season to generate crop production estimates– the Crop Forecasting Survey (CFS) and the Post Harvest Survey (PHS). The former is carried out around March/April before the maize harvest while the latter is undertaken around September/October after the harvesting period. The information generated from the CFS is mainly used for early warning purposes. The data generated from the PHS is more detailed but dissemination of results tends to seriously lag behind. Because of funding problems, CSO has also not been able to conduct post harvest surveys as regularly as in former years. Despite this, both the crop forecasting and post harvest surveys provide a sound-planning base for Zambia's food security situation.

The study also interviewed respondents from key institutions such as the Ministry of Agriculture and Co-operatives, World Food Programme, Food Security Research Project, Central Statistics Office, Bank of Zambia, Zambia National Farmers Union and the Food Reserve Agency to obtain specific insights. A number of reports on agricultural production, vulnerability, poverty and related issues were also collected and utilised.

Significant difficulties were faced with regard to the poor quality of data. *First* was the missing data for some years resulting in failure to establish clear trends. For example, crop production figures other than for maize were missing for some years, especially for cassava considered an important crop and a significant element for the exit strategy. *Second* are data inconsistencies. It was difficult to reconcile data between different sources and sometimes from the same source. For example, the crop production figures given in the food balance sheets were in some cases different from those in the agriculture statistical bulletin even though both are produced by the Early Warning Unit of the Ministry of Agriculture and Cooperatives. *Third*, food imports obtained from Central Statistical Office and Bank of Zambia was not disaggregated into food aid and commercial imports.

The report follows the chapters outlined in the terms of reference to the study. The second chapter analyses trends in Zambia's food security status using different indicators particularly malnutrition indicators but also qualitative indicators on food availability in rural areas. The chapter also examines trends in food relief and commercial food imports. The vulnerability context giving rise to food insecurity in Zambia is also discussed. **Chapter 3** is an examination of agriculture policies, programmes and the funding of the agriculture sector. This is followed by **Chapter 4** which seeks to analyse the impact of food imports on domestic agriculture production, food security and economic development. **Chapter 5** provides policy actions to address food insecurity, reduce import food dependency and achieve a more sustainable agriculture development. **Chapter 6** constitutes the main conclusions of the study.

CHAPTER 2

DESCRIPTION AND ANALYSIS OF THE FOOD SECURITY SITUATION

2.0 Introduction

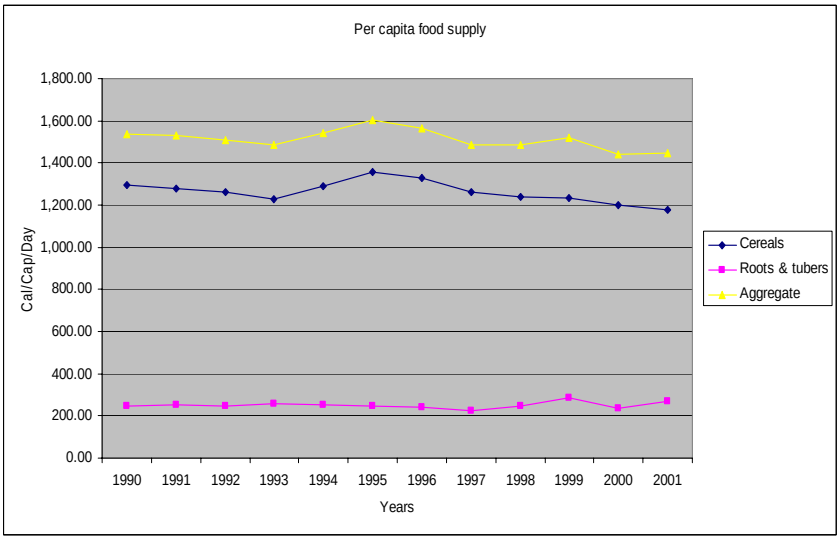
A large part of Zambia's population has lost secure access to adequate food since 1990. This development is attested to by a number of indicators including rising malnutrition levels. Malnutrition as viewed from the nutritional indicators of children aged 59 months and below are at unacceptably high levels. Both urban and rural populations have had serious problems to meet their food requirements on a continuous basis. For the rural population, the underlying problem has been difficulties to attain sustainable food sufficiency from own production due to a number of problems including variations in rainfall patterns and inability to access inputs for increased production. Many households in rural areas who mostly depend on "own produce consumed" report serious scarcity of their staple food with stocks unable to last the whole year. For urban households who must rely on markets for food purchases, the problem has been the rising urban unemployment, rising food prices and falling real earnings from both formal and informal sector employment. It is recognized that urban poverty has been rising more steeply in rural areas in recent years than in rural areas.

This chapter sets the context for the study of food import dependency by analysing trends in the food security situation as manifested in nutritional indicators and staple food availability. Using data from various sources, the chapter analyses the extent and sources of vulnerability in Zambia. It also examines the trends in food aid and commercial food imports and the proportion of the domestic cereal gap both of these meet.

2.1 The Food Security Situation

According to **Figure 2.1**, food available for Zambians was 1,445 Calories per capita per day in 2001,[1] 36% below the recommended 2,250 calories per day. About 81% of the total calories came from cereals in 2001, while the rest (19%) came from roots and tubers. It is also striking to note that food supply decreased over the years, from 1,539 Calories per capita per day in 1990 to 1,445 in 2001.

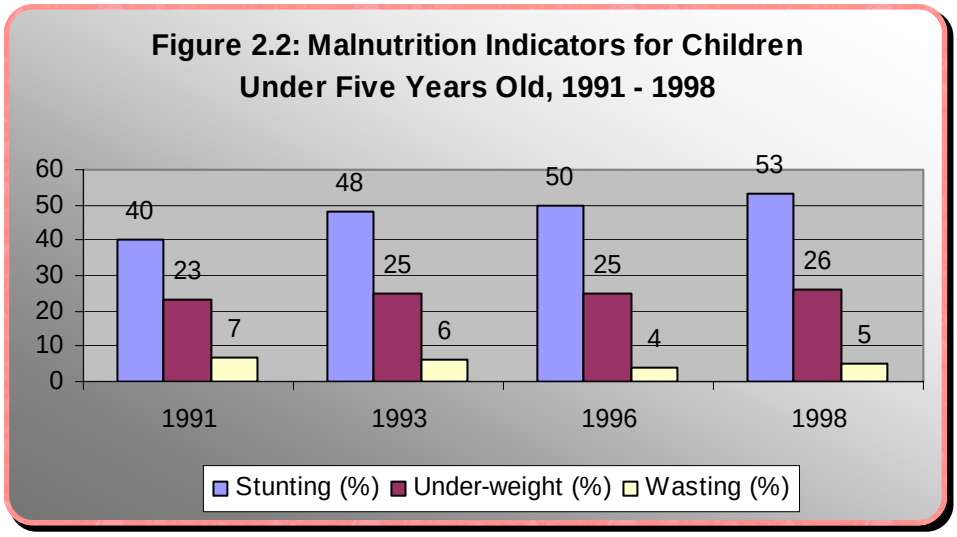
Figure 2.1: Food supply of cereals, roots and tuber (Cal/ per/ day)



Source: FAOSTAT Food Balance Sheet http://atps.fao

[1].org

This low and declining food availability has led to inadequate nutrition in the country. Zambia has faced a deep human wellbeing deterioration since the beginning of the 1990s. **Figure 2.2** that provides the anthropometrical measurement on children under five years of age for stunting, underweight and wasting paints a very gloom picture. In the four national surveys conducted between 1991 and 1998, both stunting and underweight deteriorated, particularly the former although wasting showed some improvement. Trends in the malnutrition indicators show that Zambia has faced a long-term failure to meet her food requirements. The importation of food from abroad has not redressed the situation.

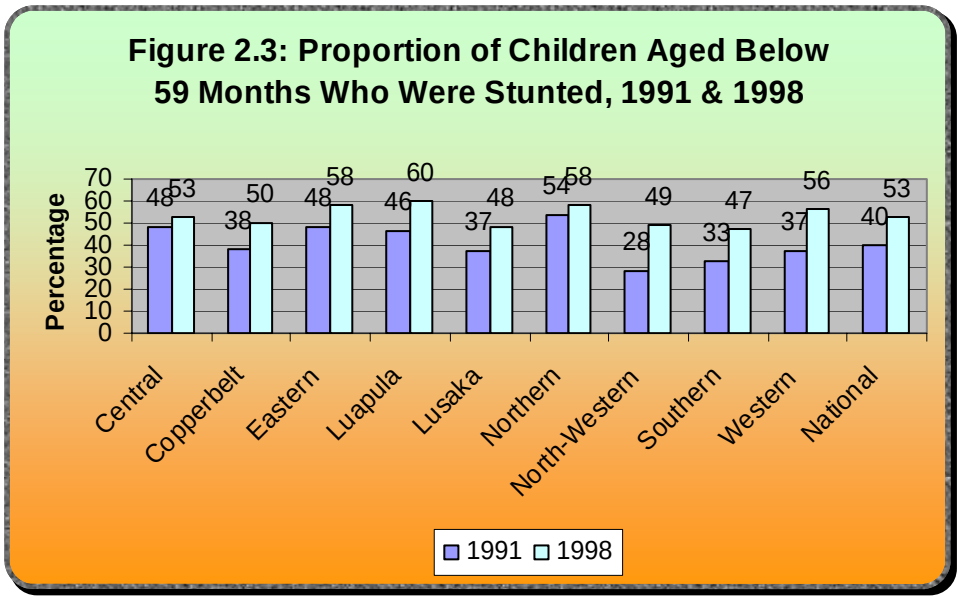


Source: Tables 2.1, 2.2 and 2.3

Table 2.1: Trends in Stunting by Province (1991 to 1998)

	1991	1993	1996	1998	% Change 1991-98
Central	48	53	46	53	10
Copperbelt	38	48	46	50	32
Eastern	48	53	51	58	21
Luapula	46	54	55	60	30
Lusaka	37	40	44	48	30
Northern	54	53	62	58	7
North-Western	28	45	54	49	75
Southern	33	41	50	47	42
Western	37	48	50	56	51
National	**40**	**48**	**50**	**53**	**33**

Source: PSI, PSII, LCMS 1996 and LCMS, 1998



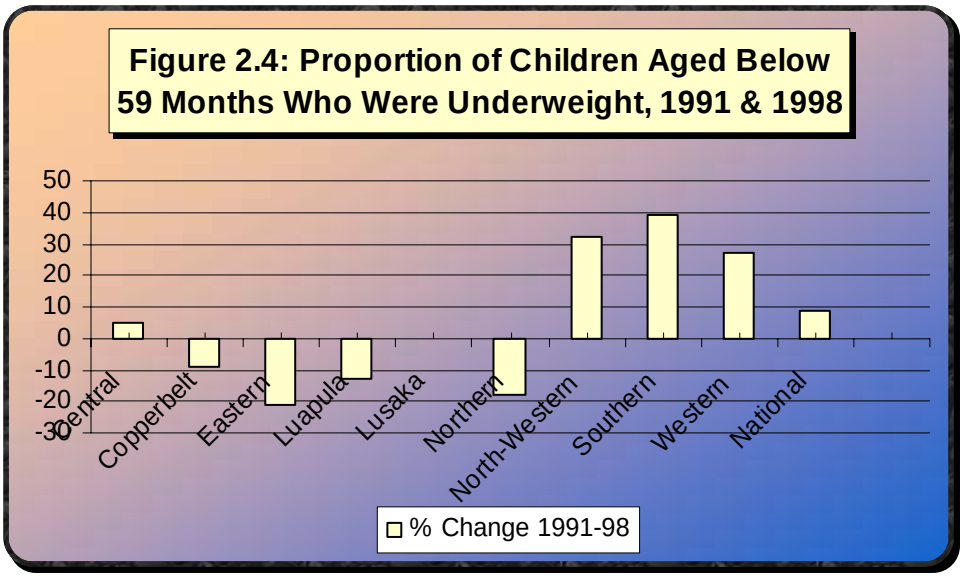
Source: Table 2.1

The proportion of children that were stunted, an important indicator of long-term exposure to food insecurity, increased from 40% in 1991 to 53% in 1998 (see **Table 2.3**). Provincial figures do not provide a clear patter to indicate the underlying factors explaining the deterioration. It is nevertheless seen that the sharpest increase in the proportion of children who were stunted was in North-western, Western and Southern Provinces in that order. Northern and Central Province had the least deterioration.

Table 2.2: Trends in Under-weight by Province (1991 to 1998)

	1991	1993	1996	1998	% Change 1991-98
Central	22	26	21	23	5
Copperbelt	23	22	22	21	-9
Eastern	28	28	19	22	-21
Luapula	30	31	36	26	-13
Lusaka	21	17	19	21	0
Northern	34	31	33	28	-18
North-Western	19	16	32	25	32
Southern	18	22	25	25	39
Western	22	33	27	28	27
National	**23**	**25**	**25**	**25**	**9**

Source: PSI, PSII, LCMS 1996 and LCMS, 1998



Source: Table 2.2

Table 2.2 and **Figure 2.4** show that the same provinces with the highest proportions of stunting – Southern, North-Western and Western – also had the highest increase in the proportion of children who were under-weight which may occur as a result of acute food shortages resulting from a short-term term inability to access sufficient amounts of food such as during a famine. The fact that these two indicators deteriorated mostly in the same provinces could be indicating a series of episodes of failure by populations in these areas to access sufficient food resulting in long term consequences depicted by stunting. It is easy to explain this in the case of Southern and Western Provinces where agronomical conditions have been unsupportive of food production in the last fifteen years, i.e. reoccurrence of rainfall failure in Southern Province and floods and poor soils in Western Province. It is difficult to explain this in the case of North-Western Province which receives sufficient rains and the soils although acidic still do support agriculture production. It is nevertheless noted that North-Western Province showed some improvement in the case of the proportion of children who were wasted between 1991 and 1998. Three provinces that showed deterioration in wasting were Eastern, Southern and Western. Therefore, all three indicators point to a grim situation in Southern and Western Provinces.

Table 2.3: Trends in Wasting by Province (1991 to 1998)

	1991	1993	1996	1998	Change 1991-98
Central	5	3	5	3	Improved
Copperbelt	8	5	7	5	Improved
Eastern	5	7	3	7	Deteriorated
Luapula	9	6	5	5	Improved
Lusaka	10	8	4	5	Improved
Northern	8	4	6	6	Improved
North-Western	14	3	4	8	Improved
Southern	5	7	4	6	Deteriorated
Western	3	5	3	6	Deteriorated
National	**7**	**6**	**4**	**5**	Improved

Source: PSI, PSII, LCMS 1996 and LCMS, 1998

Unfortunately, information from the LCMS conducted in 2002 is yet to be published to appreciate how malnutrition has developed since 1998. Other evidence indicates that this situation has not improved. A survey conducted by the Programme Against Malnutrition revealed that 69% of Zambia's farm households were food insecure in 2001 (see **Table 2.4**). This was based on the quantity of food produced and the number of months the food would last. Again the highest proportions were in Western and North-Western Provinces with 79% each. The lowest proportions were the urbanized provinces of Lusaka and the Copperbelt with 57% and 56%, respectively.

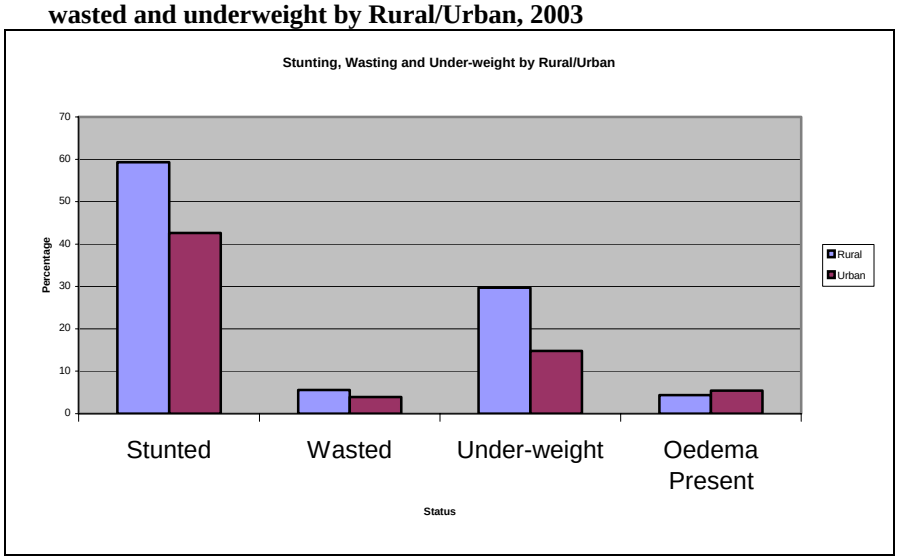
Table 2.4: Food Insecurity (HFnS) Status in Zambia by Province

Province	Farm Households	% Food Insecure Households	Number of Food Insecure HHs
Central	80,236	69	56,813
Copperbelt	45,152	56	29,908
Eastern	224,017	75	166,428
Luapula	120,266	70	85,481
Lusaka	20,369	57	12,614
Northern	161,328	71	115,253
North-Western	57,274	79	44,927
Southern	120,008	69	80,617
Western	96,585	79	75,200
Total	**925,235**	**69**	**667,241**

Source: Programme Against Malnutrition (PAM) 2001

The fact that the poor nutrition status of the country has not improved, and that it may even have become worse, is also attested to by the results of a survey of the Food Security, Health and Nutrition Information System (FHANIS) conducted in August 2003 which found similar figures as the 1998 LCMS for stunting, wasting and under-weight (see Figure **2.5).** In particular, it demonstrated that household food insecurity is more severe in rural areas than in urban areas. There was a 16.7% gap between rural and urban areas in relation to children under 5 who were stunted.

Figure 2.5: Children aged between 3 and 59 months who were stunted, wasted and underweight by Rural/Urban, 2003



Source: Central Statistics Office, The Food Security, Health and Nutrition Information System (FHANIS) August 2003, Lusaka Zambia

The FHANIS survey also collected information on the proportion of community households that had already run out of staple food and the number of months those with stocks would last (see **Table 2.5**). More than half of the households residing in some parts of Eastern, Southern and Western Provinces had already run out of staple food stocks at the time of the survey in August 2003. These areas are located in the driest low-lying or flood prone areas of the country characterized by low-rainfall and poor soils. Therefore, agronomic conditions are unsupportive of food production and thus high exposure to food insecurity. For the country as a whole, 54% of households expected to have their staple food to run out by September 2003. For the Eastern, Southern and Western Provinces areas cited above, more than 80% expected to run out of their staple food by December 2003. These results may not be representative of the other years. However, it is noted below that 2003 was a relatively good year with respect to food production as the rains were sufficient. Difficulties to access food may thus be indicating an entrenched and long-term food insecurity situation in Zambia. The fact that 2003 followed two consecutive years of poor harvest shows that recovery to droughts do not come immediately with a good harvest in one year.

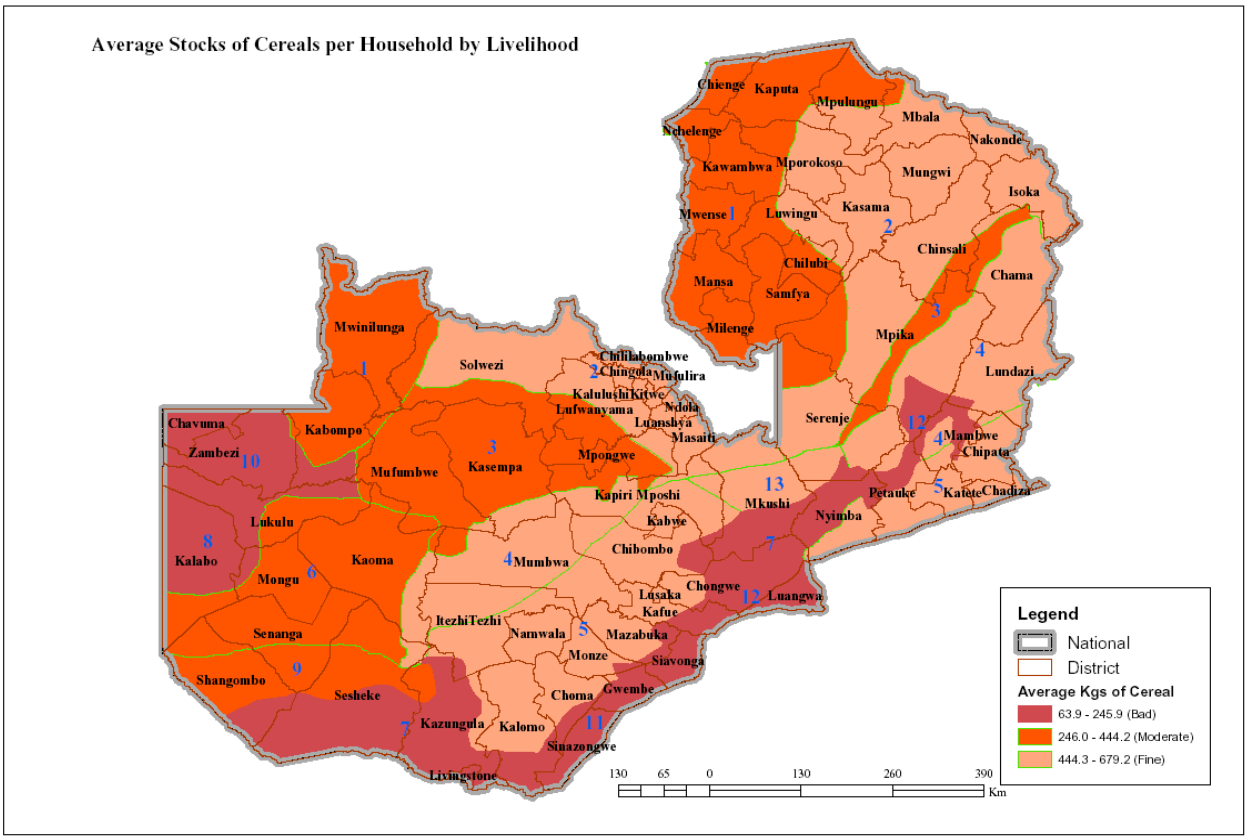
Table 2.5: Households' Staple Stocks by Livelihood Zone, August 2003

Livelihood Zone	Agro-Ecological Region (AER)[2]	Already Run Out of Staple Stocks (%)	Staple Stocks to Finish Within 1 Month (%)	Staple Stocks to Last for 2-3 Months (%)	Staple Stocks to Last for More than 3 Months (%)
Zone 1	AER III with cassava as the main staple crop.	21	17	24	38
Zone 2	AER III with maize as the main staple crop.	42	12	21	25
Zone 3	AER III with relatively more diversified staple crop composition comprising maize and cassava	35	17	23	25
Zone 4	AER IIa with maize and cassava constituting the staple crop base	18	26	28	28
Zone 5	AER IIa, non-Kalahari medium rainfall (800 - 1,000 mm) plateau with maize and cassava as the main staple	17	13	29	41
Zone 6	AER IIb, Kalahari sandy soils medium rainfall rainfall (800 – 1,000 mm) plateau with maize almost the sole staple	31	34	15	20
Zone 7	AER II, driest part of AER. Both maize and cassava are important staples	53	23	21	3
Zone 8	AER IIb with cassava as the main staple food source	56	11	14	19
Zone 9	AER I with maize as the main source of staple food	46	24	15	15
Zone 10	AER III	42	20	20	18
Zone 11	AER I, Low rainfall, Low lying areas of the country with sorghum as the main staple crop	58	22	17	3
Zone 12	AER I, Low rainfall, Low lying in which maize and cassava are the most important staple crops	44	26	15	15
Zone 13	AER IIa in the part where maize is the most important staple,	-	-	-	-
Total		**34**	**20**	**22**	**24**

Source: Central Statistics Office, The Food Security, Health and Nutrition Information System (FHANIS) August 2003, Lusaka Zambia

[2] As explained in Chapter 3, Region I covers some parts of Southern, Eastern and Western Provinces mostly the Luangwa, Gwembe and Zambezi Valleys. Region II has two main parts. Region IIa are the plateau areas of Central, Southern and Eastern Province while Region IIb covers the Kalahari sandy soils of Western Province. Region III in the north covers Copperbelt, Luapula, Northern and Northwestern Provinces.

Figure 2.6: Average Stocks of Cereals per Household by Livelihood Zone



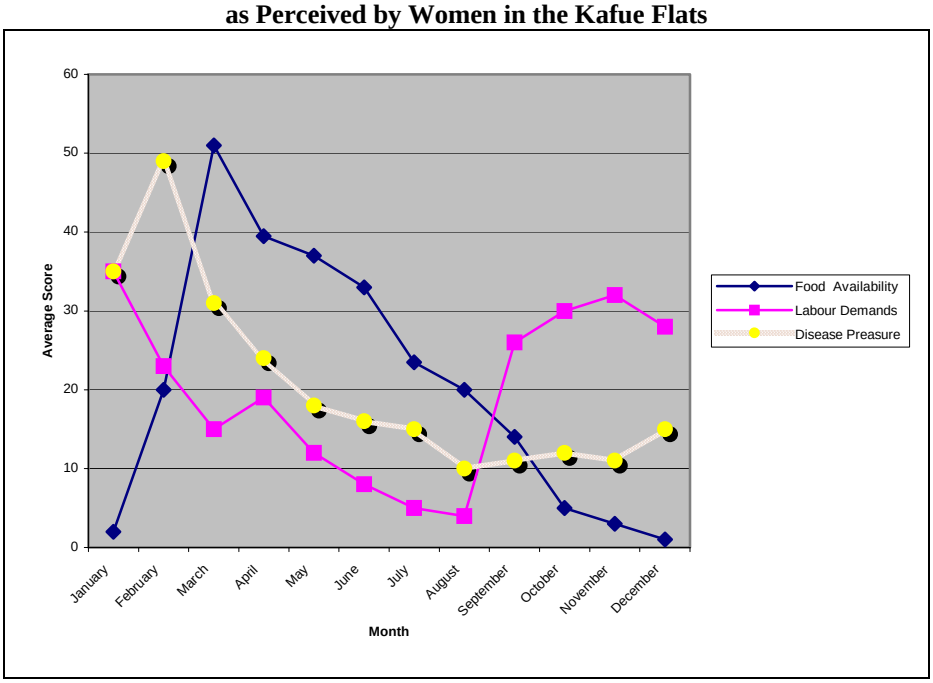
A study that focused on the Kafue river basin, which accounts for about 40% of Zambia's total population, confirms the grim picture painted by the FHANIS survey (Scott Wilson Pielsold, 2003). The food calendars generated during a socio-economic survey showed that the hunger months generally were from September with January and February being the most severe (see **Table 2.6**). During these months, extremely vulnerable communities relied on relief food. Responses to food shortages included piecework, food for work, honey collection in November, hunting, charcoal burning and collecting wild foods. The FHANIS survey had also indicated that, in response to the depletion of the staple food stocks, rural households reduced and substituted ordinary meals with fruits (e.g. mangoes) and other non-conventional meals.

Table 2.6: Food Calendar for Himankalu Community, Monze

Month	Score	Comments
January	0	Reliance on food relief, without which most households go for some days without food. To cope, households sell chickens or work for others for food. High cash need particularly for school fees.
February	0	Same as in January
March	42	Most crops mature, including fresh maize, pumpkins , gourds and amaranthus
April	105	Plenty of food. People eating as much to regain lost body condition. Nshima eaten twice a day with pumpkin leaves, fish, cleome, okra, sweet potato leaves
May	58	Some fresh produce finished
June	37	Nshima is consumed in the same quantities but other foods decrease
July	42	Increased eating of sweet potatoes
August	15	Nshima is consumed in the same quantities but other foods decreasing
September	7	Serious hunger starts, with meals reduced to once a day. maize in storage finishes
October	5	Hunger problems intensify. Water becomes a problem as well.
November	2	Households start missing meals going for a day without food at times
December	2	Same as in November

Source: Integrated Kafue River basin environmental Impact Assessment Study – Socio-economic survey June/July 2003

Figure 2.7: Food Availability, Labour Demand and Disease Prevalence as Perceived by Women in the Kafue Flats



Source: Scott Wilson Pielsod, 2003: ***Integrated Kafue River Basin Environmental Impact Assessment Study – Strategic Environment Report***

The study also found that conditions had developed into a self-reinforcing cycle where food finishes by September when households are preparing to cultivate their fields. Hungry and vulnerable to diseases, the ability of farmers to cultivate an adequate area as well as manage the cultivated crop to produce enough food to last for the whole year also reduces. It is seen from **Figure 2.7** that the prevalence of diseases is highest in the rainy season when labour demand for farming activities is high. This is also the time when household food stocks are low or sometimes would have run out. Due to body weaknesses resulting from hunger and tiredness, diseases increase, which in turn undermines labour productivity and lowers the production of food for the following season, entrenching household hunger and poverty even further.

Table 2.7 shows the sources of staple food other than own produce in rural areas. It is seen that 41% of rural households rely on cash purchase and 16% on payment in kind. Sources of cash include cash income generated through the sale of crops, casual labour and trading. According to the FHANIS Survey, 36% of rural households said sale of crops (including vegetable sales) was their main source of cash followed by casual labour (19%), beer brewing (10%) and fish sales and business trading (7% each). Only 6% of rural households mentioned formal sector employment as their main source of cash income. It is an important observation that, even in rural areas, a significant proportion of households rely on the markets for food when their stock run out. This of course is a mix of own produce and purchased consumption. Unfortunately the FHANIS survey did not determine the proportion of this mix.

Of the households that had no staple food from their own fields, 15% relied on food aid while 21% received donations from relatives or from their neighbours. Reliance on food aid was highest in the same low lying and flood prone areas identified above as suffering from food shortages. In these areas, 30% to 52% relied on food aid when a staple food ran out. It is, of course observed that households tended to use multiple sources to acquire the staple food once it ran out. Therefore, Zone 8 located in parts of Western Province with the highest proportion of households that said they relied on the markets to supplement staple food requirement also had the highest proportions that mentioned the other three sources.

Table 2.7: Households' Staple Stocks by Livelihood Zone, August 2003

Livelihood Zone	Cash Purchase	Payment in Kind	Remittances[3]	Food Aid	Number of Households
Zone 1	45	10	17	5	275,000
Zone 2	48	18	19	8	288,000
Zone 3	25	9	16	4	51,000
Zone 4	24	3	9	20	49,000
Zone 5	33	16	23	19	305,000
Zone 6	41	25	32	17	109,000
Zone 7	55	15	21	30	44,000
Zone 8	79	45	38	52	20,000
Zone 9	33	22	31	38	23,000
Zone 10	22	8	19	25	28,000
Zone 11	59	10	12	33	34,000
Zone 12	38	28	32	46	19,000
Zone 13	28	23	22	12	12,000
Total	**41**	**16**	**21**	**15**	**1,257,000**

Source: Central Statistics Office, The Food Security, Health and Nutrition Information System (FHANIS) August 2003, Lusaka Zambia

2.2 Demand and Supply of Staple Foods

The major staple foods in Zambia include maize, wheat, millet, cassava, sorghum and rice. Of these, maize and cassava are the more widely consumed (see **Table 2.8**). Following independence, agricultural policies favoured maize above all other crops. This resulted in increased dependency in maize by both urban consumers and rural producers in large parts of the country. In areas where maize was not traditionally grown or was unsuited to the climatic conditions, this maize bias induced a shift away from traditional more drought resistant crops, and increased reliance on maize as both the staple and a cash crop.

Table 2.8: Households' Staple Stocks by Livelihood Zone, August 2003

Livelihood Zone	**Main Staple Food**	**Main Livelihoods**
Zone 1	Cassava	Crops, trading, fishing and crops
Zone 2	Maize	Crops, game meat, trading, charcoal, precious minerals, wages
Zone 3	Maize, cassava	Crops, game meat and cattle
Zone 4	Maize, cassava	Cattle, crops, game meat and trading
Zone 5	Maize, cassava	Cattle, crops, charcoal, mining and trading
Zone 6	Maize	Cattle, crops and timber
Zone 7	Maize, cassava	Cattle, crops, wages, timber, curios and cross-border trading
Zone 8	Cassava	Cattle, crops and fishing
Zone 9	Maize	Cattle, crops, small livestock, fishing an game meat
Zone 10	Cassava	Cattle, crops, fishing, small livestock and trading
Zone 11	Sorghum	Cattle, small livestock and trading
Zone 12	Maize, cassava	Crops and fishing

Source: Central Statistics Office, The Food Security, Health and Nutrition Information System (FHANIS) August 2003, Lusaka Zambia

However, this may have started to change. The liberalization of the agricultural sector and the subsequent collapse of markets and rural credit institutions has been a major factor. The area under maize has declined by 23% since its peak. With less maize being produced, the amount of surplus food for sale reaching urban markets has declined, while prices have risen. Some changes in consumption patterns are being noted. The consumption of cassava in rural areas is becoming more widespread. In urban areas, consumption of wheat products is also on the rise.

[3] These are food donations (gifts) from relatives/sympathizers within or outside the community.

2.2.1 Supply and Demand for Maize

Based on the crop production figures, the crop food balance sheets are constructed by adding the carry over stocks from the previous agricultural season to the current year production to get the crop available for the domestic market. Upon ascertaining the national staple requirements, the food available for domestic purposes is deducted to determine whether the country is going to face a deficit or a surplus food production. The deficit/surplus estimate is then used to determine the import/export requirements.

As already noted above, maize production has fluctuated considerably. Taking the 1987 to 2003 period, the highest area cultivated under maize production was 1,020,574 hectares in 1989 while the lowest was 510,372 hectares in 1998. Within the year to year variations, a declining trend in total production is noticeable. Between 1987 and 1995, maize output averaged 1,018,919 metric tones but dropped to 905,211 metric tones between 1996 and 2003. This is despite the fact that the lowest production occurred in 1992 at 483,492 metric tones. Annual variations in weather is definitely the major factor. The drought years of 1992/92, 1994/95 and 2001/02 resulted in corresponding decline in production. However, to this should be added the erratic supply and declining access to inputs in the wake of the liberalization of maize markets.

Table 2.9: Trends in Maize Production, 1987 - 2003

Year	Hectares	Metric Tonnes	Yield (Tonnes/ Hectare)	Year	Hectares	Metric Tonnes	Yield (Tonnes/ Hectare)
1987	609529	1077449	1.77	**1996**	675565	1409485	2.09
1988	723087	1943219	2.69	**1997**	649039	960188	1.48
1989	1020574	1843180	1.81	**1998**	510372	638134	1.25
1990	763258	1119670	1.47	**1999**	597454	822057	1.38
1991	639390	1095908	1.71	**2000**	561491	850466	1.51
1992	661305	483492	0.73	**2001**	583855	801889	1.37
1993	633326	1597767	2.52	**2002**	575686	601606	1.05
1994	679356	1020749	1.50	**2003**	699276	1157860	1.66
1995	520165	737835	1.42				

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

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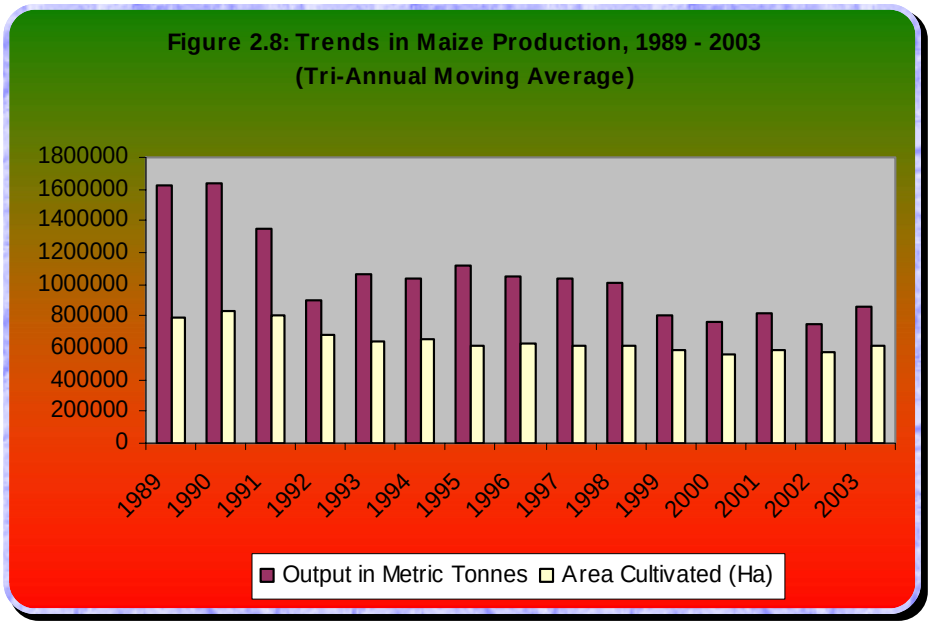


Source: Table 2.9

Table 2.10: Maize Staple Food Supply and Demand ('000 Metric Tonnes), 1989 -2003[4]

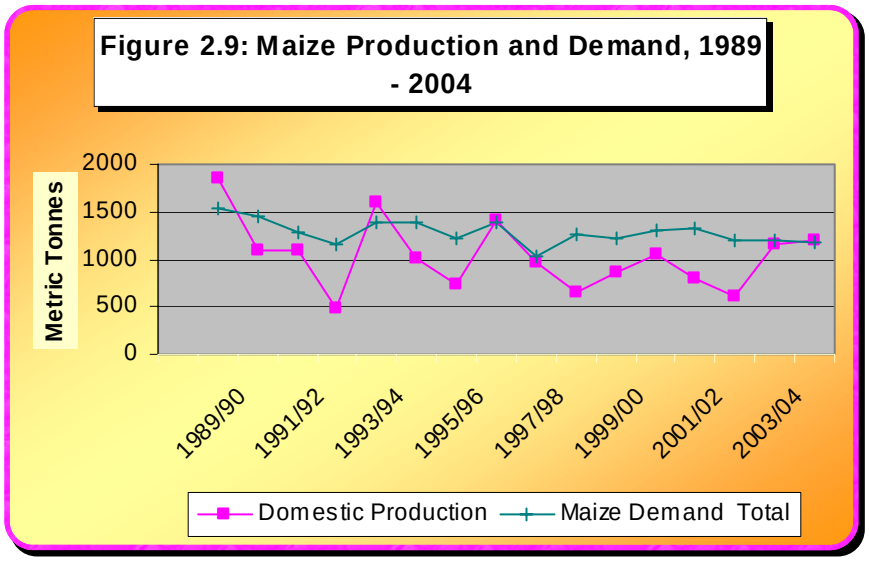
Year	Opening Stock	Domestic Production	Total Available	Maize Requirements				Surplus/ Deficit
				Human Cons.	Stock-Feed	Other uses	Total	
1988/89	609	1,845	2,454	1,167	80	290	1,537	917
1989/90	767	1,093	1,860	1,215	80	165	1,460	400
1990/91	250	1,097	1,347	1,084	40	150	1,274	73
1991/92	101	483	584	1,048	20	100	1,168	-584
1992/93	140	1,598	1,738	1,108	50	240	1,398	340
1993/94	225	1,020	1,245	1,095	50	240	1,385	-140
1994/95	85	738	823	1,013	60	140	1,213	-390
1995/96	17	1,410	1,427	1,090	100	198	1,388	39
1996/97	50	960	1,010	900	77	60	1,037	-27
1997/98	80	649	729	1,110	30	122	1,262	-533
1998/99	35	855	890	1,031	60	125	1,216	-326
1999/00	60	1,053	1,113	1,054	33	228	1,315	-202
2000/01	61	802	863	1,061	35	225	1,321	-458
2001/02	20	601	621	1,008	35	160	1,203	-582
2002/03	20	1,158	1178	1,008	35	160	1,203	-25
2003/04	100	1,207	1307	981	50	156	1187	120

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

Zambia rarely recorded surplus maize production over the last 15 years period (see **Table 2.10**). In 9 of the 15 years, the country was not able to meet its maize requirements. In the 6 years when total requirement was met, domestic production wholly covered maize requirements in four years (see **Figure 2.8**). In the other 2 years, carry over stocks from the previous season including food imports helped to mitigate the shortfall in domestic

[4] Please note that some crop production figures in the food balance sheets may not be identical to those in the crop production tables. This is how they were obtained from the source and no adequate explanation was given as to what accounted for the difference.

production. These trends show a situation where the country is consistently not able to satisfy its food (maize) needs from own production and lends evidence to the grim picture of high food insecurity exposure seen above.



Source: Table 2.10

The maize requirements that constitute the Maize Food Supply and Demand table consist of the following components:

- Human Consumption.[5] Maize estimates for human consumption ranged from 900,000 MT to 1,215,000 MT. This includes locally purchased Food Reserve Agency (FRA) stocks expected to be carried over into the next season. It is important that this item is not confused with actual consumption but understood to refer to an estimate of nutritional needs, i.e. individual calorie needs multiplied by Zambia's population. Variations in the estimated requirements result from anticipated changes in the production of the different cereals that contribute to calories requirement of Zambia.

- Stockfeed. These are estimated requirements by major stockfeed producers which peaked at 100,000 tons during the 1996/97 agricultural season and while the lowest at 20,000 tons in 1992/93. Stockfeed consumption also showed a decline during the years starting 1998/99.

- Other Uses. Other Uses comprises estimated seed crop grown for seed companies, requirements by industrial brewers and post harvest losses. Post-harvest losses are estimated at 5% for grains in line with estimates from other SADC countries.

2.2.2 Supply and Demand for Wheat

The production patterns for wheat cannot be fully analysed due to absence of data for area under cultivation for the year 2000 onwards. For the period 1987 to 1999 the area under cultivation peaked at 13,656 hectares in 1993, while the lowest was 6,925 hectares in 1988. Despite the lack of data on area under production and yield per hectare, it is seen that wheat production consistently improved in the late 1990s and early 2000s. The yield per hectare also showed an upward trend starting 1994.

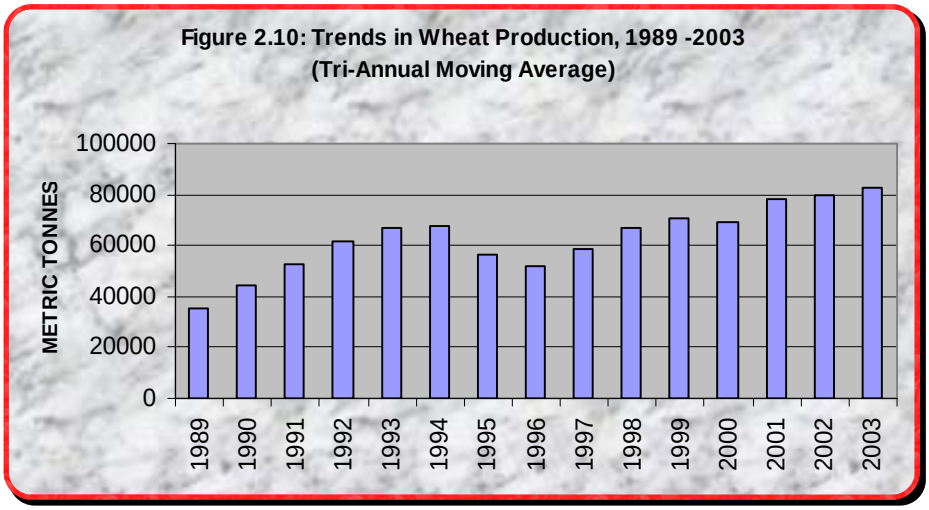
5

Table 2.11: Trends in Wheat Production, 1987 - 2003

Year	Hectares	Metric Tonnes	Yield (Tonnes/ Hectare)	Year	Hectares	Metric Tonnes	Yield (Tonnes/ Hectare)
1987	7387	27408	3.7	**1996**	10327	57595	5.58
1988	6925	32914	4.75	**1997**	10693	79810	6.62
1989	9878	46614	4.72	**1998**	11278	63925	5.67
1990	11595	53601	4.63	**1999**	9921	69226	6.98
1991	11849	58732	4.96	**2000**	-	75000	-
1992	10964	72490	4.97	**2001**	-	90000	-
1993	13656	69286	5.07	**2002**	-	75000	-
1994	11566	60944	5.27	**2003**	-	75000	-
1995	7806	38019	4.87				

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

The total requirement for wheat has been rising gradually such that the rise in production seen in **Table 2.12** has still proved inadequate. Therefore, Zambia has always experienced a food deficit in wheat with 1996/97 recording a 53,000 MT deficit. There are expectations that Zambia could become self-sufficient in wheat in a few years time given the proposed investments being considered by farmers. In 2003, commercial farmers held discussions with the World Bank to provide a facility of US$50 million from which US$10 million was to be used to acquire 100 centre pivots to irrigate an additional 10,000 hectare (Wilson Scott Piesold, 2003). This was going to double the current output and fully meet the current wheat demand. These discussions did not bear fruit but it is reported that interest remains very high.



Source: Table 2.11

Table 2.12:Wheat Supply and Demand ('000 MT), 1989 -2003

Year	Opening Stock	Domestic Production	Total Available	Wheat Requirements				Surplus/ Deficit
				Human Cons.	Stock-Feed	Other uses	Total	
1989/90	2	47	49	95	0	5	100	-51
1990/91	8	54	62	85	0	5	90	-28
1991/92	8	59	67	78	0	5	83	-16
1992/93	8	62	70	70	0	5	75	-5
1993/94	30	71	101	113	0	5	118	-17
1994/95	10	75	85	100	0	7	107	-22
1995/96	28	50	78	100	0	7	107	-29
1996/97	5	50	55	101	0	7	108	-53
1997/98	25	71	96	121	0	7	127	-31
1998/99	25	69	94	107	0	3	110	-16
1999/00	10	75	85	107	0	3	110	-25
2000/01	10	90	100	110	0	7	117	-17
2001/02	5	75	80	111	0	6	117	-37
2002/03	2	75	77	105	0	6	114	-34

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

2.2.3 Supply and Demand for Sorghum/Millet

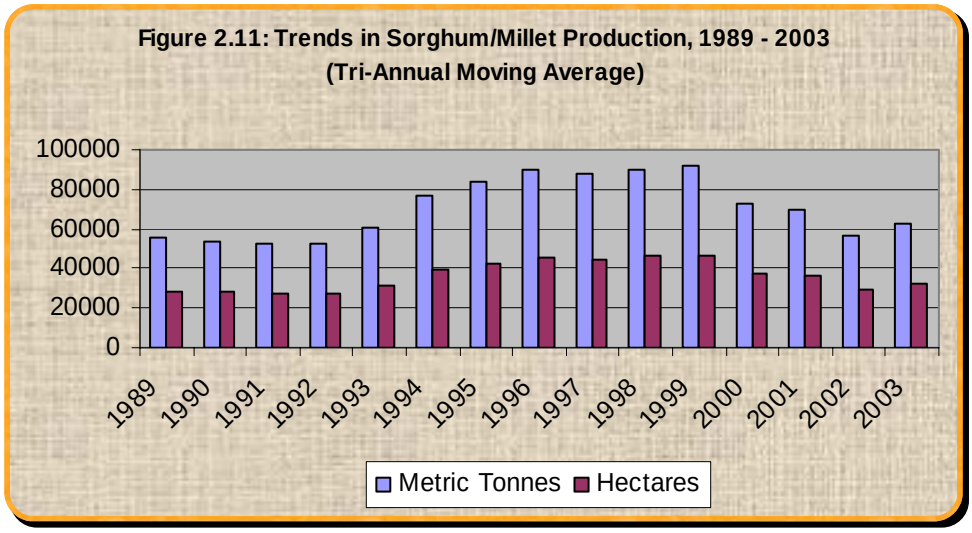
The area under sorghum/millet production showed an increase from its lowest of 77,060 hectares in 1991 to its highest 132,187 hectares in 1999. The period from 1994 to 1999 was characterised by stabilisation, with a decline thereafter from 2000 onwards. Similar trends were observed in the production volumes and yield per hectare (see **Table 2.13**). The increase in the area under cultivation after 1993 can be attributed to the liberalisation of the agricultural sector, which included the withdrawal of subsidies on fertiliser. This discouraged people from growing the staple maize crop in favour of crops like sorghum and millet which are drought tolerant and have a comparative advantage in dry areas.

Table 2.13: Trends in Sorghum/Millet Production, 19987 - 2003

Year	Hectares	Metric Tonnes	Yield (Tonnes/ Hectare)	Year	Hectares	Metric Tonnes	Yield (Tonnes/ Hectare)
1987	91053	56453	0.62	**1996**	124769	90498	0.73
1988	91521	48874	0.53	**1997**	130415	91885	0.70
1989	99424	61017	0.61	**1998**	125911	87635	0.70
1990	107335	51122	0.48	**1999**	132187	95111	0.72
1991	77060	46512	0.60	**2000**	93577	35705	0.38
1992	106921	61036	0.57	**2001**	128514	79120	0.62
1993	99217	72842	0.73	**2002**	96078	54417	0.57
1994	137547	97712	0.71	**2003**	86907	55632	0.64
1995	116174	81024	0.70				

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

Despite the information gaps, there is an upward trend in both the production and consumption of sorghum/millet. The highest consumption of sorghum/millet was 105,000 metric tons recorded in 2002/03. Zambia however has yet to become self-sufficient in sorghum/millet, as the total requirements outstrip availability. Other uses for Sorghum/millet include local beer brewing, post-harvest losses and seeds stored for the next season.



Source: Table 2.13

Table 2.14:Sorghum/Millet Supply and Demand ('000 MT), 1989 -2003

Year	Opening Stock	Domestic Production	Total Available	Sorghum/Millet Requirements				Surplus/ Deficit
				Human Cons.	Stock-Feed	Other uses	Total	
1989/90	0	61	61	29	10	22	61	0
1990/91		52	52	20	10	22	52	0
1991/92		47	47	12	10	25	47	0
1992/93		61	61	31	10	20	61	0
1993/94		72	72	37	10	25	72	0
1994/95		60	60	60	0	0	60	0
1995/96		82	82	90	3	12	105	-23
1996/97	2	89	91	71	3	13	87	4
1997/98		59	59	50	5	4	59	0
1998/99		0	0	0	0	0	0	0
1999/00		0	0	81		1	82	-82
2000/01	1	70	71	83		5	88	-18
2001/02		95	95	84		6	90	6
2002/03	2	75	77	105		6	111	-34

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

2.2.4 Cassava Production and Consumption

Though the official statistics available on cassava supply and demand are scanty, its production and consumption are obviously on the increase. As already observed in **Section 2.2**, cassava is undergoing something of a re-emergence and is considered as a main staple in as many rural areas as maize is. Of course, maize is still the country's main staple simply because the urban population is overwhelmingly reliant on maize. **Table 3.4** shows that

cassava accounted for 50% of the total area cultivated in 2001/02. This was a drought year and as a result maize was pushed into second place and accounted for only 35.4% of the area cultivated. The leading provinces in the production of cassava are Northern, Luapula, North-Western and Western Provinces.

Table 2.15:Cassava Supply and Demand ('000 MT), 1995/96 -2003/04

Year	Opening Stock	Domestic Production	Total Available	Cassava Requirements				Surplus/ Deficit
				Human Cons.	Stock-Feed	Other uses	Total	
1995/96	0	50	50	0	0	0		
1996/97	3	137	140	103	14	23	140	0
1997/98	0	0	0	0	0	0	0	0
1998/99	0	1021	1021	868	0	153	1021	0
1999/00	0	968	968	566		19	585	383
2000/01		969	969	920		48	968	1
2001/02		815	815	582		16	598	217
2002/03	0	851	851	553		17	570	281
2003/04	0	958	958	589		20	609	349

Source: Ministry of Agriculture and Cooperatives, Early Warning Unit

The increase is a result of government and NGO intervention to promote crop diversification and drought resistant crops. As a result, cassava production has spread to areas where it has never been traditionally grown such as some parts of Eastern Province. Recognizing the rising importance of cassava, the FRA has started buying cassava chips, thereby providing an alternative market.

Whilst the cassava production programme seems to be growing, a survey[6] jointly conducted by MACO, ZNFU, FRA and FEWSNET found that there was very little that has been done in the area of promoting marketing, such as creation of allied industries like starch and stockfeed processing industries, with all the processing being done at household level. Sales have remained localized and there is no formal local and external market for cassava. The Root and Tuber baseline survey established that the common market problems included lack of enough buyers and unstable/unreliable markets. The FRA purchases may not guarantee a ready market as it is driven by relief and not commercial demand.

2.2.5 Do We Truly Know Zambia's Food Requirements?

The presentation above of production and food requirements figures for selected crops suggest a very a serious gap between the two. The SADC Early Warning Unit estimates suggest that Zambia had a five year average of 311,000 MT domestic cereal deficit or 28.4% of domestic production (see **Table 2.16**). This cereal balance by weight includes maize, rice, wheat, sorghum and millet on a standard measured weight basis and includes cassava with an appropriate adjustment. With food imports the cereal gap drops to 129,000 MT, 10.8% of production. It shows the significance of food imports in addressing the country's food security situation.

[6] ***Review of the Zambia National Food Balance Sheet*** – A report based on a rapid assessment by USAID/Famine Early Warning System Network (FEWSNET), Ministry of Agriculture and Co-operatives (MACO), Food Reserve Agency (FRA) and Zambia National Farmers Union (ZNFU)

Table 2.16: Zambia Cereal Balance Sheet, Five Year Average 1999 - 2003

ITEM	METRIC TONNES
Opening Stocks	95,000
Domestic Production	1,095,000
Total Availability	**1,190,000**
Domestic Requirements	1,467,000
Unplanned Exports	14,000
Desired Closing Stocks	20,000
Total Requirements	**1,501,000**
Domestic Cereal Gap	-311,000
Commercial Imports Received[7]	111,000
Food Aid Received	71,000
Total Imports Received	**182,000**
Unfilled Cereal Gap	**129,000**

Source: Zambia Vulnerability Assessment Committee, January, 2003

In recent years, controversy has surrounded figures estimates of food requirements. In mid 2002, for example, the WFP/FAO Crop and Food Assessment Mission reported a cereal shortfall (largely maize) of 240,000 MT affecting 2.3 million people in Zambia. Subsequent national vulnerability assessments increased the figure to 2.8 million across 46 districts, largely in the South of Zambia. Food consumption estimates were calculated using standard parameters: maize 93 kgs, wheat 10.2 kgs and rice 1.6 kgs per person/year which gave a domestic cereal requirement of 1.4 million MT based on a population of 10.86 million. The final production estimates of all the cereals for the 2001/2 season was 745,000 MT, leaving a gap of 650,000 MT to be met by commercial food imports and humanitarian aid.

When Zambia rejected the Genetically Modified Organisms (GMO) maize that had already been received and was ready for distribution, a humanitarian disaster was anticipated. Because the official rejection of GMO food was done only in August, there was little time to ship in food imports. Other countries in the region had been affected by the drought as well. The World Food Programme could only procure 121,000 MT instead of the required 240,000 MT. The anticipated humanitarian crisis failed to occur, raising the view that figures cited had been overstated.

A study commissioned by Care suggests a number of reasons why the figures of food requirements resulting from the 2001/02 were off the mark (McEwan, May 2003).

- Although a maize production deficit did indeed occur, this was equated to a food deficit and the need for food relief. In the process the contribution of cassava, other tubers and small grains were not adequately factored into the crop forecast estimates. Starches such as sweet and Irish potatoes, which are important in urban areas, are often excluded.

- The contribution of cotton to the cash economy in areas of drought was underestimated. Cotton did extremely well in 2001/02 and obviously helped many households gain some resilience to face drought conditions as they could buy food (not necessarily maize) form the market.

- Although ownership has significantly gone down, livestock (including small livestock) and milk remain important factors in household's resilience against drought in some of the areas affected.

- Estimates of the need for food relief failed to take into account the multiple livelihoods of the rural society and their capacity to survive crop failure without descending into a humanitarian disaster.

[7] Unfortunately this does not take into account informal cross border imports of cereal from neighbouring countries which in years of scarcity can be significant.

- The above oversights where not helped by the sampling methodological inadequacies in vulnerability assessments that "led to inappropriate extrapolation of the numbers affected and the severity of the problem" (p.7). Cereal consumption figures and the size of the cereal gap are based on inconsistent and often contradictory data.

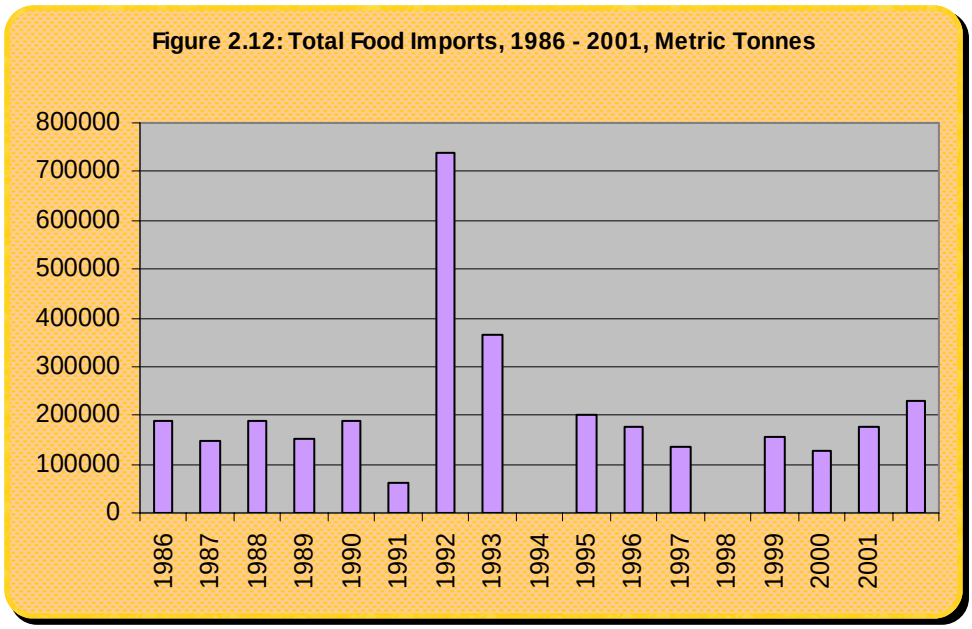
  In addition to all this is the fact that organizations participating in food aid imports and distributions both in and outside government have strong institutional incentives to overstate the food scarcity problem. NGOs having established structures to distribute food relief are unwilling to dismantle them when the need for food relief ends as it means laying off some staff. The same could be said of government structures. It is observed that the food relief is the most visible substantive job of the country's Vice President under whom the Disaster Management and Mitigation Unit lies. The Office of the Vice President has an obvious interest in perpetuating this activity.

  In **Section 4.2** we argue that the estimates for the national cereal demand (requirements) produced by the Early Warning Unit is perhaps not very much off the mark. However, the main problem is that the food balance sheet is not robust enough to take into account alternative foods consumed in the event of a huge unfilled cereal gap. Information on vulnerability should take into account the presence of alternative foods and which categories are unable to access even such alternatives when there is a shortage of cereals.

2.3 Structure and Trends of Food Imports

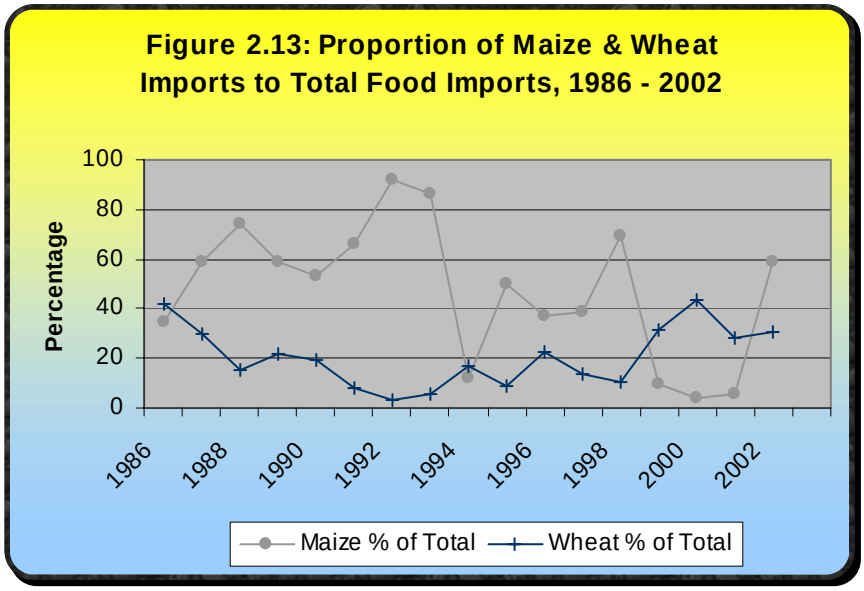
The analysis in this Section is based on data from the Bank of Zambia (BOZ), the Central Statistics Office (CSO), the Food and Agriculture Organisation (FAO) and the World Food Programme (WFP). The main weakness with the data is that there is no single data source that disaggregates between food aid and commercial food imports. CSO data when available were not disaggregated into commercial imports and relief food imports. Maize imports from the Bank of Zambia (BOZ) are only quoted in values and not the actual quantities imported. WFP data on relief food is expressed in quantity shipped without equivalent monetary values. Data from different sources have been difficult to reconcile. It has therefore been extremely difficult to develop a full picture of Zambia's actual staple food imports.

Figure 2.12 demonstrates that Zambia's total food imports over a 15 year period has fluctuated from year to year. The biggest amount of food imports was in 1992 after Zambia suffered the worst drought in living memory. As seen above, the country suffered a maize deficit of 584,000 metric tonnes. A total of 680,000 metric tonnes of food was imported in 1992 of which 92.2% was maize. Surprisingly, 366,000 metric tonnes of food was imported the following year in 1993 with maize accounting for 83.3% despite Zambia recording a maize surplus of 340,000 metric tonnes. After this is the importation of 230,000 metric tonnes of food in 2002 following another drought season.



Source: The Food and Agriculture Organisation **(**www.fao.org**)**

With respect to the composition of food imports, maize and wheat accounted for 70.2%, distributed as 48.6% and 21.6% respectively. It is seen from **Figure 2.13** that the proportion of wheat has been more stable than maize. In actual figures, wheat imports have ranged between 5,119 metric tones in 1991 and 78,000 metric tones in 1986 compared with an average annual import of 33,000 metric tones. This compares to maize whose annual imports ranged from 5,481 metric tones in 2000 to 680,000 metric tones in 1992 with an average of 146,169 metric tones.



Source: The Food and Agriculture Organisation **(**www.fao.org**)**

2.3.1 Food Aid

The fluctuations in food imports seen above, are driven by the variability in food aid from one year to another. WFP data shows that in 1992, Zambia received 451,200 metric tonnes (see **Table 2.16**). The Government of the Republic of Zambia had forecast food aid requirements of up to 550,000 metric tonnes (mainly maize cereal) during the same year.

During the following year, 354,400 metric tones of food aid imports were brought into Zambia. The continued importation of food aid on a large scale in 1993 after a bumper harvest season is a lagged response to the 1992/93 drought year. This is an indication that response to droughts may not move in harmony with the cycle of deficits followed by food surpluses and may thus work to dampen production in subsequent years by depressing the price of main crop commodities[8]. This lag occurred in the year when Zambia is said to have responded speedily to the crisis, declaring a national disaster much earlier than other countries in Southern Africa. This was the first year of the MMD Government that had assumed power on 1st November, 1991 through multi-party elections and was looked upon as heralding democracy in Africa by the international community. Zambia thus enjoyed immense goodwill from donors and international non-government organisations that responded quickly to the crisis. It has also been recognised that the institutional framework to import and distribute food relief functioned very well.

Table 2.17: Food Aid Imports into Zambia ('000 MT), 1992 to 2002

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
WFP	26.6	47.3	16.4	33	21	8	21	22	20	29	121
Total Food Aid	451.2	354.4	21.1	59	27	11	28	42	27	49	121
WFP Share (%)	6	13	78	56	78	73	75	54	74	60	100

Source: World Food Programme Zambia Office

The lag in food aid shipments despite all these advantages, seem to be pointing to the fact that there will always be a gap between food aid requirements and actual shipments. It is seen in **Table 2.18** that food aid only met 18.0% of the domestic maize cereal gap over the six year period up to 2001. This is mainly due to logistical problems, particularly the time it takes donors to mobilise their shipments as information is absorbed about a country's food crisis. Although this has not been a factor in Zambia's case, political considerations play a role in delaying the time the shipment of relief aid gets to the country.

Table 2.17 also confirms WFP as the biggest provider of food aid to Zambia as most multilateral and bilateral donors prefer to provide assistance through the organisation. Therefore, in 2002, WFP was the only organisation that brought in food aid. However, in 1992 and 1993, WFP food aid imports amounted to only 6% and 13% of total food aid imports. Again it is important to note the special circumstances of that season and the political good will that Zambia enjoyed at the time. Many countries sought to help Zambia without going through the WFP. In 2002, WFP was the only organisation that brought in food aid. However, this was because of the rejection of GMO maize by the government in October. There was little time to arrange for fresh imports and WFP was the only organisation that could bring in some food relief even though this was far short of the estimated 240,000 metric tonnes.

2.3.2 The Food Relief Process

Upon consultation and agreement with the GRZ on food relief requirements, the WFP initiates the procurement procedures. In case of emergency operations, government declares a disaster (man-made or natural) and requests WFP for help. Depending on the nature of the disaster, the level of the crop that represents the vulnerable households is established, in collaboration with NGOs that are already operational in the districts, hand in hand with the Disaster Management and Mitigation Unit (DMMU).

Relief food distribution normally starts around the months of October and November during the year. This is also the time when the vulnerable households start experiencing hunger as

[8] There is however no data on maize price movements for the period in question. The Researcher's source of information on maize price movements is the Zambia Agricultural Commodity Exchange (ACE), which was set up in 1994.

their food stocks run low as seen in the food calendars presented in **Chapter 2**. The hunger period runs from October to March when maize stocks are extremely low for many households, with January and February as the most critical months.

Zambia has institutionalised the structure for food relief that was started in 1992 at the time of one of the worst droughts the country suffered. In that year, after government had declared the anticipated food shortfall as a national disaster, the Ministry of Agriculture, the Ministry of Health and the WFP launched the Programme to Prevent Malnutrition (PPM). This mobilised non-governmental organisations with a presence on the ground to participate in the distribution of food relief. It is recognised that action prevented a humanitarian disaster from taking place and the rebounding of food production the next season owes much to this intervention. A decision was reached that the structure that had worked well needed to be preserved for ongoing relief operations. This led to the creation of the Programme Against Malnutrition (PAM) to coordinate the activities of non-governmental organisations participating in food relief. PAM was registered on 11th November, 1993 as a non-governmental organisation itself

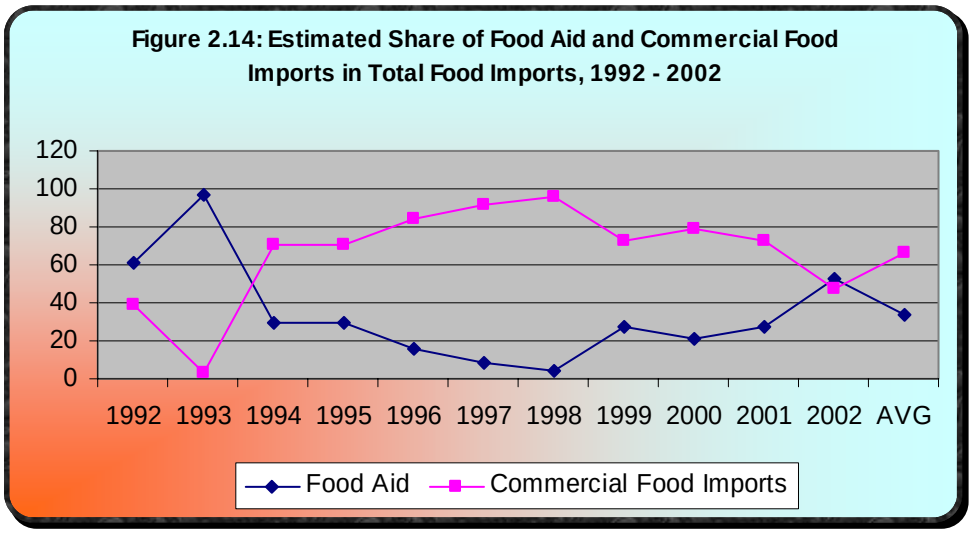
2.3.3 Commercial Food Imports

Data for commercial imports was only available for 1996 to 2001 and is presented in **Table 2.18**. It is seen that commercial imports met 23% of the country's maize gap compared to 18% for food aid. In all, maize imports met 41% of the domestic maize gap, meaning that as much as 59% of the gap went unmet. Further, **Figure 2.14** shows that the proportion of food aid to total food imports averaged 36% and that of commercial. **Figure 2.14** has been calculated from FAO figures on food imports and WFP data on food aid with commercial imports taken as the difference between the two. The two data sets are not exactly compatible and the proportions shown here are only indicative.

Table 2.18: Proportion of Food Imports to Domestic Maize Gap

Year	Total Supply	Total Demand	Maize Domestic Gap ('000 MT)	Total Maize Imports		Food Aid		Commercial Imports	
				'000 MT	As % of Maize gap	'000 MT	As % of Maize gap	'000 MT	As % of Maize Gap
1996	1427	1388	39	48	n.a	11	n.a	37	n.a
1997	1010	1037	-27	133	493	28	104	105	389
1998	729	1262	-533	73	14	42	8	31	6
1999	890	1216	-326	69	21	27	8	42	13
2000	1113	1315	-202	72	36	49	24	23	11
2001	863	1321	-458	230	50	121	26	109	24
Total	6032	7539	-1,507	625	41	278	18	347	23

Source: MACO, Early Warning Unit, World Food Programme and Central Statistics Office, Unpublished Data



Source: Calculated from WFP and FAO data

2.4 Categorising Vulnerability and Food Insecurity

Assessing vulnerability to food insecurity is a description of the capacity of individuals, households and communities to cope with factors that threaten their proper access to adequate food on a continuous basis, whether from production or purchases. The immediate causes to food insecurity vulnerability in Zambia rises from poor harvests, animal losses and declines in incomes. Multiplicity of factors underlie these immediate causes. **Table 2.18**, categorises the underlying factors into three developments: long-term trends; occurrence of shocks; and, seasonality factors. The matrix is an attempt to categorize who the vulnerable are, where they are and why they are vulnerable. It indicates the complexity of the context creating vulnerability to food insecurity in Zambia. What it shows is that, although diminished ability by households to produce enough food is a major cause of rising food insecurity, weakened livelihoods systems are at the centre of rising vulnerability. Given that the majority of the poor in Zambia live in rural areas, most of the vulnerable to food insecurity are in rural areas.

Table 2.18: Vulnerability Context Giving Rise to Household Food Insecurity

Vulnerable Groups	Vulnerability Context		
	Long Term Trends	**Occurrence of Shocks**	**Seasonality Factors**
Urban formal sector workers	▪ Fall in real wages ▪ Inflationary trends leading to rising food prices	▪ Chronically ill workers unable to sustain jobs ▪ Occasional shocks (e.g. withholding aid) that worsen long term trends ▪ High food prices in drought years	▪ Rise in food prices in the rain season before harvest
Urban informal sector workers	▪ Decline in real earnings due to rising number of informal workers ▪ Rising food prices	▪ Loss of labour due to HIV/AIDS ▪ Occasional shocks that worsen long term trends ▪ High food prices in drought years	▪ Rise in food prices in months just before harvest
Urban unemployed	▪ Declining jobs and other economic opportunities for income generation ▪ Rising food prices	▪ Occasional shocks that worsen long term trends ▪ High food prices in drought years	▪ Rise in food prices in months just before harvest
Fishing communities	▪ Depletion of fish stocks leading to decline in incomes	▪ Loss of labour due to HIV/AIDS	▪ Loss of income during months of fishing ban (Dec to March)
Small scale farmers	▪ Declining soil fertility in the south ▪ Removal of subsidies on inputs ▪ Sale of assets	▪ Loss of labour due to HIV/AIDS ▪ Droughts and floods ▪ Animal losses due to diseases	▪ Low prices at harvest ▪ Diseases during production months ▪ Seasonal access to food and income
Female headed households	▪ Gender discrimination leading to low human capital characteristics ▪ Inadequate access to productive assets	▪ Impact of HIV/AIDS ▪ Droughts and floods	▪ Little resilience against seasonality factors
People Living With HIV/AIDS	▪ Reduced ability to engage in productive activities ▪ Sell of assets	▪ Little resilience against shocks	▪ Little resilience against seasonality factors
Child-headed households	▪ Few skills for enhanced livelihood activities	▪ Little resilience against shocks	▪ Little resilience against seasonality factors
Neglected Old People	▪ Reduced ability to engage in productive activities	▪ Little resilience against shocks ▪ Bearing greater burden of caring for orphans	▪ Little resilience against seasonality factors
Areas based vulnerability			
Luangwa, Gwembe & Zambezi Valleys	▪ Harsh agronomical conditions	▪ Prone to droughts	
Barotse Flood Plains	▪ Harsh agronomical conditions	▪ Prone to floods	▪ Annual floods
Kafue Flats	▪ Building of Itezhi-Tezhi Dam to support power generation		▪ Unpredictable annual releases destroying crops

Long term trends have mostly worked through the down turn in economic development and variable macroeconomic indicators. The impact has been felt keenly by urban communities because they depend on markets to buy their food. Their ability to continually access food is dependent on incomes from jobs and developments in food prices. Both formal and informal sector workers have experienced sharp declines in real incomes. Food basket surveys indicate that formal sector wages have increasingly become insufficient to meet household food and other needs. As a coping mechanism, formal sector households supplement incomes by engaging in informal sector activities. This, in addition to rising urban unemployment has raised competition in the urban informal sector, whose markets for products has in the meantime been stagnant, and has put further downward pressure on informal sector earnings. The downturn in the economy hit the urban population most severely because of the demographic explosion that occurred in the first fifteen years of

independence owing to the urban bias in economic policies of the post-independence era. Competition for economic opportunities was already very high at the time economic growth started to slow down. The unemployed in urban areas are particularly vulnerable because they lack the means to purchase food.

In rural areas, long term economic trends led to government failure to sustain agriculture input subsidies. Throughout the 1980s, there was a gradual reduction of input subsidies until they were completely stopped in 1992. The system of input subsidies in addition to the pan-territorial pricing system and other support mechanisms had led to a wholesale adoption of maize production throughout farming communities. Therefore, the liberalisation of agriculture premised on the removal of subsidies affected small farmers' ability to produce their own food or generate income to purchase food. Although farmers are switching to the production of low-input crops such as cassava, the transition is taking longer because these crops are not well supported and their markets are still undeveloped

Other long term trends that have affected people's access to food include depletion in natural resources at times due to more intensive utilisation as economic opportunities narrowed, and at other times due to the use of wrong production methods. The Southern Province has increasingly become vulnerable to food insecurity in part because the soils are said to be getting less fertile. The Province was traditionally the bread basket of Zambia and its lands have been more intensively cultivated than the rest of the country. Declining soil fertility, recurrence of droughts and reduced land access due to population growth have induced an outward migration to other areas in the country, particularly in the north where there is abundant unutilised land. Fishing areas have experienced a depletion in fish stocks due to over-fishing and use of wrong fishing methods. Charcoal burning near more highly populated urban centres is depleting Zambia's forests. There are also contested environmental governance factors such as poaching by communities that have lost control over natural resources. Increasingly, therefore, natural resources are failing to supplement agricultural production as a source of food and incomes. The narrowing of the livelihoods matrix in rural areas induces a much deeper food crisis than would be the case and undermines prospects for quick recovery.

The occurrence of shocks have tended to deepen long term trends. Natural disasters such as droughts and floods are the most obvious. Using the Vulnerability Assessment Committee (VAC) mapping, the FHANIS survey and PAM survey it is obvious that the most hunger stricken areas in Zambia are located along the Luangwa, Gwembe and Zambezi valleys in Eastern, Southern and some parts of Western provinces as well as flood prone areas of Western Province. According to the VAC, more than 50% of the population in these areas are classified as hungry and in need of food relief. In these areas, agronomic conditions are unsupportive to crop production due to low average rainfall as well as frequent droughts. The VAC found a close relationship between food insecurity and the number of people who reported to be chronically ill in these areas. To crop failure is added shocks arising from animal losses due to diseases. This is linked to occurrence of droughts but results from poor animal husbandry and difficulties to access veterinary services.

Human health long term trends are also accentuating food insecurity for nearly all the categories of Zambia's population. The HIV/AIDS pandemic has been particularly devastating. Zambia has one of the highest prevalence rates, estimated at 16.5% in 2001/02. The rate is much higher in urban areas than in rural are but has peaked in the former and is still rising in the latter. In urban areas, HIV/AIDS chronically ill formal sector workers are unable to sustain their jobs and earnings. The condition is known to turn relatively well food secure households into a situation of high vulnerability. Urban informal sector workers are losing labour due to chronic illness, looking after patients and attending HIV/AIDS related funerals.

The SADC VAC reports that the impact of HIV/AIDS on food security in the context of the 2002 food emergency is strong and negative. The report supports the notion that HIV/AIDS has contributed to the depth of problems faced by rural households in Southern Africa. It is argued that drought stricken households have sufficient resilience through use of coping strategies. But those households affected by HIV/AIDS no longer have these strategies available. This is also supported by De Waal et al (2003)[9] who describe this impact of HIV/AIDS on rural livelihoods. A key factor is the loss of household labour – both quality and quantity – to illness, caring for the sick, funerals, protracted nature of illness, psychological impacts of the illness and loss of skills and experience. Another factor is the reduction in available cash income and asset base, which results in reduction in food consumption, erosion of asset base to finance health needs, inability to hire labour, and buy inputs, sale of productive assets, consumption of seeds, sale of land, loss of land through dispossession, loss of remittance if affected person was the sources and limited access to credit. A third factor is the declining capacity of the social environment to offer support. The traditional extended family and non-formal networks are changing as their capacity declines, demand increases, and a reversal of roles between urban and rural. To this must be added the loss of knowledge of agricultural practices and skills as women (less exposed to agriculture knowledge for cash crops due to gender discrimination) and children take over agricultural tasks.

The HIV/AIDS pandemic is creating other food insecure categories. Orphanhood has risen sharply with orphans estimated at about 976,000 or 19% of children aged up to 18 years old by the 2003 FHANIS. This is putting stress on the extended family system as already vulnerable families take in more members, raising the burden of acquiring enough food. The phenomenon of child-headed households has been rising. The number of street children has also multiplied due to HIV/AIDS. Both of these categories are extremely vulnerable to food insecurity as they have neither the skills nor the economic opportunities to raise incomes. Female headed households are more likely to suffer the negative impacts of HIV/AIDS because women are the main care givers in Zambia's communities while they face a higher risk to be infected of HIV. The elderly are another category increasingly falling into food insecurity because they bear the biggest burden of caring for orphans, some of whom are also being neglected as economic hardships mount.

The impact of drought tends to deepen the seasonal crisis, where the November to March period is characterised by greater stress than usual. In this period, there is heightened demand for cash as food stocks run low and households have to buy food but at the same time meet annual education expenses, and cope with the impact of increased levels of sickness of the rainy season (malaria, diarrhoea, coughing). At the same time, the demand for family labour is at its highest, particularly for land preparation, planting and weeding (see **Figure 2.7 on page 10**). Small scale farmers often sale all the produce at once immediately after harvest when prices are lowest due to cumulative cash needs and inadequate storage facilities. Urban communities are affected by the seasonal rise in food prices as the country's stocks begin to run out and, in some years, food imports have to be brought in.

In all these factors that create the country's vulnerability context, women are especially affected. Society defined roles tend to constrain women's access to productive resources (e.g. land, credit and assets) and economic opportunities. Female headed households tend to be labour scarce and thus can only cultivate small areas and find it difficult to manage their fields properly to maximise yields. Labour shortages are a more serious problem for women farmers than their male counterparts. When they produce marketable surplus, inadequate marketing skills means that women do not get favourable prices and maximum returns. The HIV/AIDS is known to affect women disproportionately more compared to men. The

[9] Alex De Waaal and J. Tumushabe, 1st February 2003: HIV/AIDS and Food Security in Africa. A report for DFID (www.sarpn.org.za)

incidence of the disease among women is higher while they bear greater burden in looking after the AIDS patient or the sick in general. Women farmers are also affected by the unequal gender labour distribution.

2.5 National Food Security and Poverty Alleviation Strategy

Zambia does not have a clearly elaborated food security policy in place. The Poverty Reduction Strategy Paper (PRSP), adopted in 2002 to last until 2004 with an overall goal of reducing poverty from 73% in 1998 to 65% by the end of 2004 makes little reference to issues of food security. The PRSP is the most important policy document with respect to poverty reduction. It has the main aim of attaining average annual economic growth of 4.2% by improving the performance of sectors that have potential for broad based growth and good merit for poverty reduction. Agriculture is given high priority because it employs over 65% of Zambia's labour force. Other economic sectors are manufacturing, tourism and mining (with a specific focus on small mining). However, in describing the agriculture sector and elaborating the required strategies, the focus in the PRSP is on the commercialisation of the smallholder sub-sector. The underlying assumption appears to be that with commercialisation, household food security would be attained.

The PRSP nevertheless does mention without elaborating that one of the strategies to be pursued is the development of a "Targeted Support System for Food Security". Although it is not clearly stated, it would appear that this led to the adoption of the Food Security Pack in 2000/01 to last until 2004/05 under the Ministry of Community Development and Social Services and implemented through the Programme Against Malnutrition. It targets resource poor farmers cultivating less than one hectare giving them access to a package of yield-enhancing inputs and technologies. It also seeks to put in place institutional mechanisms to improve access to markets for inputs, agriculture and alternative livelihood products. The Food Security Pack has three components besides management and coordination: (i) Crop diversification and conservation farming; (ii) Market entrepreneurship, seeds and cereal banks development; and, (iii) Alternative livelihoods interventions. The third focuses on viable non-farm livelihoods activities such as bee-keeping. The Food Security Pack targeted 200,000 small scale farmers every agricultural season with a view to cumulatively reach 600,000 in four years in 72 districts.

No evaluation of the impact of the Food Security Pack has been made and hence independent judgement of how it has performed is not available. However, the model has generated a lot of interest such that a number of donor agencies (World Bank, FAO, Sida/NORAD and EU) have come forward willing to provide assistance for its extension. The Programme Against Malnutrition claims that the programme has made most of the beneficiary households self sufficient in food, saved the GRZ and other agencies substantial sums that would have been spent in food relief and enabled many resource poor farmers to graduate and qualify for the Fertilizer Support Programme which subsidised the cost of fertiliser by 50%. Only farmers that were deemed as able to pay back the fertiliser credit could qualify for the facility under the Fertiliser Support Programme.

2.6 Conclusions

Although there are difficulties with data used, the main conclusions of **Chapter 2** cannot be contradicted. At least five main findings are drawn out. *First*, Zambia is consistently failing to meet her food needs from domestic production. With respect to maize, which is the country's main staple, domestic production covered requirements only in six years out of fifteen years considered. In addition, Zambia had a wheat deficit in all the fourteen years considered. As a result, the country had a combined cereal gap in three years out of fourteen years represented in **Table 2.19**.

Table 2.19: Supply and Demand of Cereals (Maize, Wheat and Sorghum) in '000 MT, 1989 - 2003

Year	Opening Stock	Domestic Production	Total Available	Cereal Requirements				Surplus/ Deficit
				Human Cons.	Stock-Feed	Other uses	Total	
1989/90	769	1201	1970	1339	90	192	1621	349
1990/91	258	1203	1461	1189	50	177	1416	45
1991/92	109	589	698	1138	30	130	1298	-600
1992/93	148	1721	1869	1209	60	265	1534	335
1993/94	255	1163	1418	1245	60	270	1575	-157
1994/95	95	873	968	1173	60	147	1380	-412
1995/96	45	1542	1587	1280	103	217	1600	-13
1996/97	57	1099	1156	1072	80	80	1232	-76
1997/98	105	779	884	1281	35	133	1448	-564
1998/99	60	924	984	1138	60	128	1326	-342
1999/00	70	1128	1198	1242	33	232	1507	-309
2000/01	72	962	1034	1254	35	237	1526	-493
2001/02	25	771	796	1203	35	172	1410	-613
2002/03	24	1308	1332	1218	35	172	1428	-93

Second, is that Zambia has become dependent on food imports as a means to try and overcome the chronic food deficits she suffers. In all the years between 1986 and 2002, Zambia has had to import cereals in an attempt to close the gap arising from inadequate domestic production. Between 1992 and 2002, commercial food imports made up 60.4% of total food imports while 39.6% came in as food aid. *Third*, an unacceptably high proportion of Zambia's population is exposed to chronic food insecurity. The high levels of the proportion of under-five year old children that are stunted reveal that a big proportion of the country's population suffers long-term exposure to food insecurity. Therefore, both food imports and domestic production have been inadequate in assuring the country and households of adequate food.

The *fourth* finding is that the vulnerability context producing the high levels of food insecurity is complex. Immediate causes are declining incomes in both urban and rural areas and the failure of the agriculture sector to produce enough food to meet national and household food requirements. This is due to long term and seasonal factors and occasional shocks. Zambia's economic crisis traced to the fall of copper prices and production in the mid-1970s, severe agronomic features in some areas of the country, the devastating consequences of HIV/AIDS, droughts and floods and a number of other factors have all combined to undermine people's livelihoods in both urban and rural areas. Because of this, many people in the country have a declining resilience to withstand difficulties of accessing food due to occasional shocks and seasonal factors. Therefore, in the event of crop failure in a season, the negative impacts are much more severe than would have been the case in previous times. Recovery for occasional shocks has become difficult for such households.

The indicators in food insecurity presented in the chapter are serious and require urgent intervention measures to rectify the situation. Initiatives will need to focus on building the agricultural sector by raising production that match its potential as discussed in **Chapter 4**. However, exposure to food insecurity has gone on for a long time now that targeted interventions aimed at reducing vulnerability in the short term are also required. Three of these are proposed below. In this regard, deliberate effort is required to help rural producers to rebuild livelihoods that have been devastated by the complex vulnerability context in which many factors have been at play. The Food Security Pack implemented by the Programme Against Malnutrition on behalf of Government appear to have worked may need to be consolidated. Support systems to rebuild livelihoods should be diverse enough to encompass all livelihoods. However, in so doing a clear phase-out strategy should be built in to avoid a dependency attitude creeping in.

CHAPTER 3

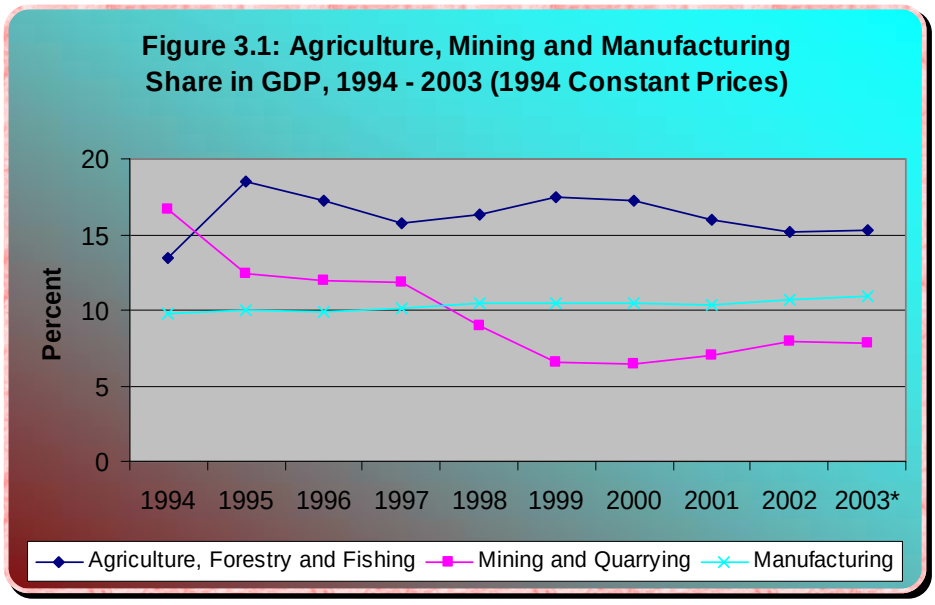
EVOLUTION AND TRENDS IN SUPPORT TO THE AGRICULTURAL SECTOR

3.0 Introduction

This section analyses public support that has been given to the agricultural sector and the extent to which this is linked to agricultural performance in the last ten years. It establishes the importance of the sector to Zambia's economy using a number of indicators and its potential to make further contributions. The evolution in policy since independence through the 1990s when a more liberal approach to the management of agriculture was more fully embraced is analyzed in the chapter. The support given to agriculture is analysed within the context of the Agriculture Sector Investment Programme (ASIP) and its successor, the Agriculture Commercialisation Programme (ACP).

3.1 Importance of the Agriculture Sector

Zambia's agriculture sector is recognized as key to the country's development particularly in the context of declining mineral output. It is expected that agriculture will be the engine of growth for the next decade and beyond. The sector generated an annual average of 16% of Zambia's GDP between 1994 and 2003 (see **Table 3.1**). The highest contribution was 18% in 1999, while the lowest was 13% in 1994. Meanwhile, the contribution of Mining, Zambia's main foreign exchange earner, to GDP declined from 17% in 1994 to 8% in 2003 and averaged only 10%. If value added from agro-processing industries that are directly fed by agriculture is taken into account (i.e. food, beverages and tobacco and textiles and leather products) agriculture would add another 8% to the country's GDP.



Source: Table 3.1

Table 3.1: Industry Shares of G.D.P at Constant 1994 Prices (%), 1994 –2003

KIND OF ECONOMIC ACTIVITY	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003*
Agriculture, Forestry and Fishing	13.5	18.5	17.2	15.8	16.3	17.5	17.2	16.0	15.2	15.3
Mining and Quarrying	16.7	12.4	12.0	11.8	9.0	6.6	6.4	7.0	7.9	7.8
PRIMARY SECTOR	30.2	31.0	29.2	27.6	25.3	24.2	23.6	23.0	23.1	23.1
Manufacturing	9.8	10.0	9.9	10.1	10.5	10.5	10.5	10.4	10.7	10.9
Electricity, Gas and Water	3.2	3.3	2.9	2.9	3.0	3.0	2.9	3.1	2.9	2.8
Construction	5.0	4.9	4.1	5.1	4.8	4.8	4.9	5.3	6.0	6.5
SECONDARY SECTOR	18.0	18.2	16.9	18.1	18.2	18.3	18.4	18.8	19.5	20.2
Wholesale and Retail trade	14.8	13.6	17.0	17.2	18.1	18.5	18.3	18.4	18.7	18.8
Restaurants, Bars and Hotels	1.6	1.7	1.8	1.8	1.9	1.8	1.9	2.3	2.3	2.4
Transport, Storage and Communications	6.0	5.7	5.8	5.6	6.2	6.4	6.3	6.2	6.1	6.1
Financial Institutions and Insurance	8.2	10.0	8.6	8.3	8.5	8.6	8.2	7.8	7.9	7.8
Real Estate and Business services	5.0	5.3	6.1	6.6	7.6	8.4	9.5	9.4	9.5	9.5
Community, Social and Personal Services	8.0	8.1	7.8	7.6	7.6	8.0	7.7	7.8	7.7	7.5
Public Administration & Defence/Public sanitary services	4.6	4.7	4.5	4.3	4.3	4.6	4.4	4.2	4.0	3.8
TERTIARY SECTOR	43.6	44.5	47.0	47.1	49.9	51.7	52.0	51.9	52.1	52.0
Less: FISIM	(4.7)	(5.8)	(4.9)	(4.8)	(4.9)	(4.9)	(4.9)	(4.8)	(4.7)	(4.6)
TOTAL GROSS VALUE ADDED	87.1	88.0	88.1	88.1	88.5	89.3	89.1	88.9	90.0	90.7
Taxes on Products	12.9	12.0	11.9	11.9	11.5	10.7	10.9	11.1	10.0	9.3
TOTAL G.D.P. AT MARKET PRICES (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
TOTAL G.D.P. AT MARKET PRICES (K' BN)	2,240	3,005	3,950	5,140	6,028	7,478	10,072	13,133	16,260	20,377

*** Provisional-most of the data is based on the first two quarters of 2003; likely to undergo revision**

Source: Central Statistics Office, Lusaka

And yet these figures mask the true significance of the sector. Agriculture absorbs about 67% of the labour force and is thus the main source of income and employment for the majority of Zambians. It is directly significant to household food security for many Zambians, particularly in rural areas. Agro-processing industries directly fed by agriculture constitute 75% of total manufacturing production (see **Table 3.2**). This had an obvious significant contribution to urban employment. To this must be added the fact that, because of the increase in the share of agricultural exports in total non-traditional exports (NTEs) from 23% in 1990 to 41% in 2000, at a time when total NTEs have made a phenomenal rise, the contribution of agriculture to balance of payments has increased significantly.

Table 3.2: Proportion of Agro-Processing Sub-Sectors in Total Manufacturing (%), 1994 - 2003

Economic Activity	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	Average
Food, Beverages and Tobacco	61	64	63	57	59	61	59	60	60	60	60
Textile and leather products	11	10	12	16	17	18	17	17	17	17	15
Non-agro processing	28	26	25	27	24	21	24	23	23	23	25
Total	100	100	100	100	100	100	100	100	100	100	100
Total in K' billion	219	218	231	242	247	253	263	274	289	308	254

Source: Central Statistics Office, Lusaka

Given these merits, the Poverty Reduction Strategy Paper (PRSP) recognizes agriculture as possessing important qualities for equitable growth. The PRSP is currently the most important policy document on poverty reduction. Strategies for poverty reduction in the PRSP aim at stimulating sustained economic growth at an average of 4.2% per year through macroeconomic stability as well as improved performance in economic sectors with potential for both growth and high impact on poverty reduction. Four economic sectors are identified– agriculture, manufacturing, tourism and mining particularly small mining. Agriculture receives great prominence and is declared the engine for broad based and equitable growth.

3.2 Structure and Structural Change

3.2.1 Agricultural Potential

Zambia has potential to expand agricultural production and make the country food self-sufficient. This is because of her vast resource endowment in terms of land, labour and water resources that the country possesses. Of Zambia's total area of 75 million hectares (752,000 square km), 58% is classified as medium to high potential for agricultural production. Rainfall ranges between 800 mm to 1400 mm annually, making a large part of the country suitable for the production of a broad range of crops, fish and livestock. It is estimated that only 14% of the total land with agricultural potential is currently being utilized.

Zambia has one of the best surface and underground water resources in Africa, with many rivers, lakes and dams. This, with the addition of high potential underground water aquifers in many areas offers excellent prospects for irrigation. However, these water bodies are largely unexploited. Of the country's irrigation potential conservatively estimated at 423,000 hectares, only about 50,000 hectares are currently irrigated.

Therefore, Zambia has a resource endowment for development of agriculture. This potential differs between different areas. The country is divided into three major agro-ecological regions, namely Regions I, II and III. Climate, particularly rainfall, and the quality of soils differ across these zones.

Region I. This region receives less than 800 mm of rainfall annually and constitutes 12% of Zambia's total land area. It consists of loamy to clayey soils on the valley floor and coarse to fine loamy shallow soils on the escarpment. It covers the Southern Province and part of Eastern and Western Provinces and part of which is the Gwembe Valley. The Region is suitable for production of drought resistant crops like cotton, sesame, sorghum, and millet and has the potential for production of irrigated crops but has limited potential for cassava cultivation. Region I is also suitable for extensive cattle production but the valley parts of the region, being on a low altitude and consequently hot and humid, are not suitable for cattle rearing because of tsetse flies.

Region II. The Region receives between 800 to 1000 mm of annual rainfall and constitutes 42% of the country. It is sub-divided into two sub-regions, namely Region IIa and Region IIb. Region IIa covers the Central, Lusaka, Southern and Eastern plateaus of the country and generally contain inherent fertile soils. Permanent settled systems of agriculture are practiced. A variety of crops are grown including maize, tobacco, cotton, sunflower, soybeans, irrigated wheat, groundnuts and other arable crops. This area is also highly suitable for flowers, paprika and vegetable production. Region IIb covers Western Province and consists of sandy soils. It is suitable for production of cashew nuts, rice, cassava and millet, as well as vegetable and timber production. The Region is highly suitable for beef, dairy and poultry production.

Region III. The Region receives more than 1000 mm up to 1500 mm of rainfall annually and constitutes 46% of the country's total land area comprising the Copperbelt, Luapula, Northern and North-Western Provinces. With the exception of the Copperbelt, the Region is characterized by highly leached acidic soils. It has good potential for production of millet, cassava, sorghum, groundnuts, and beans. Some coffee, sugarcane, rice, pineapples are also grown in this area. The agricultural potential of the Region can be enhanced by application of lime, and its perennial streams can be utilized for small-scale irrigation. Increased exploitation of fisheries resources and introduction of fish farming offer good opportunities for development.

3.2.2 Agriculture Performance and Constraints

As already indicated in **Section 2**, agriculture performance in the last decade belies its great potential. Central to the poor performance has been the decline in maize production (with no corresponding increase in the production and/or output value of other crops). However, it is observed that there has been some recovery in recent years although no upward trend is established yet. Comparing the periods 1991 to 1996 and 1996 to 2000, one study observed trends for various variables indicating some positive outcomes in recent years as seen in the higher agriculture GDP, average area cultivated and agricultural exports (see **Table 3.3**). It also observed some recovery in the use of fertilizer and some diversification away from maize as the production of the other crops increased. From 1990 to 1995, total area cultivated ranged between 777,392 and 1,131,896. However, the range between 1996 and 2000 was 1,160,869 to 1,327,221 hectares. Average area cultivated which had declined from 1.42 hectares in 1990 to 1.17 hectares in 1995 averaged 1.47 hectares in 2000. The share of farmers using fertilizer dropped from 31.3% in 1990 to 19.9% in 1995 before rising slightly to 22.6% in 1999. Agriculture share in non-traditional exports rose significantly from 23% in 1990 to 47% in 1999 before dropping in 2000 to 41%.

TABLE 3.3: KEY PERFORMANCE INDICATORS OF THE AGRICULTURAL SECTOR, 1991-2000

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Agric. GDP (1994 Constant Prices, K=million)	284,891	242,403	322,379	302,183	402,964	400,423	386,703	356,900	423,300	429,900
Total Value of Agric. Exports (US$= million)	33.65	28.34	35.70	23.89	47.24	56.56	109.44	113.12	132.08	106.95
Total Area Cultivated (ha)	1,131,896			777,392		958,572	1,195389	1,168,384	1,327,221	1,160,869
Area Cultivated/Farm Hh (ha)	1.42			1.37		1.17	1.36	1.33	1.47	1.45
Share of Maize in Area Cultivated (%)	55.2			59.04		56.97	47.79	44.58	44.16	48.37
Net Farm Income/Household (Constant 1994 Kwacha)				76,570.1	82,297.7	89,328.7			65,910.00	
Value of Total Agric. Sales (K'billion)				2.3		3.1	2.7	3.1		
Fertilizer Use (kg/ha)	98.22	69.35	121.33	79.46	55.97	59.46	24.49	26.76	29.28	37.56
% Using Fertilizer	31.36			26.87		19.92	7.00	7.00		
% Using Hybrid Seeds	43.60					22.95	17.04	17.44	23.60	37.10
Percentage of HH with Cattle	18.19	20.00	17.00	13.69	13.00	12.82	15.22	12.60	15.20	14.80
% Participating in Output Markets	54.7			46.63		35.00	33.01	31.80		39.70

Source: Kane Consult and RuralNet Associates Limited, 2002.

However, despite these improvements, the general assessment is that agriculture has under-performed and failed to rise match its potential. A number of studies have shown that the underlying causes of this poor performance include the following factors:

- Uncertainties caused by the transition to a liberalised agricultural sector particularly given the demise of marketing and rural finance institutions that served the sector (Chiwele, *et al*, 1996; UNZA/IAS, 1996). As described below (see Section 3.2.1), the liberalisation of agricultural marketing led to the collapse of key rural institutions and, particularly for remote areas, and the failure of the private sector to fill the vacuum they left, caused many small farmers to lose access to markets leading to a decline in production.

- Low agricultural prices for agriculture produce in remote areas caused by high transaction costs resulting from poor roads, inadequate on-farm storage to take advantage of better prices later in the marketing season and poor information transmission in rural areas (see RuralNet Associates Limited, 2002).

- Climatic variability and the lack of adaptation of current farming practices in the small-scale sub-sector (UNZA/IAS, 1996 and Elwell, et al, 1999). As seen in **Section 2**, maize yields have varied significantly from one year to another on account of changes in weather. Farmers have neither access for supplementary irrigation nor practice moist conservation techniques to mitigate rainfall failure at critical times of the growing season.

- Compounding the problem of climatic shock is the decline in soil fertility in areas which have been historically the most productive due to constant cultivation. This problem is pronounced in Zones I and parts of Zone II which in recent years have been severely affected by persistent droughts (Saasa, 2003).

- Labour constraints at peak times of the agricultural season. This has been seen in **Figure 2.1** where labour demand peaks in January before starting to decline until September when the agricultural season starts again. This is compounded by the low farm power mechanisation in the sub-sector. In the 1990s, the problem was worsened by high animal losses suffered (UNZA/AIS, 1996) due to poor animal husbandry, inadequate access to veterinary services and the recurrence of droughts. Further worsening the situation is the devastating impact of the HIV/AIDS epidemic (McEwan, May 2003). In HIV/AIDS affected households, labour constraints already a problem have worsened leading to reduced area cultivated and yields as the quality of farm management diminishes further.

- Poor quality of human capital as a result of low education and poor health status. Diseases that become prevalent during the farming season with chronic hunger weakens farmers' immunities. This is again observable from **Figure 2.1**. Low education makes it difficult for small farmers to receive and process information for improved production particularly adopting the production of high value crops.

- Gender discrimination. Female headed householders suffer worse deprivations compared to male headed households which combine together to make it difficult to improve their production and food security as well as meaningfully participate in the markets.

- Decline in the number of households with access to modern farm inputs when the adopted farming practices are based on the high external input dependent agricultural systems. The number of farm households using fertilizer declined from 31.4% in 1990/91 to 17.8% in 1997/98 before rising slightly to 22.6% in 1999/00. The share of farmers using improved seeds dropped from 43.6% in 1990/91 to 17.4% in 1997/98 before rising to 37.1% in 2000 (see **Table 3.3**).

- Inadequate investments for farm improvements due to a land tenure system which does not provide sufficient security to encourage permanent improvements. Land accessed under the traditional land tenure system, the only land at the disposal of most small farmers, is not titled thereby inducing a sense of insecurity.

3.2.3 Structural Change

Zambia's agriculture consists of about 800,000 farming households (650,000 small-scale and 150,000 medium-scale) and only about 1,500 commercial farmers. Small-scale are characterised by their dependence on hand hoes and unpaid family labour and low use of inputs. They cultivate maize, sorghum, millet, cassava, groundnuts and mixed beans and contribute about 60% to total crop output (UNZA/IAS, 1996). Although they participate in the markets, a substantial part of their production is for home consumption. Medium scale farmers produce both food and cash crops, rely on oxen or tractor cultivation, have a higher use of fertilizer and improved seeds and a high proportion of their output is produced for markets.

Maize is the dominant crop and accounted for about 60% of the total area cultivated before the early 1990s. The dominance of maize was fostered by deliberate government policy that gave the crop priority in research, extension, subsidized inputs and marketing infrastructure including price support for remote areas. With this maize bias came a shift in consumer taste such that maize became the staple food for most areas in Zambia including some of those that had relied on other crops such as cassava and sorghum. However, the liberalization of agricultural markets has removed some of the advantages that maize enjoyed over other crops although it still retains the most developed marketing system.

Table 3.3: Share of Crops in total Hectares for Various Farm Categories (%), 1993/94 to 1999/00

Crop	Year	All	Male HH	Female HH	Small Scale	Medium Scale	Zone I	Zone II	Zone III
Maize	1993/94	59.03	59.76	54.75	57.05	68.98	49.87	71.14	33.94
	1994/95	57.81	57.5	59.22	56.16	69.02	53.35	69.75	40.99
	1998/99	44.16	44.65	41.99	43.32	56.58	35.50	61.38	21.15
	1999/00	48.37	48.69	46.86	46.87	59.55	37.06	66.35	24.19
Small Grains and Tubers	1993/94	22.98	21.95	29.03	26.14	7.07	40.62	8.00	47.77
	1994/95	23.53	23.51	23.62	25.91	7.27	45.53	7.62	50.75
	1998/99	35.58	35.34	36.68	37.25	10.97	54.83	12.50	64.02
	1999/00	36.93	36.56	38.65	39.21	20.10	57.12	14.62	65.15
Cash Crops	1993/94	6.51	7.19	2.53	5.09	13.68	7.07	9.71	0.86
	1994/95	6.81	7.29	4.57	5.99	12.40	0.73	13.11	0.62
	1998/99	6.68	7.15	4.52	6.03	16.14	2.80	11.58	0.57
	1999/00	4.79	5.08	3.45	4.43	7.49	1.34	8.33	0.40
Legumes /Oil seeds	1993/94	10.28	10.00	11.94	10.39	9.72	2.43	11.93	8.04
	1994/95	11.04	10.91	11.64	11.10	10.64	0.39	10.15	13.46
	1998/99	12.17	11.49	15.30	12.26	10.97	5.06	13.16	12.91
	1999/00	8.51	8.28	9.56	8.32	9.92	3.34	8.97	9.34
Other Crops	1993/94	1.20	1.10	1.75	1.33	0.54	0.00	0.61	2.33
	1994/95	0.82	0.79	0.98	0.84	0.67	0.00	0.63	1.23
	1998/99	1.41	1.38	1.51	1.14	5.33	1.81	1.37	1.35
	1999/00	1.40	1.38	1.47	1.18	2.94	1.24	1.74	0.93

Source: Kane and RuralNet Associates Limited, 2002 (Calculated from Post Harvest Survey Data).

With these developments there have been some structural changes in sector production (see **Table 3.4)**. The most pointed aspects are listed below:

- The dominance of maize in production has been falling as the sector becomes more diversified. Therefore, the share of maize in total area cultivated fell from 59.7% in 1993/94 to 48.4% in 1999/00 with some fluctuations in between. The sharpest decline occurred in Region I followed by Region II by 12.8% and 9.7% respectively. In Zone II, which has the highest proportion of the areas cultivated devoted to maize (71.1% in 1993/94) the decline was only 4.8%.

- These changes reflect the fact that much of Zone II lies along the line of rail and Eastern Province and thus is within the more accessible agricultural areas of the country. Liberalization of agricultural markets has thus tended to favour Zone II for the production of maize. It is also noted that Zone II is most suitable for maize production and thus the changes taking place could also be reflecting adaptation to the given agronomic conditions in Zone I and III in the absence of massive support for maize.

- The diversification observed above constitutes a reversion to production of traditional crops. The share of areas cultivated for all crop categories declined although not as sharply as maize but that of small grains and tubers (millet, sorghum, cassava and sweet potatoes) rose from 23.0% in 1990/91 to 36.9% in 1999/00 or by 14.0%. Evidence provided in **Table 3.5** shows that the increase in the share in the area cultivated is much more attributable to cassava, which in the 2001/02 drought year increased its share of the area cultivated to 50.1%, from 37.3% in 1999/00.

Table 3.5: Share of Crops in Total Area Cultivated of Main Crops 1999 - 2001

Crop	1999/00	Share (%)	2000/01	Share (%)	2001/02	Share (%)
Maize	1,310,000	50.38	801,889	42.47	601,606	35.42
Sorghum	25,494	0.98	30,245	1.60	16,801	0.99
Millet	25,494	0.98	46,875	2.48	37,615	2.21
Paddy Rice	69,618	2.68	12,387	0.66	11,645	0.69
Wheat	75,000	2.88	69,226	3.67	74,527	4.39
Cassava	969,000	37.27	815,246	43.18	850,627	50.09
Groundnuts	53,950	2.07	51,000	2.70	41,421	2.44
Mixed Beans	14,708	0.57	11,860	0.63	16,619	0.98
Seed Cotton	56,758	2.18	49,485	2.62	47,394	2.79
Total	2,600,022	100.00	1,888,213	100.00	1,698,255	100.00

Source: MACO, Early Warning Unit

This development is important given its implications for household food security. The Zambia National Human Development Report 2003 observed that "In Zambia, farming systems that depend on roots and tubers and other traditional crops have been less prone to hunger and food insecurity in the last two years than those that did not" (UNDP, 2003, p.86). Because they require minimal external inputs and are less prone to changes in weather, cassava, millet, sorghum and other more drought tolerant traditional crops provide a more consistent basis for household food security.

- Following a reciprocal trend to that of maize, the main increase in the share of cultivated area for small grains and tubers is in Zones I and III. In Zone I it increased from 40.6% in 1993/94 to 57.1% in 1999/00 while in Zone III the share of small grains and tubers increased from 47.8% to 65.2% respectively.

- There is evidence that roots and tubers and other traditional crops are increasingly entering the markets and farmers could thus adopt improved varieties (see RuralNet Associates Limited, 2002). It is for this reason that the area cultivated for small grains and tubers has also increased among medium small scale farmers, from 7.1% in 1993/94 to 20.1% in 1999/00.

- The Central Statistical Office admits that, because the sample frame for the Post Harvest Survey on which the data is based was devised a long time ago, the surveys may have not yet picked some of the structural changes taking place on the ground. In particular, the rise in cash crops, particularly for districts along the line of rail, may not have been reflected fully. It is known that farmers have increasingly adopted the growing of cash crops under outgrower schemes.

Table 3.6: Composition of Earnings from Non-traditional Agricultural Exports, 1990-2000

Year	Animal products (%)	Floriculture Products (%)	Horticulture Products (%)	Leather Products (%)	Primary Agricultural Products (%)	Total Agric. Exports (US$'000)	Total NTEs (US$'000)	Total Exports (US$'000)	Share of NTEs in Total Exports	Share of Agric Exports in NTEs (%)
1990	9.76	4.47	19.36	4.43	61.97	23,466	102,202			23%
1991	3.67	5.88	17.96	2.09	70.40	32,330	121,322			27%
1992	1.71	11.18	10.98	1.40	74.73	26,720	101,970	1,110,000	9.19	26%
1993	2.12	15.75	6.84	3.60	71.70	34,968	124,091	990,000	12.53	28%
1994	1.53	39.39	10.47	5.34	43.27	23,129	138,859	1,067,000	13.01	17%
1995	1.41	38.75	5.57	2.61	51.66	46,454	202,498	1,186,000	17.07	23%
1996	3.48	8.44	5.80	3.76	78.53	56,700	240,824	975,000	24.70	24%
1997	3.11	6.74	5.14	2.03	82.98	109,613	328,557	1,275,000	25.77	33%
1998	3.54	27.83	16.35	2.70	49.58	116,249	301,792	858,00	35.17	38%
1999	3.27	31.81	17.27	1.39	46.27	133,941	284,946	753,00	37.84	47%
2000	3.18	31.94	25.80	4.08	34.99	106,026	256,236	800,00	32.02	41%
2001	2.34	26.05	27.82	2.99	39.26	130,800	310,492	871,000	35.65	42%
2002	3.18	18.58	27.54	2.54	46.92	163,049	368,330	920,00	40.04	44%
2003	2.16	17.72	22.68	1.18	54.16	126,362	362,733	1,137,000	31.90	35%

Source: Calculated from Ministry of Finance and National Planning, 2001

This has led to a sharp rise in the exports of agricultural products. It is seen from **Table 3.6** that non-traditional exports (everything but minerals) increased from US$102 million in 1990 to US$362 million in 2003. Whereas NTEs accounted for just less than 10% in 1992, their proportion in total exports rose to 40% in 2002 before declining to 32% in 2004. Within this rise, the share of agricultural exports has also been increasing from 23% in 1990 to 44% in 2002 before declining to 35% in 2003. It is seen from the table that the slow down in the rise of NTEs is as a result of the decline in primary agricultural exports which in 1997

constituted 83% of total agricultural exports but fell to only 35% in 2000 before starting to rise reaching 54% in 2003. In absolute terms, primary agricultural exports fell from US$90.9 million in 1997 to US$37.1 million in 2000 and then rose to 68.4 million in 2003. The fall resulted from a combination of poor output in maize that constituted the bulk of primary agricultural products and the decline in access to the Democratic Republic of Congo due to the outbreak of civil war which before that had been developing into a major destination for Zambia's agricultural products. There is a sizeable market for agricultural exports in the region, which Zambia can exploit, especially as peace returns to the DRC and Angola.

3.3 An Assessment of Support to the Agricultural Sector

Support to the agricultural sector in the last 10 to 15 years is assessed from three viewpoints. *First*, the study examined the policy shifts with respect to the agricultural sector that created the context for the operations of all players in the sector. The central question asked is whether policy as it evolved was able to put in place an environment that would foster greater investments in the sector. *Second*, is a review of government's and donor's institutional support. The performance of the Agricultural Sector Investment Program (ASIP) and its successor, the Agriculture Commercialization Program (ACP) are reviewed in this regard. *Third*, the study examines the financial support to the sector by both government and donors.

3.2.1 Agricultural Policy

A major objective of the immediate post-independence government was to redress the imbalances in agricultural development between the line of rail[10] and non-line of rail provinces by substantially increasing the level of support to rural areas. In pursuit of this objective, the Grain Marketing Board and the Rural Agricultural Marketing Board that were created during the colonial period to cater for settler and non-settler farmers respectively were merged to form the National Agricultural Marketing Board (NAMBoard). NAMBoard was to provide a marketing service that encompassed the handling of both inputs (fertilizer and seeds) and outputs. It was also to serve all farmers in all provinces on a non-discriminatory basis. In order to fulfill its mandate, NAMBoard became involved in intra- and interprovincial as well as international trade. The creation of NAMBoard was quickly followed by the establishment of cooperatives, small and medium farmers' organizations whose structure began at village level rising to form an umbrella organization called the Zambia Cooperative Federation (ZCF) at national level.

To further its objectives of increasing incomes in the non-line of rail areas, the government introduced a uniform pricing policy during the 1974/75 season. Farmers were now to receive a single uniform price regardless of their location. Since in the absence of a uniform pricing policy lower prices would be paid to farmers far from consumption areas to reflect transportation costs, the policy favoured producers in remote areas. Simultaneously, the government adopted a cheap food policy for the rapidly rising urban population, thereby squeezing the marketing margins allowed to marketing institutions. The margin between the producer price at which they bought and the government set into-mill prices at which the marketing agencies sold did not cover their total marketing costs, resulting in huge operational losses. The government had to step in to cover the operational losses by paying

[10] The line of rail is a narrow strip of land from Livingstone in Southern Province to the Copperbelt in the north where most of the development was concentrated. It consequently has the most urbanized districts in Zambia with the highest population concentration.

subsidies to the marketing agencies. This marked the beginning of the controversial legacy of maize marketing subsidies.

Marketing subsidies began at a low and perhaps affordable level at a time when Zambia enjoyed high mineral rents. But, over the years the subsidies rose rapidly from K6.4 million in 1975 to K3 billion in 1990. An increase in the producer price of maize in the 1980s within the framework of government's attempt to move towards a more liberal agricultural pricing policy failed completely to reduce the gap between producer price and into-mill price, mainly because the consumer price of maize meal (the major product of maize grain) was kept static. Consequently, the required level of subsidies increased.

In time, the rising subsidies required to keep the price of maize meal low became increasingly difficult to sustain as Zambia slipped into an economic crisis, which began with the fall in copper prices in the mid-1970s. Maize marketing subsidies soon came to be seen as impairing the performance of the economy. It was argued that the government's subsidy policy created disincentives that prevented agricultural output from attaining its full growth potential. Dissatisfaction with the worsening performance of the sector led to some modest liberalization during the 1980s. Some of these reforms included a progressive raising of producer prices beginning in 1982, reforms of public sector institutions engaged in agricultural marketing leading to the liquidation of NAMBoard in 1988 and the adoption of the Agricultural Marketing (1989) Act which liberalized agricultural marketing except for maize and fertilizer. Fearing the political repercussions that could arise from an increase in the price of maize meal, little was done to liberalize the marketing and pricing of maize which remained under state control.

High and rapidly rising subsidies in an economy with declining resources led to a rise in deficit financing. Maize subsidies which in some years were as much as 145% of the budget deficit, were thus linked to rising inflation, negative interest rates and the overvaluation of the Kwacha. Therefore, when the adjustment process embodied in IMF- and World Bank-sponsored structural adjustment programmes was initiated, the removal of subsidies in general and maize marketing and producer subsidies in particular, formed an important part of the conditions tabled with the Zambian government by international financial institutions. Efforts to remove maize-related subsidies began in 1985 with the phasing out of fertilizer subsidies. Further attempts to remove the maize marketing subsidies were made in 1986 and 1990 when the price of mealie meal was raised. On both occasions the decision had to be rescinded when widespread food riots resulted.

The beginning of the 1990s saw radical policy shifts in the agricultural sector, moving away from state intervention towards a more liberal and market led agricultural sector. The changes were particularly to be felt in the marketing arrangements for agricultural inputs and outputs. This occurred in the general context of economic liberalization that gained momentum with the loss of power by Kenneth Kaunda's United Nations Independence Party that had ruled the country for 27 years. In 1992 policy recommendations that the Washington institutions had encouraged Zambia to adopt were now more completely embraced by the new government. The new policy thrust sought to stabilize the macro-economy with a special focus on the elimination of fiscal deficits of which food subsidies were a major part. Further, new policies sought to institute far reaching sector reforms.

In the agriculture sector, the new policy regime sought to liberalize markets and raise the participation of the private sector. It was hoped that this would improve marketing efficiency and effectiveness and have a positive impact on agricultural production and exports. In turn this was expected to raise farm incomes and household food security resulting from both the increase in food production and the ability to buy required food from

the markets. Partly driven by the need for better fiscal discipline, agricultural marketing subsidies that had been central to the sector were completely removed in 1992 and agricultural prices now allowed to be determined by the forces of supply and demand.[11] Under this regime, government also sought to ease restrictions on agricultural imports and exports as well as privatize state owned agro-processing companies. Import licensing, which was an important mechanism in the maintenance of a fixed exchange rate, was completely removed in 1994. The privatization of the agro-processing companies was undertaken within the framework of Zambia's radical privatization programme launched in 1993 with a vow to turn all state owned enterprises to the private sector within ten years.

These measures have worked to raise the profile of the private sector in agriculture. Private traders have responded well to changed policies and currently dominate agricultural marketing where the state was once dominant. In particular, the emergence of contract farming through outgrower companies covering about 130,000 smallholder farmers growing cotton and the so called high value crops (mostly export vegetables) is hailed as a major success of the new regime. Nevertheless, these schemes have not been extended to crops such as maize because of the problem of side selling.[12] Although cotton farmers are more widespread covering Eastern, Southern, Central and Lusaka provinces, other crops in outgrower arrangements are concentrated in more accessible areas, specifically in Lusaka and Central Provinces.

However, a number of problems in realizing the objectives of the policy shift towards a private led agriculture sector have been encountered and include:

- Although considered successful, the growth of private sector participation has been constrained by the poor rural infrastructure (roads, communication facilities and electricity). In the process, agricultural marketing seems to have done well in the more accessible areas (RuralNet Associates Ltd, 2002 and Kane Consult and RuralNet Associated Ltd, 2002).

- The unstable macroeconomic environment has restricted the extent to which the private sector in general and in the agricultural sector in particular could expand their activities. High interest rates make the cost of borrowing too high compared to any expected returns and undermined the ability of marketing companies to invest to expand their operations (IAS/UNZA, 1996; INESOR, 1997; MAFF, 1998 and INESOR, 2000). The base lending rate was as high as 139% in June 1993. Although this has substantially come down, the base lending rate hovered around 50% for most of the second part of the 1990s and up to mid-2003 when it started to come down to less than 30% in June 2004.

- Although the policy stance of agricultural market liberalization has been generally adhered to, government has not always been consistent in implementation and has in the process sent conflicting signals to the private sector (MAFF, 1998 and Kane Consult and RuralNet Associates, 2002). In particular, the private sector has not fully taken over the importation and distribution of fertilizer because government feels it cannot trust the

[11] The government seemed to want to completely disengage from participation in agricultural marketing besides the removal of subsidies. However, the drought that devastated the 1992 harvest necessitated government intervention through the import and distribution of grain to affected areas. The poor harvest of the 1991/92 season was followed by a bumper harvest in the 1992/93 season which the newly emerging private sector could not adequately handle. This necessitated the involvement of government in purchasing and storing crops.

[12] The schemes appear to do well with crops where the contractor has tight control over the marketing channels. In cotton, the few companies that own ginneries are running the outgrower schemes although some side selling has been reported even here.

private sector to completely carry out this role. The private sector claims this to be a self-fulfilling prophesy as the presence of government raises high risks for its operations. Government supplied fertilizer sold on credit has had very low recovery rate and thus often amounts to a grant to small farmers. In the process, small farmers shun the fertilizer supplied by the private sector.

- Policy shifts did not move in tandem with the strengthening of the regulatory framework. As discussed in further detail below, revisions to the regulatory framework fell behind changes in the policy environment while the enforcement of laws protecting sector players remained weak (MAFF, 1998). This was clearly seen in the problem of side selling that emerged with the growth of contract farming. Although appropriate law was passed in 1995 to address this problem, inefficiencies of the court systems made it difficult for contractors that had lost their investment in this way to seek redress. A weak regulatory framework was unsupportive to private sector development in the sector.

At the beginning of the reforms, there was good opportunity to redefine the roles of the public and private sectors and the responsibilities of beneficiaries. However, apart from the broad-based liberalization policy framework discussed above, the facilitative role of the Government was not defined in sufficient detail. The need to modernize existing laws to support changing development requirements as a large body of agricultural legislation was outdated, was well recognized. The three main acts to be given priority were the Credit Act of 1962, the Cooperative Amendment Act and the Land Act. All the three acts were amended in 1995.

However, there was no clear timeframe for reviewing the 30 or so acts that needed amending. Responsibility and timing remained unspecified. Not surprisingly, little progress has been made on reviewing these legislations. The process has been faced with a number of difficulties. *First*, within MACO, the capacity to initiate new legislation was limited due to the absence of legal expertise in the institutional framework. *Second*, enacting new legislation is a lengthy process. Thus, actions that should have been supported by new legislation have been undermined by the absence of an appropriate regulatory framework. *Third*, enforcement of legislation is extremely weak and mocks the huge effort made in coming up with new legislation. It has been difficult to enforce the Agricultural Credit Act because there is no system to register and enforce the charge on agricultural products. This has particularly affected the expansion of contract farming.

3.2.2 Institutional Support

The Agricultural Sector Investment Programme

In response to deficiencies observed in the sector, government inaugurated the Agricultural Sector Investment Program (ASIP) to run from 1996 to 1999 but later extended the programme for one year to 2000. ASIP was to revitalize agriculture to a sustainable growth path by improving the institutional and policy framework and to effectively co-ordinate public investments in the agricultural sector. There had been concern that the proliferation of projects in the sector that numbered about 200 before 1994 was overextending government management capacity and had little coherence with respect to addressing the critical constraints in the sector. It was hoped that after four years, with the policy and institutional framework for agriculture having been consolidated, agricultural growth would attain full potential. ASIP had five main objectives:

(i) To ensure national and household food security;
(ii) To maintain and improve the existing agricultural resource base (land, water and air);
(iii) To generate income and employment through the realisation of domestic and export market potential;
(iv) To contribute to sustainable industrial development; and,
(v) To expand agriculture's contribution to the national balance of payments.

ASIP was designed with four main components and fourteen sub-programmes. The first component, ***policy and institutional improvements*** focused on two areas. *First*, policy reforms in marketing (eliminating subsidies to marketing parastatals), trade and pricing, standards, food security, rural finance, land use and tenure, and livestock. *Second*, institutional restructuring and strengthening with the aim of improving the capacity of sectoral agencies to provide efficient services that could not be supplied by the private sector. The second component comprised ***public investment*** in six sub-programmes: research, extension, livestock, fisheries, irrigation, farm power and mechanization, and training. Following the restructuring of MACO, the corresponding functional units came under the Department of Field Services, the Department of Research and Specialist Services, and the Department of Human Resources and Administration.

The third component, ***private sector development***, embraced three sub-programmes: Rural Finance, Seed Multiplication, and New Product Development. Government would set up a revolving credit fund channelled through commercial banks to support product and input marketing. Through the Seed Multiplication Sub-programme a village-based commercial multiplication and distribution system would be established for the staple food crops and legumes. The new product development sub-programme would support efforts by the private sector to diversify into non-traditional exports through the provision of specialized technical services and financing as well as establishment of the Golden Valley Agricultural Research Trust (GART).

The fourth component, ***pilot investment schemes***, comprised two sub-programmes. First, was the rural investment fund to support development of rural infrastructure in rural communities on a matching grant basis to be implemented through the establishment of District Development Committees (DACs). Second, a subdivision and privatisation of state farms sub-programme to be implemented by the Ministry of Lands.

A review of ASIP conducted in 2002 concluded that implementation had proceeded in an unfavourable environment as the “pre-conditions necessary for successful implementation were either totally absent or failed to hold as expected” (Kane and RuralNet, 2002, p. 27). This referred to four major weaknesses:

- Implementation proceeded in the absence of a national agricultural policy approved by Cabinet. This owed to the frequent changes of ministers of agriculture and the implicit understanding that the policy proposals contained in the Letter of Credit signed with the World Bank which was the lead donor were sufficient. However, the absence of an official policy document led to various interpretations as to what was the policy on specific issues leading to contradictions and conflicting signals to sector players.

- The macro-economy continued to be unstable and undermined private sector response. This had particular effect on agricultural finance for investment, agricultural marketing and the disinvestments that started taking place as players preferred safer avenues for their investments including treasury bills.

- Agriculture expenditure fell far short of what had been planned which in the process upset the implementation of planned activities. Actual expenditure only mounted up to 49.9% of the budgeted expenditure (see **Table 3.7**).

- Delays in implementing the new structure led to confusion in the assignment of roles and functions besides undermining the morale of staff who stayed for a long time without being sure of the outcome with respect to their jobs. Restructuring of MACO was still ongoing by the time the program was scheduled to end in 1999. ASIP implementation thus took place without an appropriate institutional framework in place.

The Agricultural Commercialisation Programme

The Agriculture Commercialization Pogramme (ACP) has been formulated as an Agricultural component of the PRSP to guide the sector vision as set out in the draft National Agricultural Policy (NAP) which is "*to promote* development *of an efficient, competitive and sustainable agricultural sector, which ensures food security and increased income*".

The overall goal of ACP is to achieve *"sustainable and broad-based agricultural growth"* as a basis for poverty reduction while the broad objectives of the ACP are: (i) to promote development of a competitive private sector driven agricultural marketing system, (ii) to facilitate the establishment of an effective, efficient, and sustainable private sector driven agriculture finance system, (iii) to facilitate the development, rehabilitation and maintenance of agricultural infrastructure and promote land development and settlement in potentially productive areas, (iv) to promote demand-driven technology development and dissemination, (v) to facilitate efficient utilization of financial, human, and physical resources.

The five priority components and their percentage share of the US$280 million four-year budget are given: (i) Marketing, Trade and Agri-business Promotion (20%); (ii) Agricultural Finance and Investment (35%); (iii) Agricultural Infrastructure and Land Development (15%); (iv) Technology Development and Dissemination (20%); (v) Agricultural Sector Management and Coordination (10%).

Reflecting the general dissatisfaction with the outcome of ASIP, the ACP has not taken off as expected with no donors funding its implementation. Instead, some aspects are being implemented through the Poverty Reduction Strategy Paper for which agriculture is seen as a major strategy for dealing with poverty. The agriculture component of the PRSP reflects the ACP framework. Some donors have also taken up the theme of agriculture commercialization but are designing programmes with implementation arrangements outside MACO, e.g. the Sida funded Agriculture Support Programme and the IFAD funded Smallholder Enterprise and Marketing Programme.

3.2.3 Expenditure Support to Agriculture

To facilitate the implementation of ASIP, an elaborate finance management system was put in place. A Financial Management Unit, with staff seconded from the Ministry of Finance, was created and charged with the responsibility of managing both GRZ and donor funds. This was supposed to operate under the principle of basket funding whereby all the financial resources funding ASIP activities were to be pooled together under common disbursement and accounting procedures. The FMU with a staff of 96 had a presence at the district, provincial and HQ levels.

Table 3.7: Planned and Actual ASIP Expenditure, 1996 - 2000

Year	1996	1997	1998	1999	2000 Estimate	Total
Estimated Budgetary Allocation (US$' million)						
A. Government						
Recurrent expenditure	29,146	28,362	34,189	38,197	37,176	167,070
Capital expenditure		27,632	6,980	4,636	3,628	42,876
Subtotal	29,146	55,994	41,169	42,833	40,804	209,946
B. Donor						
Recurrent expenditure	16,435	24,058	8,507	59,864	51,500	160,364
Capital expenditure	41,810	30,635	24,412	20,968	24,886	142,711
Subtotal	58,245	54,693	32,919	80,832	76,386	303,075
Grand total	87,391	110,687	74,088	123,665	117,190	513,021
Actual Expenditure (US$' million)						
A. Government						
Recurrent expenditure	19,590	31,118	29,503	35,753	20,388	136,352
Capital expenditure	N/A	N/A	614	N/A	N/A	614
Subtotal	19,590	31,118	30,117	35,753	20,388	136,966
B. Donor						
Aggregate expenditure*	11,800	32,144	37,274	37,999	N/A	119,217
Subtotal	11,800	32,144	37,274	37,999	N/A	119,217
Grand total	31,390	63,262	67,391	73,752	20,388	256,183
Actual/Budgeted (%)	35.92	57.15	90.96	59.64	17.40	49.94

Source: Kane Consult and RuralNet Associates Limited, 2002

The Mid-Term Review of ASIP conducted in 1998 observed that financial management under ASIP emerged as core to the problems that dogged the implementation of the programme, disappointing both GRZ and donors (MAFF, 1998, p.23). According to **Table 3.7**, ASIP was expected to cost about US$500 million. Donors were expected to provide US$300 million (60% of the total) in both ongoing projects and new funding. The Zambian government was to provide counter part funding of about US$200 million.

Actual disbursement amounted to only 49.9% of the planned funds. Donors disbursed US$120 million or 39.3% of the committed funds. Government releases as a proportion of planned expenditure turned out better than was the case with donor funding amounting to US$137 million between 1996 and 2000 which was 65.2% of the budgeted expenditure. It should nevertheless be noted that a 35% shortfall is still very significant. The following were the main problems faced:

- The financial management and reporting system developed appeared too complex for effective implementation given the capacity of accounting personnel posted to districts.

- As the FMU staff still fell under the Ministry of Finance, the restructuring of the unit fell behind the overall restructuring embarked upon within MACO. This problem was accentuated by the uncertainty of the staff posted to districts regarding their conditions of service which made it difficult to retain high calibre accounting staff.

- Many logistical problems made it difficult to quickly disburse funds to districts and for returns to be sent back to the HQ in good time. Among the logistical problems included: (i) the high number of accounts (390) in 67 districts operated under this system which considerably delayed bank transfers as there was no single bank with branches in all districts; (ii) lack of computerization of accounting systems at the district level; (iii) poor communication and infrastructure facilities which delayed the sending of returns; and, (iv) the inadequate number of accounts staff at HQ to process returns.

- Although financial management was to be guided by the annual work programme and budgeting process, this proved ineffective in performing its role due to little stakeholder consultation at the district level, the fragmentation of the process which focused on individual sub-programmes rather than dealing with key development issues identified and prioritized at the district level and the little time accorded to the process every year with budgets at times being sent to the MAFF HQ before they could be endorsed by the DAC.

  Given these problems, both GRZ and donors lost confidence in the system and reduced their funding to ASIP or sought to channel funds outside the FMU. Even donors that had readily adopted the system at the beginning were by the end of 1998 having to reconsider their position. Although the inadequacies exhibited by the FMU were key to this development, other equally important factors constrained the extent to which the finance management system and expenditure pattern could work as planned.

- The declining GRZ disbursements to ASIP may also have been caused by a lack of commitment by the Ministry of Finance to the ASIP concept. During the design of the programme, Ministry of Finance took a back seat. This fact was evident by the absence of Finance's representatives on committees created as part of the consultative process. Instead, Ministry of Finance was merely asked to work out its projected disbursements to agriculture.

- Adding further instability to the Ministry of Finance's disbursements to agriculture was the adoption of a cash budget system whereby government only spent what it had already collected in terms of revenue. Finance had based its projections on the funding of agriculture on the anticipated GDP growth which it linked to an overall increase in public revenue. The projected growth failed to materialise. The failure in the economic upturn combined with lack of ownership to create an environment that set ground for severe cuts in funding which at the same time became highly erratic.

- A number of donors had misgivings about the principle of basket funding from the very beginning. Some rightly predicted absorptive capacity problems of the FMU. Others, however, were merely constrained by their own operational rules, especially with respect to conforming their financial procedures to those set by the FMU. It is also clear that some donors feared loss of identity if they were to put their funds in one basket. For this reason, multilateral lenders appeared more ready to disburse funds than bilateral lenders.

  These factors led to significant declines in aggregate public agriculture expenditure that made the range of activities planned under ASIP unsustainable. The World Bank which at the time of appraisal of the programme had assumed the status of the lender of last resort, i.e. stepping in to meet any shortfall on expected donor funding, was unable to play this role as the expenditure gap was much higher than anticipated. The severe cuts in funding also distorted the pattern of spending with disproportionate amounts spent at the MACO HQ rather than districts and on administrative functions rather than on service delivery, a factor that undermined not only the effectiveness of expenditure but its efficiency as well. This led the ASIP MTR to conclude that A... the process of setting and funding expenditure priorities through the budget mechanism has broken down with regard to ASIP. Steps should be taken

to re-establish this system and permit questions of sustainability, effectiveness and efficiency to be posed on a regular, systematic basis over time to move towards an improved allocation of resources (MAFF, 1998, p.27).

Table 3.8: Distribution of Government Expenditure by Function (%), 1994 – 2003

	1996	1997	1998	1999	2000	2001	2002	2003
General Public Services	10.99	24.73	21.85	29.41	23.91	25.16	10.67	11.61
Defence	5.39	7.73	9.99	13.36	12.84	12.98	6.06	6.60
Public Order & Safety	3.40	3.97	5.81	5.79	4.78	4.94	3.57	2.86
Education	11.42	18.85	13.21	13.88	12.56	12.78	14.48	12.73
Health	6.83	8.73	10.35	9.92	7.49	6.27	12.55	11.04
Social Security & Welfare	0.84	0.88	1.37	0.95	0.74	0.96	0.88	0.47
Housing & Community Amenities	0.82	0.38	0.62	0.38	0.26	0.65	0.52	0.42
Recreation Cultural & Religious Affairs	0.66	0.64	0.65	0.64	0.38	2.18	0.28	0.19
Economic Affairs	8.80	9.25	9.11	12.35	8.52	11.06	10.10	11.05
Transport & Communication	2.52	2.88	2.92	5.43	4.12	6.48	5.77	7.25
Other Econ Affairs	3.70	1.05	1.65	2.39	1.26	1.03	0.41	0.30
Other Expenditures	4.11	0.06	0.00	0.00	0.00	0.00	0.00	0.00
Loans & Investments (Local Authority)	0.00	0.00	0.15	0.47	1.37	2.02	3.86	4.58
Loans & Investments (Ministry of Finance	1.46	0.96	1.96	2.63	5.18	8.54	15.71	14.36
Pensions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transfers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constitutional & Statutory	39.35	19.88	20.35	2.40	16.67	4.96	15.15	16.55
Discrepancy	-0.29	0.00	0.00	0.00	-0.07	0.00	0.00	0.00
Total Expenditure(=C.II)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Central Statistical Office (unpublished)

Table 3.8 provides a detailed breakdown of government actual expenditure by different functions. It is seen that as a share of total government expenditure, agriculture only accounted between 2% and 5% between 1994 and 2003 and averaged only 3% in ten years. It is noted that between 1996 and 1999, i.e. the last three years of ASIP before it was further extended by one year, i.e. between 1997 and 1999 the share of agriculture in total government expenditure averaged 4.3%. Therefore, despite the disappointments expressed above, ASIP may have worked to mobilize government resources slightly better than at other times. The share of agriculture expenditure rose from 2% in 2001 to 3% in 2002 and 2003 because of the Fertiliser Support Programme by which GRZ sought to subsidise 50% of the fertilizer input for small scale farmers.

It is also seen from **Table 3.8** that agriculture has consistently obtained less than the social sectors in terms of expenditure allocations. This is to be expected as agriculture being an economic sector is not organized in the same way as social sectors in which the principal financing channels are through public sector sources, both government and donors. However, of concern is the high share of constitutional and statutory expenditure that mainly cover costs of elections, presidential affairs, judiciary and parliament. There is little justification for the high proportion of this expenditure. Further, the proportion of defence expenditure before 2002 which rose as high as 14% between 1999 and 2001 is now viewed as linked to thefts of public resources through this route as it was known that public scrutiny of much of this spending was unlikely. Therefore, whereas it may not be expected that public spending on agriculture would be as high as on health and education, with a better rationalisation of spending there is much room for improvement.

An additional problem with the public funding of agriculture alluded to above has been the fact that, at best only half (0.53 in 1998) of the budgeted expenditure is actually funded (see Table 3.9). There is no pattern in the way that funding of the budget appears to be carried out. What is clear is that the pattern of releases has created serious instabilities and made the budget as a tool of planning completely irrelevant. All the sub-programmes could not be sure of what they would obtain as the proportion of what was released varied from one year to another without any clear logic.

Table 3.9: Proportion of Actual to Budgeted Expenditure by Sub-program, 1999 - 2002

	1998	1999	2000	2001	Total
Headquarters	0.46	0.81	0.76	1.05	0.53
Seed Control and certification	0.56	0.33	0.18	0.97	0.46
Soils and Crops Research	0.67	0.56	0.30	0.17	0.63
Policy and Planning	0.86	0.21	0.18	0.18	0.32
Animal production and Health	0.70	0.40	0.06	0.25	0.19
Agricultural Training	0.25	0.30	0.35	0.79	0.35
Farm Power and Mechanisation	0.46	0.10	0.18	1.04	0.41
Irrigation and Land Husbandry	0.71	0.16	0.47	0.21	0.33
Marketing and Trade	0.11	0.05	0.07	0.36	0.16
Fisheries Research	0.29	0.22	0.02	1.31	0.38
Fisheries Extension	1.31	0.36	0.17	0.92	0.58
Agricultural Information Service	0.32	0.27	0.24	1.16	0.98
Agricultural Extension	1.18	0.67	0.52	0.19	1.00
TOTAL	0.53	0.39	0.27	0.45	0.31

Source: Calculated from CSO unpublished data

3.4 Conclusions

It is generally recognized that agriculture has special merits for broad based and equitable growth that could facilitate the tackling of some of Zambia's greatest economic challenges including high levels of poverty and food insecurity. The potential for agriculture to meet this role is enormous but has not been realized given Zambia's vast resources including land, water and generally favourable weather. However, agriculture's performance belies its great potential. In the last 15 years, agriculture has faced various constraints that has made it difficult to establish a more sustainable growth path in the sector. Some of these factors include the uncertainties caused by the change in policies at the beginning of the 1990s, particularly the removal of subsidies and the dismantling of marketing institutions that had served rural farmers, and the unfavourable agricultural prices in more remote areas that followed the removal of the uniform price policy. Labour constraints especially given the rising impact of HIV/AIDS and declining farm power mechanization and the climatic variability are some of the other constraints.

This chapter has established that, whereas government in its policy documents recognises agriculture as important, particularly in its role as the engine for broad based and equitable growth, its support to the sector has not matched this stated position. As a share of total expenditure, agriculture received an average of 3% between 1994 and 2002. What is more has been the huge differences between budgeted figures and actual disbursements, a factor that has undermined the budget has a tool for planning. Both the Agriculture Sector Investment Programme and the Agriculture Commercialisation Programme have not redressed the under-

funding of the sector, particularly when compared to the funding going to the other sectors such as the social sectors. The liberalization of the agricultural sector in the 1990s, undertaken without carrying out a core functions analysis to determine the roles of the private and public sectors, may have instigated a mindset within government that the sector could be largely funded outside public resources. Therefore, whereas liberal policies are now irreversible, there is an urgent need for government to carry out a core functions analysis to determine the functions that would be carried out by the public sector, those that should be left to the private sector and those in which the public sector would retain a role but could be commercialised. A core functional analysis would also lessen the confusion in allocation of roles and the conflicting policy signals that characterised the past 10 to 15 years and worked to undermine policy actions of the government.

The importance of agriculture to Zambia's economy, to meeting food security and to the reduction of poverty calls for increased support by government to the sector. It is clear from the evidence provided above that an effective expenditure system for agriculture needs to be established. This is not only about increasing the level of funding but also establishing the effectiveness and efficiency of expenditure. Further, in assessing the evidence provided above on the public support given to the agricultural sector, it has to be understood that agriculture is a productive sector that cannot be supported in the same way as the social sectors such as education and health. With this in view, the necessary actions required to effectively support the sector would constitute the following elements:

1. **Achieve a stable macroeconomic environment.** This is important to allow long-term investments in agriculture to take place. Given the fact that both producers and intermediaries are private sector players, most expenditure would occur outside public sector sources and can only take places if these players are assured that their investments would not be wiped out by high rates of inflation. Further, the extent to which these players are able to mobilise investments is dependent on a stable macro-economy particularly low and stable interest rates. As the economy has been stabilising in the last two years and interest rates have been dropping, commercial banks are exploring ways in which they can resume their lending to the agricultural sector which hitherto had almost stopped. Therefore, the GRZ should consolidate actions for a stable macroeconomic environment.

2. **Strengthen the regulatory framework.** A weak regulatory environment makes players like the marketing and financial intermediaries tentative in making investments that would expand their activities. It blocks off critical services that could be provided by the private sector leaving only the public sector as the only alternative. Because the public sector is ill suited to carry out these roles, resources tend to be wasted as they are inefficiently applied.

3. **Obtain clarity in the allocation of roles and functions.** This will be aided by a core functional analysis to establish what should be undertaken by the public sector, what should be left to the private sector and what roles the public sector should commercialise. Government should stick to its core functions which it should then properly fund.

4. **Undertake an analysis of expenditure efficiency and effectiveness.** This should examine the functions performed and identify opportunities for cost saving, including options for contracting out.

5. **Resolve problems of policy inconsistence.** A core functions analysis should help in this regard. Adoption of the National Agricultural Policy by Cabinet would go a long way in ensuring that public actions and pronouncements are consistent.

6. **Move towards a medium-term approach in allocation of resources within government.** The recent adoption of a Medium Term Expenditure Framework (MTEF) may help in this regard.

This should lead to a replacement of the cash release approach that has undermined the credibility of the budgetary system. It should also allow for a periodic assessment of the expenditure requirements of each sector including agriculture. However, MTEF needs to be accompanied by an overhaul in the public expenditure management system to enhance accountability.

CHAPTER 4

ASSESSING THE IMPACT OF FOOD IMPORTS

4.0 Introduction

In **Chapters 2** Zambia's chronic dependency on food imports was demonstrated. This situation is paradoxical given the country's great potential to produce enough to meet its food requirements and even export food to other countries. Zambia's agriculture remains vulnerable to changes in weather hence the variations in the performance of the sector and its ability to produce adequate food to meet the country's requirements (see **Chapter 3**). At the heart of poor performance, in particular with respect to maize production, is the inadequate support the agriculture sector has received as perceived from the unsupportive macro-economic environment, the poor implementation of sector programmes and policies and the failure to match expenditure with determined requirements of activities supported by government. Inadequate support to agriculture is despite the fact that the Zambian economy suffers serious constraints to generate enough earnings to import food to meet shortfalls in domestic production.

This chapter takes the discussion of the last two chapters further by analysing the impact of food imports on Zambia's food security and agricultural development. The terms of reference (see **Annex 1**) required that three questions be posed and answered:

- What has been the impact of food imports on the food security and nutritional situation of the vulnerable groups in Zambia? This required an assessment of whether food aid was reaching the intended beneficiaries at the right time, in the right composition and the right quantity.

- What has been the effect of food aid on domestic food supply? This demanded that the distortionary effects of food imports on Zambia's food consumption and demand structure be analysed. The second element is the analysis of the impact of food imports on domestic producer and consumer prices, and consequently on crop choices and production.

- What has been the impact of food imports on Zambia's Balance of Payments?

The difficulties in obtaining data to build at least medium term trends on a number of variables means that these questions cannot be answered quantitatively. The chapter thus only makes a qualitative assessment of the perceived negative and positive impacts of food imports. There are a number of qualitative studies that make observations on key issues pertaining to implications of food aid on food security and agricultural development. These have been utilised to try and provide some insight into the questions raised above. To this is added the views of some key players in the food imports business – NGOs, farmer representatives, public sector officials and millers.

The assessment of how food imports have affected the domestic food supply will be based on maize grain imports, maize being the staple food imported for both relief and commercial purposes. The analysis could however only be made to the extent for periods which information was made available from the Central Statistics Office and the World Food Programme. Data from the Bank of Zambia on maize grain commercial imports could not be

used for the analysis because it was only available in United States Dollar values and not in quantity.

4.1 Impact of Food Imports on Food Security and Nutritional Situation

Because they work through very different channels, it is important that the analysis of the impact of food imports separates between food aid and commercial food imports. It is nevertheless important to first of all note that Zambia's total cereal imports relative to the domestic maize gap has varied widely from year to year (see **Table 2.17**). For the period 1997 to 2002, this ranged from 14% to 493% and averaged 41%. It is obvious from this that, although there may be no conscious choice of food imports over increased support to the sector, food imports implicitly exist as a supplementary avenue for achieving adequate food supply. Food imports are seen as a short-term decision to rectify the fall in the country's food supply while it grapples with ways to better support agriculture so as to attain food self-sufficiency in the long run.[13]

The wide range of total food imports relative to the identified cereal gap points to two problems. The *first* is the absence of a clear government policy on the proportion of food imports relative to the domestic gap. From the information provided in the balance sheets, it seems GRZ aims to fill the full domestic cereal gap with food imports. By this implicit policy, the GRZ fails to consider that households are much more resilient in coping with staple food short falls and that up to a certain extent they are able to substitute the staple food with other foods in the case of a crisis. Therefore, one study observes that the contribution of wild nuts, fruits and roots, which in the past formed part of the staple diet (e.g. mantembe root) is often underestimated (see McEwan, 2003). Similarly underestimated is the contribution of cassava, other tubers and small grains. The ability of the rural population to buy food from the market although not adequate to support an acceptable standard of living is often underestimated. The sell of small livestock is often relied upon to obtain cash to buy food in situations where food production is inadequate. In **Chapter 2**, it was pointed out that the role of cotton in minimising the impact of low food production may have been underestimated.

There is thus a growing view that a cereal crisis should not be necessarily equated to a food crisis. The impact of a policy that seeks to import staple food that would fill the full domestic gap would be to undermine the coping mechanisms in communities which may actually be valuable in pointing out directions for more sustainable food access mechanisms. It may also undermine the extent to which households come to value the need for a more diversified food production base. For example, continuing to distribute food relief in the form of maize in areas where cassava is increasingly being grown, as has been observed to happen in Western Province, undermines the drive towards increased diversification.

However, even if government seeks to fulfil the whole cereal gap with food imports, in reality this rarely happens, although there are years when food imports have exceeded the estimated food gap. **Table 2.15** shows that even with food imports, there was on average a 129,000 MT unfulfilled cereal gap for the five years from 1999 to 2003. This is a big gap representing 10.8% of domestic production. The absence of humanitarian crises when these serious gaps occur was pointed to in **Chapter 2** as an indication of problems of actually overestimating the cereal gap itself. It also confirms in part that there is more resilience with communities than is often acknowledged.

The wide variation of the proportion of food imports to the cereal gap from year to year also point to the second main issue, i.e. the problem the country faces to actually bring in food

[13] Policy makers state again and again that it is "embarrassing for the country to beg for food" when it ought to feed itself

imports. It is obviously uncertain the amount of food imports that Zambia would eventually receive once the cereal gap has been determined. As seen in **Chapter 2**, there may be logistical problems to mobilising food aid, for example, from the time that an emergency is recognised up to the time that food relief is distributed in deserving communities. The Zambian government at times faces serious constraints to facilitate commercial food imports, mainly due to lack of funds despite its intention to do otherwise. Therefore, even in the years in which the government has declared intention to bring in grain, there have been long delays. In a number of years, the actual amount brought in has been less than the declared intention. The way government is involved may itself be a cause for failure to bring in the expected amounts through commercial imports (see **Box 1**).

Therefore, there are strong factors in the case of both food aid and commercial food imports that make the amount of food imports finally received an uncertain variable. This uncertainty makes it difficult for various players ranging from farmers, millers to agencies participating in the distribution of food relief to adjust and plan adequately.

4.1.1 Food Aid and Food Security

Assessment as to whether food relief reaches deserving households in the right quantity and composition, two basic ingredients that would determine the extent to which food relief contributes to household food security, is difficult to make because it depends on the parameters looked at and revolves greatly around the question of targeting. Some participating NGOs interviewed on the impact of their relief food distribution felt that it had no adverse effect as they target the most vulnerable communities with no purchasing power, and are outside the agricultural market systems and face the prospects of hunger in the absence of food relief. In addition, they thought that the quantities distributed are too small to have an impact on the food pricing and production system, despite minor reported cases of pilferage. Indeed, as a proportion to total food production, food relief on average made up only 10.3% between 1992 and 2003. It was very significant in 1992 and 1993 when it was 33% and 61% of the total domestic production respectively while no food aid has been received in both 2002/03 andfor 2003/04 other than 3,000 metric tonnes of rice donated by India mentioned below.

Despite this view, there are questions regarding the effectiveness of targeting. In principle food relief is targeted at geographical areas where food shortfall is anticipated and targeting within those areas the most vulnerable households. With respect to geographical targeting, politically driven decisions are a factor in having some districts included on the targeted list. Districts that at have only experienced a slight or no production shortfall are also at times targeted for food aid. A wholesale case cited by some players interviewed is that of donated rice to Zambia by India in 2003 which was distributed in all constituencies. Each member of Parliament was given 2,000 bags of 50 kilogram rice to distribute, a factor that highly politicised the exercise and became a source of bickering both at constituency and national levels. If this can be said to be an exceptional case, there is a view among NGOs that the Disaster Management and Mitigation Unity is liable to political influence and at times targets an entire province because of pressure from neighbouring districts to those where shortfall has been experienced.[14] Therefore, the entire Southern Province is often targeted when a drought has been declared even when some districts did not experience production shortfall. Unfortunately, this appears to have disadvantaged those districts and communities that really needed food relief.

[14] Often this comes in inflated stories of disaster – "people subsisting on wild roots and fruits" – with appeals from politicians for immediate intervention. Such stories do not appreciate that the eating of wild roots and fruits is in many cases part of people's traditional diet.

How to identify the most vulnerable within targeted districts is another issue. For a long time, the WFP and NGOs have relied on beneficiary lists provided by the District Disaster Committees. These were not trained in the identification of vulnerable households actually needing assistance and in turn relied on information provided by traditional leaders and development agencies directly in contact with communities. Community perceptions of people needing assistance vary from place to place. In August 2002, the VAC adopted the household food economy approach in an attempt to standardise how beneficiaries are selected. However, it is recognised that trying to fit a standardised approach to widely varying livelihood patterns will remain problematic.

Reliability of crop forecasting is another dimension that has made both geographical and community targeting difficult. Accurate data is the first step in obtaining good estimates of the relief food requirements. Questions have been raised as to whether the Crop Forecasting and Post Harvest surveys although may give accurate data for maize are comprehensive enough to estimate well the country's food requirements. For example, there have been questions regarding the accuracy of cassava production in agricultural statistics and it is believed that part of the perceived increase in recent years is simply that recent surveys are coming round to getting more accurate information. There is also a question of the relevance of the national agriculture statistics given that they use a sampling frame which in the first place was not designed to provide detailed district and sub-district level information on food production.

With regard to the composition of food aid, most has been in the form of maize cereal which is considered the country's staple food. The case cited above of rice distribution is not a normal occurrence. At times sorghum has been distributed in areas where it was not a staple food crop. In such cases the beneficiaries were reported to have either sold the commodity or exchanged it for a more acceptable crop, or even used the crop for brewing beer in the case of sorghum. The distribution of maize in Western Province where cassava is the main staple may help to perpetuate the distortion in food consumption and demand, in the same way that the over-promotion of maize before the 1990s helped to distort the consumption patterns of the whole country.

4.1.2 Commercial Food Imports and Food Security

The same question posed above on food relief reaching deserving households in the right quantity, time and composition can also be asked with respect to commercial food imports. The basic difference is that commercial food imports work through markets and only households with means to cash are likely to have access to it. This consideration obviously bears much more strongly on the urban population. But it was observed in **Chapter 2** that even in rural areas, 41% of households turn to the markets when staple food stocks run out. Therefore, the population that would be directly affected by commercial food imports is likely to be bigger and more widespread than that will be affected by food relief. Therefore, commercial food imports are likely to have greater impact on household food security whether positively or negatively.

BOX 1

Government's Actions Undermine Food Importers Quick Response to Low Food Supply

In July 2001, the national crop forecast and food balance sheet suggested a commercial import requirement of 200,000 tons of maize. In August 2001, Government announced its intention to arrange the importation of maize to be sold at a subsidised price and initiated a tender process to selected importers. It made arrangements with 16 Zambian millers (as buyers) and a number of commodity trading firms (as sellers) to import 200,000 tonnes of white maize over the period October 2001 through April 2002. However, starting in November, shortages were evidenced by many people queuing outside shops to buy mealie meal and local maize prices rose well above the cost of importing from South Africa.

While import arrangements were announced in August 2001, maize imports of substantial volume did not commence until December 2001 and January 2002. Between August and December 2001, marketing actors had information that Government and millers were working out financing arrangements and other modalities to import maize to be sold at below-market prices in Zambia. During this period most private companies refrained from importing commercial supplies, based on the knowledge that subsidised supplies were coming into the country under the Government import programme to be sold at below market prices and that commercial imports would be unable to find buyers in this situation.

Due to financing problems, imports under Government programme were delayed. By the end of May 2002, only 130,000 tons had been imported under these arrangements, not the intended 200,000 tonnes. Late and insufficient imports under the Government programme had two major effects:

- Fewer private market participants: The risk to firms not awarded preferential import subsidies were great as the firms selected to receive the subsidies could undercut the rest of the market. This situation effectively froze out all traders, except those chosen under the Government program.

- A temporary import market paralysis causing maize grain (and mealie meal) shortages and high prices. Before arrival of the imported grain, local supplies dwindled, and maize prices rose sharply, reflecting scarcity of the commodity caused by an import gap, and the expectation that subsidised Government imports were imminent.

The 2001/2 maize shortage resulted in rationing of maize meal and the subsidy that Government conferred on maize importation was not passed on to the consumers. Despite the subsidy on maize, and the subsequent price reduction of maize grain, breakfast meal prices remained at high levels throughout 2002.

J.J.Nijhoff, et al, November 2002: ***Policy Synthesis No. 6***, "Markets Need Predictable Government actions to Function Effectively – The Case of Importing Maize in Times of Deficit", Food Security Research Project, Lusaka

In Zambia government behaviour seems to make the market process malfunction in a way that harms national food security. The narration in **Box 1** of the experience of maize importation in 2001/02 through the private sector has actually been replicated in other years when substantial commercial food imports have been sought. The Millers Association of Zambia confirms that its members are able to bring in substantial food imports without government assistance as long as they are certain that the market will not be distorted and will be able to recoup the investment. By dealing with a few preferred dealers, government cuts out other millers. Potential importers recall the experience in 1996 when government brought in maize distributed to preferred millers who undercut other millers who had imported grain as well and were subsequently forced to close their operations (see **Box 2**).

BOX 2: RULES AND PRACTICE IN MANAGING THE RELEASE OF STRATEGIC RESERVES

The sale of strategic reserves became an immensely controversial issue during the first half of 1996. In particular, the contract between MAFF and the Agricultural Commodity Exchange gave the latter full responsibility for releasing and accounting for the reserve stock sales. To that effect, the ACE was using an official Maize Release Note, the format and content of which had been agreed upon with storage operators, to authorise the release of maize. As early as late-February, however, Maize Release Orders started to appear which had been issued by MAFF independent of those agreed with ACE. The maize covered by these orders appears to have been directed towards a number of selected mills on the Copperbelt who subsequently started offering mealie meal at considerably lower prices than those prevailing on the open market. Details of the agreements, payments and selection criteria are not known and have not been disclosed, but would appear that the maize in question was released on a swap basis.

Importantly, this type of agreement would allow the relevant mills to replace maize stocks after prices had begun to fall so that mealie meal could be sold for much less than pure commercial terms would allow. While these agreements helped drive mealie meal prices down, which is an important objective, they also undermined the plans set in place by others not luck enough to have been included. Obviously, these mills and traders made business plans, including import agreements with international companies based on the expected free market price of mealie meal. When this price change occurred, these firms found themselves in extremely vulnerable positions. The Mazabuka Marketing Company, for example, was very hard hit while the Zambia Farmers Co-operative is now bankrupt and in receivership largely as a result of this episode.

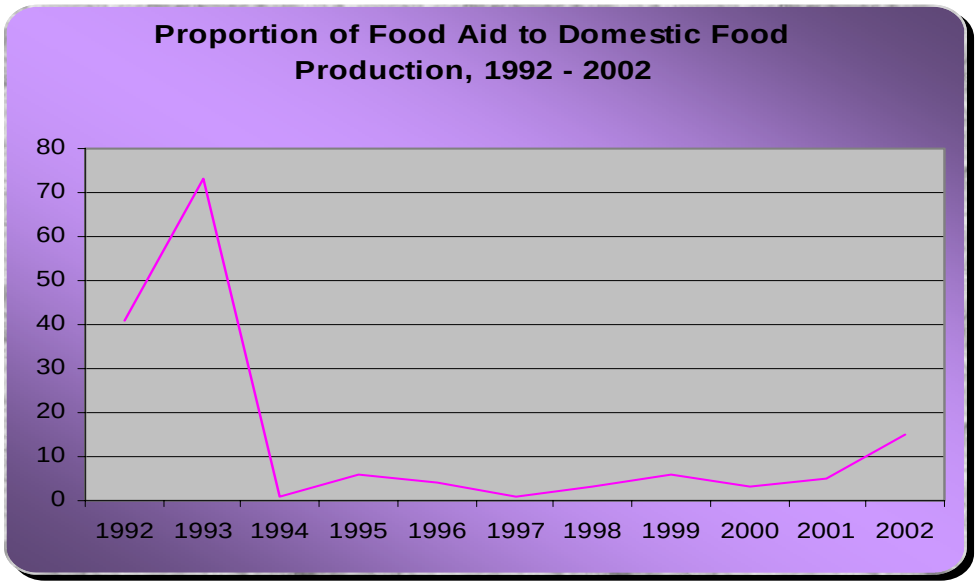
Source: Institute for Economic and Social Research, 1997: ***Agriculture Sector Performance Analysis and the Evaluation of the Agriculture Sector Investment Programme***, Box 1.1.

Recent revelations in the courts have pointed out that importation of maize has been one of the routes for channelling out resources plundered from the treasury. This perhaps would point out the high interest of politicians in the importation of maize. The government justifies its involvement on the grounds that it wants to forestall the overshooting of prices of mealie meal because that is the staple food of the country. However, **Box 1** shows that this is not achieved, as the subsidy given to importers is not passed to consumers. Specifically for 2001/02, the preferred millers did not pass on the subsidy to the consumers. It worsens the prospects for food security by creating uncertainty and delaying the actual importation of food. Further, government interference lead to the desired amounts not being brought in because it does not have ready funds for importation given the competing demands it has.

4.2 Impact of Food Imports on Domestic Food Supply

The basic elements in the analysis of the impact of food imports on domestic food supply are the possible impacts on domestic producer and consumer prices that could lead to farmers opting out of the production of the country's staple and on food consumption and demand structure as consumer preferences are distorted in the process. Again a causal relationship cannot be established between food imports and domestic food supply because of the scanty data and will hence be only analysed qualitatively.

Figure 4.1: Proportion of Food Aid to Domestic Food Production, 1992 - 2002



Sources: MACO Early Warning Unit, and WFP, Zambia Office

With no statistical causal analysis, views on the impact of food imports on grain and food prices differ sharply, particularly between farmers/millers on one side and NGOs such as those on the Food and Livelihoods Security Committee, a consortium of seventeen international NGOs, on the other. NGOs suggest that the size of relief food which normally does not exceed 50,000 metric tonnes is minimal and cannot have an impact on Zambia's commercial markets, which in any case goes to very poor and vulnerable households in rural areas. **Figure 4.1** would seem to support this view. It shows that the proportion of food aid to domestic production has varied between 1% in 1994 and 1997 and 73% in 1993. If we exclude 1992 and 1993 when food aid was brought in to forestall one of the most serious droughts Zambia has ever faced, the proportion of food aid to total food requirements would range between 1% and 9% and average 4.4%.

The position of the Zambia National Farmers Union (ZNFU) and the Zambia Association of Millers (ZAM) is that food imports depress prices and consequently discourage production. The two groups claim that the effective market demand of maize meal is only between 700,000 and 800,000 metric tonnes, which is much lower than the 1.2 million metric tonnes requirements estimated by the Ministry of Agriculture, Food and Fisheries which is based on calorie requirements. The two organisations thus state that, because of this overestimation, too much food aid is brought in and depresses maize prices, discouraging both millers and farmers in the process. A study conducted in 2002 involving 19 millers established that the annual installed milling capacity in 2002 was 1,136,878 MT of maize. The cumulative total of maize processed was 900,758 MT, and the average capacity utilization was 82%. The study also established that there have been no major shifts in human consumption to warrant further investment in the milling industry.

Further analysis would indicate that both positions have merit but oversimplify their case at the same time. The argument by organisations participating in the distribution of food relief that the proportion of distributed food is too low when compared to the nation's food production fails to take into account localised negative impacts in areas where the proportion of food relief to total production is high because communities have been declared vulnerable. It has been shown above that there are problems with targeting which undermines the argument that only the vulnerable have access to food relief. There is also the question of timing. The ZNFU claims that commercial and medium farmers who invested in irrigation in

the 2002/03 agriculture season were negatively affected when prices could not peak as expected in March and April when they could have their crop ready for sale because both food aid and commercial imports were still being offloaded in the country. Thereafter the market is flooded with the maize harvest which means that they lose advantage of their investing in irrigation as they then compete with rain fed maize. Unfortunately, the maize export ban that followed made the situation even worse.

The argument by millers and the ZNFU on effective demand being smaller than the estimated food requirements has one flaw. It fails to see that the effective demand referred to has to do with monetized demand through the markets. This applies mostly to the urban population, although as shown in **Chapter 2** the rural population too buys from the markets. The 800,000 metric tonnes referred to does not take into account the grain milled in communities using hammer mills which, as argued above has been rising in significance. Besides, the estimated national food requirements also take into account the own produce consumed of the rural population. When these are put together, the national cereal requirement estimated by government may not be very much off the mark. Its main deficient may lie instead in the failure to take into account other foods that serve as substitutes to maize.

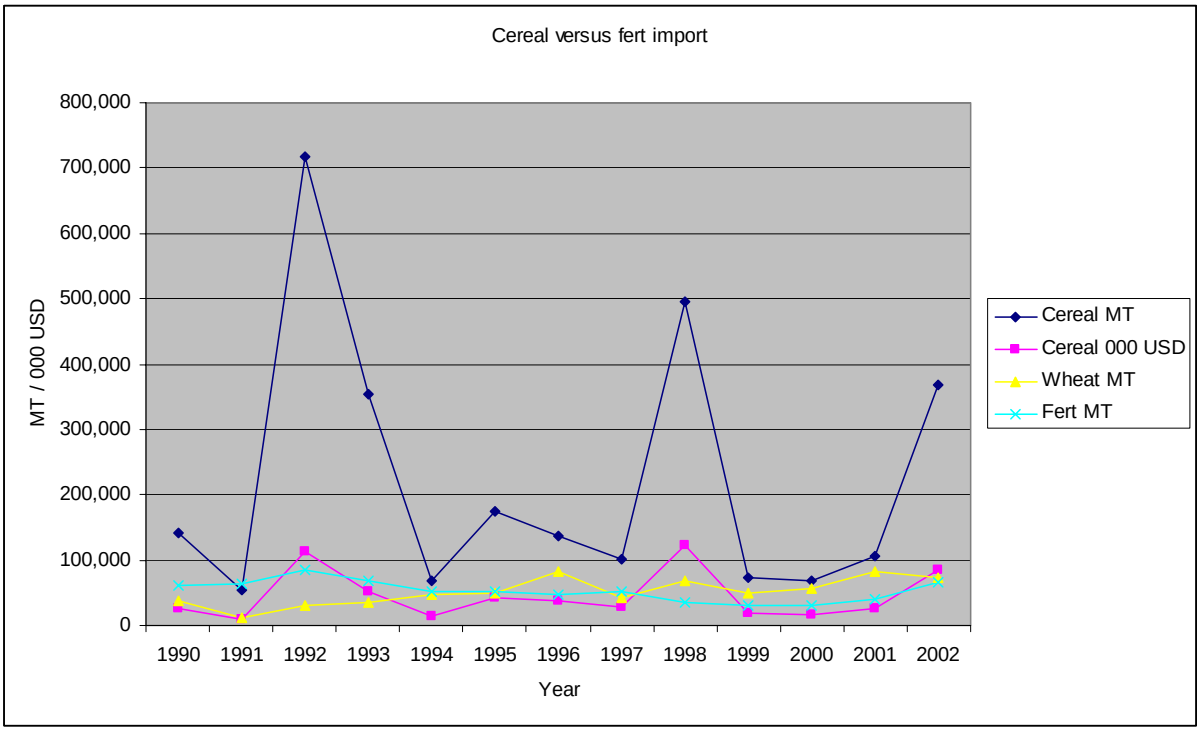
When these arguments are taken together, the negative impact of food imports on agriculture production seems to consist mainly in the following:

- The uncertainty to farmers caused by intervention to bring in food imports. It is never clear exactly when imported food would arrive and in what quantities. This undermines long-term investments in the agriculture sector. As we argue in **Chapter 5**, irrigation development which holds significant prospects to expand agriculture production and assure the country of more steady supply of food is particularly affected.

- In communities where food relief is consistently provided, a dependency syndrome has been observed. There are no studies to show this as the case but frontline development agents express concern that this is becoming the case. In Southern Province, some farming households were said to quickly sell the maize harvest in 2003, presumably at low prices, with a view to make themselves eligible for continuing food distributions.

Analysis of the impact of food imports on the demand structure of staple foods is complicated by the fact that in Zambia the biggest factor in changing consumption preferences in the post-independence years has been government policy which over-promoted maize through actions that favoured maize such as state subsidized input provision, research, extension, marketing and distribution. However, food imports could be entrenching the preference for maize consumption created by past support to the crop. This is connected to improper targeting of communities even if the vulnerable households are well identified. Relief maize is distributed in communities where cassava has been re-immerging as a staple food, as is the case in Western Province where there is a cassava surplus. This may perpetuate the maize bias that saw Zambia's agriculture develop into a mono-crop production system. As pointed out in **Chapter 3**, liberalisation has started to reverse the dominance of maize somewhat with cassava beginning to claim back the status it lost to maize. This is viewed as a good trend because of cassava's resilience to rainfall failure and the fact that it can be grown with minimal external inputs and does well in some agronomic conditions that are not favourable to maize production. It thus has important qualities for food security. Food relief may be prolonging the dependence on maize and undermining people's capacity to cope with climatic changes.

Figure 4.2: Cereal import versus fertilizer import



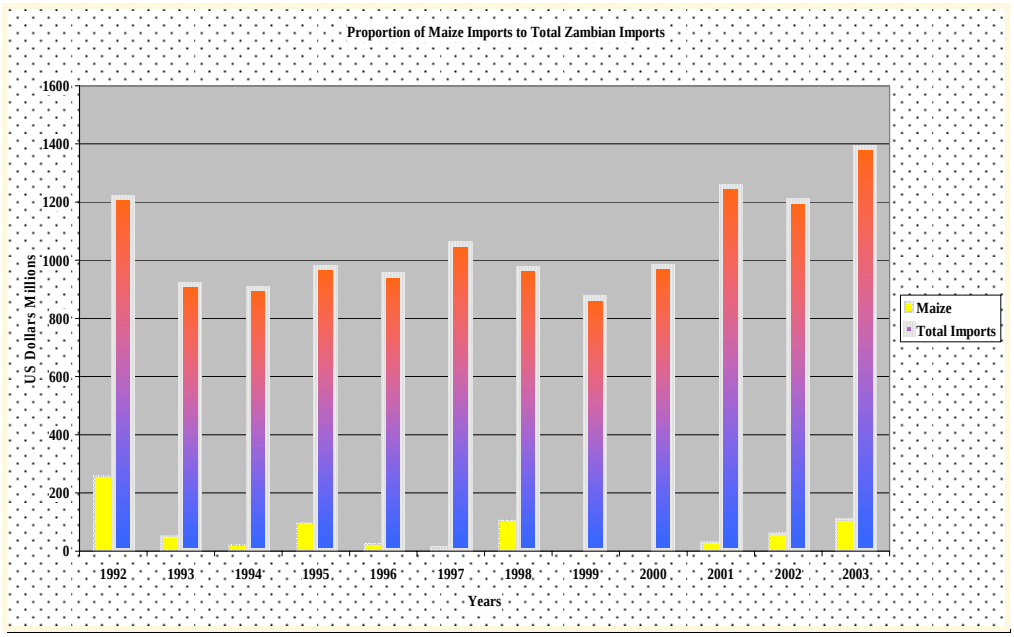
A growing dependence on food import contrasts sharply with stagnation in fertilizer import in Zambia. As shown in **Figure 4.2**, the quantity of fertilizer imported declined below 53,000 MT in all the years after 1994, except in 2001. The quantity of cereal import was 7 to 10 times the amount of fertilizer imported in 1992 and 1998. Attempts to increase fertilizer use received minimal attention in the 1990s. The choice to depend on food import rather than on fertilizer import to increase domestic production has not only increased food vulnerability but also increased the cost of supplying food to the poor.

4.3 Food Imports and National Balance of Payments

Commercial food imports and food aid would have opposing primary impacts on national balance of payments. Because there is actual foreign exchange outflow, commercial imports would have negative impact to Zambia's national balance of payments position. Food aid on the other hand could be seen as a saving on the country's foreign exchange if similar amounts from the country's own resources were going to be spent on commercial imports. It would be regarded as having a positive impact. Unfortunately it has been difficult to have food imports value data that would separate between the two.

Total maize imports (both commercial and food relief) ranged between US$12 million and US$258 million between 1992 and 2003 and averaged US$64.4 million in CIF prices. Much of this is accounted for by the value of food imports in 1992 which constituted 25% of the total maize imports in value terms between 1992 and 2003. The proportion of maize to the total import bill have ranged from nothing in 1999 and 2000 to 21% in 1992 and the average for the period 1992 to 2003 was 6%. By using average landed prices, we are able to approximate the value of the quantity of food aid that came into Zambia between 1992 and 2002. This ranged between US$6.2 million in 1997 and US$38.5 million in 2002, and averaged US$15.7 million per annum. Without food aid Zambia would therefore have been forced to source funds to procure commercial terms.

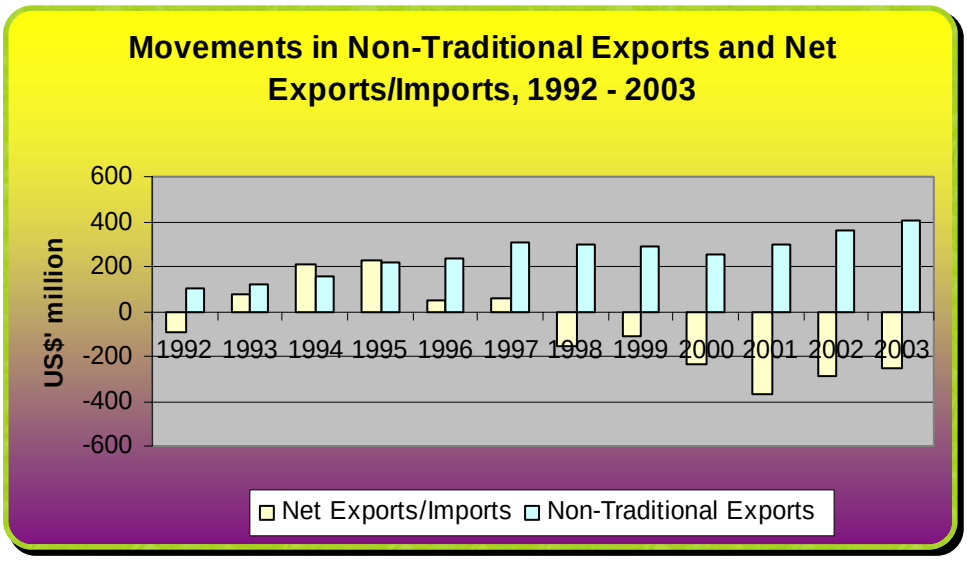
Figure 4.3: Maize Imports and the Total Import Bill, 1992 - 2003



Source: Bank of Zambia Economics Department

These figures are obviously very small. However, their significance may lie in the fact that Zambia has experienced serious balance of payments problems in the period under consideration and therefore faces problems in importing food. **Box 1** besides other issues also illustrates the problems Zambia faces in mobilising resources to import grain. This is due to the fact that earnings from copper production plummeted as production levels sank very low in a situation when copper prices did not sufficiently recover relative to the heights attained before 1975. Although non-traditional exports have increased tremendously, these have not compensated fully the fall in copper export earnings such that Zambia's trade balance has been in deficit since 1998 (see **Figure 4.4**). This factor should be considered in the light that Zambia has enormous potential to be self-sufficient in food production to spare the country pressure on balance of payments. Positively, Zambia has capacity to export grain to other countries and could turn maize into a significant foreign exchange earner. After recovering from food production shortfalls in 2002/03 and 2003/04, Zambia has exported maize to the Democratic Republic of Congo, Zimbabwe and Mozambique while plans to export 50,000 MT of maize to Angola were underway in September 2004.

Figure 4.4: Movements in Non-Traditional Exports and Net Export/Imports



Source: Ministry of Finance and National Planning

4.4 External Market Environment

Zambia's trade policy has five pillars. The *first* is the continuation and deepening of trade liberalization with export and import trade creating foundation for industrial development. The *second* is the creation of a diversified export base moving away from mineral exports. This is anchored further by the *third* pillar which seeks to promote exports of value added products rather primary products. The *fourth* points at the expansion of the country's regional and international export markets. The last and *fifth* pillar is the creation of an efficient trade administration regime. Both the Agriculture Sector Investment and the Agriculture Commercialisation Programmes have been supportive of the country's trade policy and recognize agriculture as having very high potential to contribute to the erection of its five pillars.

Although this is a sensible trade policy, Zambia faces great difficulties in achieving it. In the first place is the complexity of her trade regime because the country is a member of a number of trade organizations and groupings. As a result, Zambia's trade regime is governed by different commitments and rules arising from participation in regional organizations – the Southern African Development Community and the Common Market for Eastern and Southern Africa – and international trade agreements, i.e. the World Trade Organisation, the Cotonou Agreement between the European Union and the African, Caribbean and Pacific (ACP) countries as well as the Africa Growth and Opportunity Act with the United States of America. Zambia enjoys trade preferences by being part of the last two agreements mentioned. In addition, because she is classified as one of the Least Developed Countries (LDCs), Zambia is entitled to further special treatment under WTO rules and Everything But Arms (EBA) with the EU.

Despite receiving special treatment, Zambia utilizes very little of these due to a number of difficulties. The most obvious is the country's geopolitical situation being a land-locked country with the nearest functional port being over 2,000 kilometres away and running through difficult terrain. This significantly reduces her comparative advantage in agricultural exports. The prolonged civil war in Angola until very recently worsened the situation because Lobito Bay is Zambia's nearest port. Before this, the liberation struggle in Southern Africa had damaged many infrastructure necessary for the country's external trade. Trade related infrastructure are generally undeveloped.

Unfortunately, preferential treatment amounts to little when it is considered that protection in developed markets is highest in areas of greatest advantage to developing countries including

Zambia. They face great difficulties to meet the stringent sanitary and phyto-sanitary (SPS) requirements set by developed countries as equipment that would improve standards is often obsolete and in poor state. Tariff peaks tend to be concentrated on agricultural products where developing countries have an advantage. For such products preference margins are smaller although the EBA and AGOA are granting countries like Zambia much more generous conditions. This is worsened by the high subsidies of the producers of such products in developed countries receive from their governments.

What should Zambia do in order to further her external trade policy with agriculture playing a pivotal role given this unfavourable environment she faces despite the so called preferential treatment? Strategies need to take a number of things into account. In the short to medium-term, Zambia should focus on developing her regional trade and slowly build capacity to penetrate developed countries markets. This strategy considers Zambia's long distance to the international markets plus the barriers erected by the developed countries. In this regard, Zambia should work with her neighbouring countries to deepen the regional markets. Nevertheless, for products that have been doing well already in international markets, Zambia should strengthen its advantage by investing in resolving supply-related constraints. The recent situation where her neighbours came to negotiate for maize imports from Zambia illustrate the fact that other countries in the region could look to Zambia to meet food shortfalls. Furthermore, she should invest in equipment such as food laboratories that would help her meet the SPS measures in developed countries. It is also important that Zambia strengthens her voice together with developing countries in negotiating much fairer international trade arrangements.

4.5 Conclusions

Measuring the impact of food imports on various variables in the economy is not easy because of the difficulty in getting quality and consistent data that would give the direction of a causality effect. However, from the discussion in this chapter, the direction of the impact can be observed even if the extent cannot be conclusively measured. *First*, the magnitude of the direct impact on both food production and nutrition is obviously small because food imports relative to a set of key variables is small. However, this is different for those areas declared vulnerable where food aid has been distributed consistently. Here because food relief compared to food requirements is high, the impact of production decisions both as a result of psychological or price effects seems high even though there is little evidence to resolve the issue conclusively. This is heightened by the fact that the effectiveness of targeting of food aid to vulnerable households is questioned on grounds of how to actually identify these households. *Second*, food aid may be perpetuating the situation of maize dependency given that it is mainly maize that is imported and distributed as food relief even in areas where cassava has been remerging strongly as the staple and main production crop. *Third*, the timing of food imports which go through until shortly after harvest of the local produce begin to get to the markets, could be undermining long-term investments in agriculture.

Specifically farmers irrigating their maize crop to time the peaking of prices in March/April are uncertain of the outcome because of the importation of food. Based on what farmers themselves have stated, the uncertainty that food importation induces among local producers is perhaps one of the strongest negative direct effects.

The less direct effects are perhaps much more compelling. It is observed that the importation of food which exists as an implicit policy of supplementing domestic food supply has failed to meet the nutritional requirements of the country. The high incidence of malnutrition demonstrated in **Chapter 2** points to this fact. Although the food aid being brought into the country may not be as significant, it nevertheless may be undermining the urgency to stimulate increased support for a more diversified and well performing agriculture. It has introduced a

complacency in the policy making process because it exists as an alternative to domestic food production. Agriculture does not receive the necessary support as a result. Given the importance of the sector in affecting many other important economic parameters such as poverty reduction, export revenue and economic growth, food imports turn out to be a big cost to the economy in the end.

CHAPTER 5

POLICY ACTIONS FOR SUSTAINABLE AGRICULTURE DEVELOPMENT AND FOOD SECURITY

5.0 Introduction

The high levels of food insecurity in Zambia are neither inevitable nor irreversible. It has been pointed out in this report that Zambia has great potential to both meet her food requirements and turn agriculture into a significant source of foreign exchange through exports. The reasons why agriculture can not fulfil this demand have been discussed. To reiterate, these include: (i) transitional costs of policy shifts but particularly the demise of rural institutions that served small farmers including those in rural areas; (ii) labour constraints at the critical time in the agricultural season especially given the declining access to animal draught power; (iii) poor human capital particularly in the face of gender discrimination and the devastating impact of HIV/AIDS; (iv) declining participation in input and output markets by small farmers; and, (vi) the vulnerability of Zambia's agriculture to changes in weather.

For Zambia to exit from the situation of high exposure to food insecurity demonstrated in **Chapter 2**, these factors must be resolved. In a sense the exit strategy is well documented including policy documents such as the Agriculture Commercialisation Programme (ACP) and Poverty Reduction Strategy Paper (PRSP). Many programme formulation documents on the sector have also detailed the inadequacies of Zambia's agriculture and what needs to be done. In addition, there are studies commissioned by different agencies that have provided detailed review of Zambia's agriculture, its constraints and what needs to be done to improve its performance.

Although the exit strategy for food security is tied to putting in place actions that will combat each of the constraints, this chapter takes a different approach that recognises the emerging opportunities in the agricultural sector and how to build on that. It thus gives a profile of new developments, some of which have already been touched upon in **Chapter 3** of this report, and then provides strategies on how these trends can be better consolidated, always keeping in view the issue of food security.

5.1 Emerging Opportunities For Addressing Food Security

Although the food security situation in Zambia continues to be bad, there are some trends in the agriculture sector which are likely to be significant in redressing the situation if these are further consolidated. The analysis of the agriculture sector and its potential, constraints and changing structure in **Chapter 3** pointed out aspects that could be significant in mitigating and finally redressing the high exposure to food insecurity. These are listed here before discussing the strategies for consolidating them in the next section.

Increased diversification away from maize. It was seen from **Tables 3.3** and **3.4** that maize is accounting less and less of the total area cultivated such that its share in 2000/01 and 2001/02 was much less than that of cassava. This is important because maize is a sensitive crop to even small changes in rainfall. Yields can be drastically affected when rainfall distribution is such that there is too little or too much of it at certain critical times of the growing season. The rising diversification helps to spread the risk across a number of crops and this is important from a food security's view point. The challenge is to ensure that this diversification is not resulting from a decline or stagnation in maize production. Within a context of an expanding agriculture, there is room to increase maize output only that it will not be the only staple of significance as there would be alternatives. Given the potential that maize has as an export

crop in neighbouring countries, it is possible to allow increasing maize exports as the food requirements of the country are met by other alternative staple foods. As shown below, with further investments in irrigation, Zambia can produce much more maize for both domestic and export markets.

The rising share of roots and tubers and small grains in total area cultivated. This is the other side to the declining share of maize in total area cultivated. The development is important because in this category of crops are the alternative staples in Zambia's diet. It would seem that efforts that started in the early 1990s to promote drought tolerant crops have began to pay off. In particular cassava has emerged very strongly such that it accounted for 43.2% and 50.1% of the area cultivated in 2000/01 and 2001/02 respectively. This is good for food security given that cassava and small grains like sorghum and millet have better tolerance to low rainfall than maize and hence are good for food security. It is also recognised that cassava has many other uses, including stock feeds, but has never really attracted much attention because processors have considered the volume too low. However, some stock feed producers have began to consider adopting cassava in place of maize.

Rising entry of traditional crops into markets. There is evidence that the marketability of cassava, sweet potatoes and some other traditional food crops has been rising that the distinction between so called food crops and cash crops has been getting blurred (see RuralNet Associates Limited, 2002). As seen above, these crops are very important for household food security. Their entry into the markets is important because these crops can now generate cash income which farmers can use to adopt improved varieties and thereby increase their output. This development is important because it makes efforts to promote household food security much more sustainable than was the case before. As long as the base for household food security consisted in adopting crops that could not be marketed, there was little chance that production could expand beyond subsistence levels which exposed households to vulnerability as any crop failure made it difficult for households to recover and attain food security. It is increasingly being appreciated that improved livelihoods based on better access to markets is the foundation for sustainable household food security and vice versa. Neither is sustainable without the other. This point has been proven in so many projects aimed at promoting food security that have claimed good results which, however, have easily been erased once there has been some shock.

Rising exports. The phenomenal rise in non-traditional crops has been recognised in this report and is widely acknowledged. It is noted that agricultural exports have played a significant part in this rise. This experience shows that agriculture can indeed be the engine of growth and also be the basis for resolving many other problems Zambia faces including balance of payments problems.

The rise in outgrower schemes. This has been rising rapidly and is the channel through which small farmers are participating in exports markets particularly in cotton. It is expected that before 2010, as many as 25% of the small farmers would be participating in contracting farming. This will be the definite number of farmers that would have come into the commercial vector with clear links to both input and output markets.

Changing farming practices. Farmers are adapting to the changed agricultural environment. The diversification away from maize into roots and tubers and small grains seen above is an attempt by farmers to adapt to reduced access to modern farm inputs as prices sharply rose due to the removal of subsidies. Conservation farming is also spreading fast particularly in Southern Province and some parts of Eastern Province. This has been described as one of the highest adoption rates of farming techniques in Zambia. The reasons are not difficult to see. Conservation farming seems to address many constraints faced by small farmers. Because they can start the preparation of their fields early, the practice allows farmers to plant early and get ready to weed immediately. Both of these aspects improve yields considerably. Conservation

farming also allows farmers to use fertiliser and other inputs like lime more efficiently and thus less of it. In drier areas, the pans created in pot holing help moist conservation which can be important when there is some disruption in rainfall at a critical time of the growing season. In the 2001/02 season, farmers who used CF in Southern Province were able to obtain far much better yields despite the low rainfall experienced (UNDP, 2003, p.3). The increased adoption of CF is important for household food security because of the qualities described above that help farmers to significantly increase their output even with hand hoes. Outgrower schemes such as for cotton are insisting on their farmers adopting conservation farming because of these merits. A wider adoption of conservation farming should thus be encouraged by building on the efforts already made.

Increased support to agriculture. Although much is still needed to be done, there has been some increase in support to agriculture both in terms of funding and the prioritisation of the sector in national policies as evidenced in the PRSP and the Transitional National Development Plan (TNDP). The new government in the last two seasons has appeared better disposed to support agriculture and has carried out some very important initiatives that seem to be bearing results already. In the last two seasons, government through PAM has carried out a Targeted Food Security Pack Programme. By this, government provides a small loan repayable in-kind consisting of seed for a cereal (i.e. maize, millet, rice), plantings for tuber (sweet potato, cassava) and seed for a legume (groundnuts, beans) and to farmers identified as vulnerable. The positive results of the Food Security Pack have been discussed in **Section 2.5**.

Government has also carried out the Fertilizer Support Programme in which farmers are given a subsidy of 50%. This was supposed to be phased out after three seasons. The Fertiliser Support Programme appears to have been important in the rebound of agriculture seen in the last two seasons besides the good rains. That Zambia has entered the export market to neighbouring countries could be indicating the depth of this rebound. Concern has been raised as to whether GRZ has the political will to phase out the programme, particularly as the country heads towards elections in 2006. In 2004, the last year of the FSP, farmers were supposed to bear 75% of the cost of fertiliser. However, it was announced in mid-2004 that the 50% proportion will be maintained, sending the signal that GRZ was not about to bring this to the end. It is another aspect of policy inconsistency that has undermined private sector growth all along.

Improvements in the macro-economy. Although still high, Zambia's inflation at about 17% in 2003 has been at its lowest since the mid-1980s. The Zambian Kwacha has experienced the longest period of stability in the last two years since a free exchange rate was adopted. This has seen base interest rates dropping from about 50% in 2002 to 28% in March 2004. Interest rates have fallen only very slowly despite the fact that inflation dropped to current levels about two years ago. High interest rates were being fuelled by heavy government borrowing from the domestic financial markets through treasury bills. Since the last part of 2003, government has began to drastically reduce its domestic borrowing which has sent interest rates on treasury bills plummeting. Banks are reported to be holding on to huge amounts of funds and are in the processes of rearranging their lending portfolio. Because for a long time banks could make money by simply buying treasury bills, they are in a transition in which they are reassessing the risk profile of potential lending areas. However, any increased bank lending to arise from this scenario is likely to favour the agriculture sector as well. Stanbic Bank has already announced that agriculture is accounting for 20% of its lending portfolio in 2004, up from 15% in 2003. With falling inflation, the environment is improving for investing in agriculture.

5.2 Strategies to Achieve Food Security

Although literature has tended to highlight mostly the negative aspects of Zambia's agriculture, developments highlighted above show that there are some positive trends that could prove important in tackling the country's low food security situation. The challenge is finding strategies that would help to scale up what is already working to obtain greater impact. From what has been profiled above, building on the positive developments in the agricultural sector requires three broad strategies. The *first* is to build the livelihoods security of vulnerable groups. The *second* is to promote agriculture diversification with a view to increase alternative and complimentary food crops to maize. The *third* is to promote the commercialisation of smallholder agriculture particularly so that small farmers participate increasingly not only in domestic markets but also in export markets. All these must take place in an environment that increasingly supports further investments in agriculture. These aspects are discussed in turn below.

5.2.1 Creating a Conducive Environment for Agriculture Development and Food Security

Food security at both national and household levels will not be attained if the agricultural sector continues to operate in an environment that is not conducive. Although the macro-economy has been improving as noted above, there is still much more that needs to be done. The rate of inflation at about 17% and base rates at about 28% in March 2004 are still too high to support meaningful investment in agriculture. Policy actions to reduce these even further are required. The great stumbling block has been government spending that has tended to fuel domestic borrowing keeping interest rates high. There is need to reorient government expenditure so that it is much more in line with the available funds.

However, there is a dilemma in this from agriculture's point of view. Discussion in **Chapter 3** has called for increased funding to the agriculture sector. This would be difficult in the context when government is required to reduce its overall spending when even at current levels it has been difficult to find money to support agriculture sufficiently. Two things seem imperative. The *first* is that there must be better rationalisation of overall spending of government which should take place within the context of better priority setting. This also requires that government must exercise great fiscal discipline to spend according to the set priorities. Part of the problem with government spending that has tended to affect all the sectors is that unplanned expenditures have tended to crowd out the budgeted expenditures and this mainly on constitutional and statutory expenditures. There has been significant improvement in processes for priority setting typified by the PRSP and the MTEF being implemented for the first time in 2004. These are important developments because there is consensus in the nation that agriculture in general and issues of food security in particular must receive great priority. However, experience with the PRSP has shown that government has not abided by the priorities set with the estimated PRSP cost only receiving 50% funding.

The *second* is that spending within the agriculture sector itself needs rationalised and focused on areas where government intervention would have greatest impact. Experience from ASIP implementation indicates the tendency by GRZ to want to carry too many activities. A Core Function Analysis has been recommended that would determine the activities that GRZ should retain, those that should be commercialised and those that should be left to other players altogether. The Core Function Analysis should be done in the context of an expenditure review that examines the levels of expenditure that agriculture could realistically expect from the government treasury. Included in the analysis should be an analysis of expenditure efficiency and effectiveness. Government expenditure in the agriculture sector should thus be on those activities that are core to the operations of the public sector which should be in turn properly funded.

Government must invest in good sector policies. It has already been noted that agriculture has operated for the last nearly fifteen years without policies endorsed by Cabinet. This has been one factor behind policy inconsistence that has been noted. Government's actions must be both credible and predictable if confidence by investors is to be generated. Interventions in fertilizer markets in the past has undermined private sector confidence which now largely keeps away from this. As pointed out above, government faces great challenge in how it will handle the post-Fertilizer Support Programme as to whether it will not succumb to pressure to continue the importations of the commodity rather than leaving it to the private sector. Maize export bans in the past have also been counter productive as they have prevented farmers from exploiting better prices prevailing in the region and have worked to dampen domestic prices and consequently production. In addition to good policies should be the improving of the regulatory framework. A number of statutes need revision to bring them in accord with the new liberalised environment. Enforcement needs improving as well.

It is also critical that rural infrastructure be improved if agriculture has to develop. Infrastructure such as roads, electricity and telecommunication facilities are vital for opening up rural areas and having them better linked to the markets. This is vital for the commercialisation of smallholder agriculture as well as for sustainable food security from the production side and access to food when own production fails. Improving infrastructure is a mammoth task as these in Zambia have deteriorated to such an extent that reversing the situation now requires huge investments. The fact that Zambia is a vast country and is sparsely populated makes it even more difficult. Whatever the difficulties, there is no alternative to ensuring that the country has good infrastructure. Innovative ways are therefore needed. Part of this is to admit that for most parts of the country only third grade roads could be put up. Involvement of communities and local institutions in putting up and maintaining such roads is crucial in this regard. Zambia may need to learn from other countries on putting up "growth centres" after so many kilometres taking into account population and economic factors. These centres would then be provided with the vital infrastructure useful in linking rural areas to the larger world. This strategy recognises that although vital infrastructure may not be taken at the doorstep of each and every smallholder, at least the distance to it can be drastically reduced.

A better environment should be such as would support access to finance by agriculture producers. As observed above, improvements in the macro-economy would facilitate increased lending by commercial banks to the agricultural sector. However, this is likely to benefit large scale farmers and a few intermediaries with the ability to put up sound collateral security. Further this is likely to be concentrated in only in urban areas along the line of rail and a few provincial centres as commercial banks have been withdrawing from rural areas in the past years. Smallholder agriculture and other rural producers are in desperate need for rural financial services. And yet historical experience militates against the creation of such services including the collapse of rural financial institutions in the mid-1990s due to government interference, the bad credit culture, high poverty levels and consequently the low ability by many rural producers to engage in enterprises that generate adequate revenue to pay back.

Rural financial services should thus take these issues into account. A proposed Rural Finance Programme has suggested some of the following as some of the ways in which to address these issues (IFAD, 2004):

- Promote "Accumulated Savings and Credit Associations" (ASCAs) and "Village Banks" to help build up savings and allow participants to begin to invest in economic enterprises. ASCAs are suitable even for producers with very small funds which could build up slowly. The simplest would be when they exist for savings only. They can slowly graduate to lend out to the members and charge interest. Members would share out the accumulated

returns from interest charged. ASCAs can be the basis for training rural producers in credit discipline and management. The ASCAs that do well could be turned into village banks, essentially allowing groups to save and borrow bigger amounts. This might mean an infusion of outside resources.

- Most market linkage facilitation programmes have no credit component mainly because they do not want farmers to be attracted to their activities for the sake of credit. However, access to credit is recognised as a vital ingredient in the commercialization of smallholder agriculture. It is possible to set up parallel structures to these programmes to offer credit to smallholders that have been trained by the programmes and are recognised as having potential to effectively use credit well.

- The pulling out of rural areas by commercial banks as well as the demise of the Cooperatives Bank has left a void as far as banking services are concerned. Deliberate efforts to fill this gap are required. The National Savings and Credit Bank has been recognised as having the merits to help the mobilisation of savings and provision of credit in rural areas. Proposals are that the bank be capitalised so that it expands its branch network in rural areas as well as improve its operations in a number of vital areas.

- Create a credit line for contracted small producer schemes for rural economic activities that can utilise the facility (e.g. high value crops, dairy, fisheries, wood and non-wood products and eco-tourism). This will be managed by commercial banks under an apex institution such as the Development Bank of Zambia and is meant to help intermediaries such as upcoming outgrowers have access to finance to expand their operations.

5.2.2 Improved Livelihoods Security for the Vulnerable Groups

Increasingly issues of food security are being seen in the context of the sustainability of people's livelihoods. From this viewpoint, food security exists alongside other livelihood outcomes that may include increased incomes, participation, reduced vulnerability to various shocks and better and more sustainable utilisation of the natural resource base. It is seen that people employ their livelihood assets (i.e. financial, physical, natural, human and social capital) to maximise multiple livelihood outcomes. The strategies they choose to achieve this will be influenced by policies, institutions (both national and local) and processes. In this context, it is appreciated that household food security is not dependent only on the amount of food a household produces, but also on the extent to which existing structures and processes enable households to deploy their livelihood assets effectively and maximise livelihood outcomes so that they can maintain a reasonable level of food consumption even in the face of crises.

The extent to which they can do this is thus dependent on their livelihood security. Vulnerability to shocks, trends and seasonality factors deepen and become chronic because the deployment of available assets cannot cope with these changes. The quality and access to these assets is thus important. In Zambia, vulnerability to food insecurity may have increased because of the weakening asset base. The declining quality of human capital due to decreasing access to education and the rising effects of HIV/AIDS and other related factors, the falling ecological integrity partly as a result of intensification in utilisation due to mounting poverty, the increasing difficulties to access financial capital especially given the collapse of rural credit in the 1990s, the capital disinvestments in the smallholder sub-sector and diminishing ability of social networks to deal with multiple crises all have undermined households resilience to shocks including food deficits.

Policy actions are required to ensure livelihoods security of the poor that face exposure to food insecurity. The search is for policies, institutions and processes that help to augment people's livelihoods. Obviously this would take account of the different levels of vulnerability. For households whose livelihoods base has been so weakened by the past exposure to manmade and natural shocks emphasis should be put on helping them to rebuild the livelihoods base. Targeted interventions to rebuild livelihoods have been suggested in **Chapter 2**. There are at least four aspects of rebuilding people's livelihoods each of which requires its own specific policy actions as presented below:

1. **Helping households cope with hunger.** This could be a response to an immediate crisis. It could also apply to those groups that have found themselves in a situation of chronic hunger who cannot reasonably come out of the vulnerability trap. In this phase the preoccupation is to help households overcome the hunger situation, preventing them from falling further into vulnerability. Food relief could play an important role. In rural areas, it is known that the effects of past shocks have now been inbuilt in the economic behaviour of some households because they have failed to overcome them. For example, after earlier food shortfalls as a result of poor rainfall, some households now perpetually work for food in their neighbours' farms to meet immediate needs while they fail to till their own land only to continue with this dependency situation in the next season. Relief may just help to break that cycle. Actions such as the Food Security Pack which help the vulnerable to produce some food in the following season can be considered as part of this component. The difficulty is ensuring that these actions are well targeted and are not extended to households who are not as deserving.

2. **Raising the productivity of available assets in the face of persisting constraints.** The greatest challenge of Zambian agriculture is to institute a technological revolution that would raise both labour and land productivity. In the face of a severe depletion of physical assets, such a revolution will only come about with the change in the coefficient of production of the same level of technology as is available. For most households this means that they should produce more with hand hoes. Conservation farming seems to meet this requirement as farmers are able raise their labour productivity (i.e. expand area cultivated) and improve yields with the same low levels of technology. Constraints affecting labour scarce households must also be addressed of which conservation farming may not necessarily be the solution. This has become a more critical issue in the face of the rising prevalence of HIV/AIDS but is also fuelled by long known impediments such as gender discrimination. Changing the structure of production with livestock (including small livestock) taking a more prominent role and adopting more capital intensive means of production where this is possible could be some of the adaptations that would go a long way in rebuilding livelihoods that have been destroyed by a series of past shocks.

3. **Increased integration into markets.** Actions to address this are further discussed under **Section 5.2.4** on commercialisation.

4. **Promotion of non-farm activities**. This is important because it has been shown that factors accentuating food vulnerability include the general fall in cash income as well as the seasonal nature of agriculture which undermines farmers' cash outlay. It has been observed that, despite producing enough to eat, small farmers are forced to sell their produce so as to meet accumulated cash needs only to be faced with hunger later in the year. Farmers are also forced to engage in desperate sell at very unfavourable prices because of the same non-food needs. Promoting non-farm activities such as bee-keeping, timber harvesting and handicrafts (hopefully all done in an environmentally

sustainable manner) would help to enhance household food security and the capacity to cope with shocks.

5.2.3 Increased Diversification of Agriculture

It has been noted that the diversification of agriculture production is a good trend. The only drawback is that this is partly being accounted for by the stagnation in maize production. The importance of raising production of roots and tubers and small grains for food security has been elaborated above. It is emphasised here that rather than leave this process to work itself on its own, there is a clear need for policy actions that would consolidate and increase this trend. In particular, the process of these crops entering the markets which is so obvious must be spurred on by deliberate interventions firstly to ensure that it becomes irreversible but secondly to help it expand to levels that will become the means for better livelihoods for many smallholders who cannot take up the growing of export crops in the commercialisation drive. Taking cassava, for example, the following actions aimed at raising the marketability of the crop are recommended (see RuralNet Associates Limited, 2002):

- Raising awareness of the wide range of ways through which these products could be consumed by writing and disseminating various recipes that utilise traditional crops. An important step was taken when the FAO published such a recipe book in 2002. However, not much publicity has been made and a much more vigorous campaign is now required.

- Persuade hotels and restaurants to include such foods on the menu with a view to raise consumption in the long run through a demonstration effect.

- Encourage NGOs to network with other development agencies to facilitate and promote the processing of these crops before agro-processing companies can be assured of demand to go into such ventures.

- Reorienting farmers towards markets by first and foremost making them appreciate how markets work and then empowering them with the ability to reorganise market opportunities and how this information should then be factored into their production decisions.

- Making information about developments in the markets available both to farmers and buyers.

5.2.4 Greater Commercialisation of Smallholder Agriculture

Results of actions to raise food security are easily reversed if production does not rise high enough to generate a substantial surplus that can be absorbed by the market. Where there is a surplus, shocks are more likely, at least in the medium term, to cut production to levels still enough to satisfy household food security. It may be easier for such households to recover from shocks in subsequent seasons easily attaining their previous status. This is particularly so because, with household food security not significantly affected, the households' human capital base may remain more or less intact. Unfortunately in Zambia, agriculture is mostly taken as a way of life rather than as a business such that entering into markets is not well planned for. Helping farmers to take a more commercial approach to their activities is important and this must be deliberately promoted. Fortunately, this point is now well recognised as is evidenced from the Agriculture Commercialisation Programme and the PRSP documents.

Two elements necessary in commercialising smallholder agriculture are raising the entrepreneurship skills and reorienting the mindset of small producers towards markets as well as adopting policy actions that help the markets to work for the poor. Pro-poor market policies have been discussed above with respect to creating a better environment for the sector including improving infrastructure, reducing interest rates, adopting better sector policies and putting in place an effective regulatory framework. An elaborate process of facilitating farmers in business skills, appreciation of how markets work and in taking production decisions informed by market and economic decisions is critical in smallholder commercialisation. It has to be appreciated that the commercialisation process of small producers will not happen if these producers are not taken first and foremost out of the vulnerability net. This is why the measures that have been discussed in **Section 5.2.2** are an important step before the stage of commercialisation can be attained.

Developments in contract farming seen above are very important for the commercialisation of smallholder agriculture because they have proved to be one of the most viable ways for farmers to access extension advice, inputs and markets. Contract farming is also enabling farmers to participate in export markets through intermediaries. It is thus necessary to adopt policy actions that would help outgrower companies to consolidate and expand their activities to cover more smallholder farmers. Again the various elements proposed above with a view to improve the environment for agriculture are as important for the deepening of contracting farming as they are for smallholder commercialisation. In particular, although it would be expected that with falling interest rates outgrower companies will access more finance for the expansion of their operations, creating a credit line for contracted small producer schemes would go a long way in helping these companies to expand their activities.

5.2.4 Meeting National and Household Food Security: The Case for Investing in Irrigation

In this section, we present different scenarios of how increased irrigation would have an impact on national food security and to some extent household food security. Other benefits explored are impact on medium scale farmers incomes and the national balance of payments. In presenting the scenarios, it should be appreciated that this obviously simplifies reality but is presented to build a case for increased support to the agriculture sector. It should also be considered that the case is obviously stronger at national level as it is clear how commercial farmers could much more easily adopt the technology if conditions allowed. However, the processes of commercialisation if it succeeds should be able to raise farmers to the level where they may be able to adopt irrigation.

Table 5.1 shows that Zambia has an irrigation potential of 523,000 ha of which the largest is in the Zambezi river basin (423,000 ha). Of this, only 41,400 ha and 5,000 ha are developed in the Zambezi and Congo/Zaire river basins respectively. This amounts to only 8.9% of the total irrigable area. This means that potential irrigable land is not a limiting factor to pursuing the development scenario of maximising food production through irrigation. This study considers what would be the impact on maize cereal deficit of expanding maize cereal deficit of irrigating additional land between 5,000 ha up to 60,000 ha.

Tale 5.1: Irrigation Potential and Irrigated Area in Zambia

Type of Irrigation	Upper Zambezi	Kafue River Basin	Luangwa River Basin	Total for Zambezi Basin	Congo/Zaire
Located	112,000	165,000	14,000	291,000	
Ground Water	15,000	15,000	15,000	45,000	
Commercial	2,000	2,000	2,000	6,000	
Dambos	30,000	20,000	30,000	80,000	
Total	**159,000**	**202,000**	**61,000**	**422,000**	**101,000**
Existing Development				**41,400**	**5,000**

Source: FAO Irrigation Potential in Africa (Cited In Sichembe, 2003)

The commonly irrigated cereal suitable for production in winter in the Kafue river basin is wheat. Its average yield is 5.5 tonnes/ha. It is seen from **Table 5.2** that the expected total production of wheat for additional area under irrigation of between 5,000 and 60,000 ha would range between 27,500 and 330,000 tonnes respectively. If maximum irrigation of 60,000 ha is achieved, the additional production would meet the 2002/03 wheat deficit of 34,000 tonnes and leave 296,000 tonnes for export. Currently, there are markets for exported wheat from Zambia, once local demand is met, to neighbouring countries, especially the Democratic Republic of Congo. Admittedly, Zambia would face stiff competition from producers abroad but could take advantage of its proximity to these markets. The good news is that Zambia's wheat, helped by a more realistic exchange rate regime, has increasingly become competitive and this trend is likely to continue as farmers invest in improved technologies.

Table 5.2: Vale of Irrigated Wheat Production

Scenario	Irrigation Area (Ha)	Probable Wheat Output MT/Yr	Potential Value of wheat production grown in Zambia (US$' m)	Potential cost of importing similar amount of wheat (US$'m)	Potential benefit of locally grown wheat production over importing (US$'m)
1	5,000	27,500	7.43	9.35	1.93
2	10,000	55,000	14.85	18.70	3.85
3	20,000	110,000	29.70	37.40	7.70
4	30,000	165,000	44.55	56.10	11.55
5	40,000	220,000	59.40	74.80	15.40
6	50,000	275,000	74.25	93.50	19.25
7	60,000	330,000	89.10	112.20	22.10

Quite often, irrigation infrastructure developed for winter wheat is used for supplementary irrigation of rain-fed maize for which yields are increased by about 4.5 tonnes/ha. It is seen therefore from **Table 5.3** that the expected additional total production of maize from supplementary irrigation ranges from 22,500 to 270,000 tonnes. This output would have been on top of the 120 MT surplus expected in 2003/04 (Table 2.10) which would enhance greatly Zambia's export earnings.

The potential value of the expected output of additional irrigation of wheat is estimated using the into mill price of US$270/tonne (Agriculture Market Information Centre) while that from supplementary irrigation of maize is estimated by adopting the current government floor price of US$120/tonne and adding a 25% mark up giving US$159/tonne as the final into-mill price. Based on this, **Table 5.2** shows that the total average value of locally produced wheat would range from US$7.43 million to US$89.1 million. Adopting a landed import cost of US340/tonne shows that the cost of importing similar quantity of wheat would range from US$9.35 million to US$112.2 million. The difference between the cost of importing the grain and the value of producing the same quantity domestically is the assumed benefit of producing wheat locally. This would range between US$1.93 million and US$22.1 million.

Table 5.3: Value of Additional Maize Production from Supplementary Irrigation

Scenario	Irrigation Area (ha)	Probable Maize Output (MT/Yr)	Potential Value of Maize production – grown in Zambia (US$' m)	Potential cost of similar amount of Maize (US$' m)	Potential benefit of locally grown Maize production over importing (US$' m)
1	5,000	22,500	3.38	5.51	2.14
2	10,000	45,000	6.75	11.03	4.28
3	20,000	90,000	13.50	22.05	8.55
4	30,000	135,000	20.25	33.08	12.83
5	40,000	180,000	27.00	44.11	17.11
6	50,000	225,000	33.75	55.14	21.39
7	60,000	270,000	40.50	66.17	25.67

Similarly, **Table 5.3** shows that the total average value of the locally produced additional maize from supplementary irrigation will range from US$3.38 million to US$40.5 million if land under irrigation is expected in the order discussed and presented in the table. The table also gives the cost of importing grain from outside Zambia. Adopting a landed price of US$245 /tonne (SADC FANR VAC, 2003), the cost of importing a similar quantity of grain and the value of producing the same quantity domestically is the assumed benefit of the producing maize locally. This would range between US$2.14 million to US$25.67 million.

The message is that producing cereals locally is much more beneficial for Zambia. These scenarios are only illustrative. It may be noted that Scenarios 2 and beyond for 10,000 ha and above produce more wheat than the 2002/03 deficit about 34,000 tonnes, for which only an additional 6,200 ha of irrigation is sufficient. Strictly, if these surpluses are exported, the cost of importing wheat should not be deduced for these quantities.

A difficulty with the presentation made above is that it demonstrates the benefits from irrigation accruing at national level and neglects to tackle the question: to what extent can irrigation help to eradicate widespread hunger and poverty at household level? It is known that ensuring national food security does not necessarily translate into household food security. Nor does it necessarily follow that increased national food production will lead to better livelihoods.

The problem is the inadequacy participation of smallholder farmers in irrigated agriculture. Currently there are no small scale farmers growing irrigated wheat. The above demonstration on wheat will thus not have a significant direct impact on the poor in the Kafue river basin. Some smallholder farmers with irrigation technology mainly applied to the growing of vegetables are also applying supplementary irrigation on maize. Given that the additional maize output from supplementary irrigation illustrated in **Table 5.3** is assumed to be on land growing wheat, smallholder farmers will still not benefit from expanded irrigation even for maize in this case.

To see how expanded irrigation would have impact on widespread poverty and hunger at household level, scenarios can be altered to build in participation of smallholder farmers. This is presented in Table 5.4 which assumes that 50% of additional acreage under irrigation for each scenario is taken up by medium-scale farmers for the growing of vegetables. Values for vegetables are averages for eight vegetables with varying yields, prices and gross margins (Annex Table… (???annexes are missing)) These are common vegetables requiring little skill to manage and can thus be easily grown by smallholders having access to inputs. Given that irrigation technology will now be installed on the land, smallholders could go on to use this for supplementary irrigation on maize during the rainy season. **Table 5.4** thus also includes values for additional output for rain-fed maize as a result of supplementary irrigation. Maize outputs for medium-scale farmers have been arrived at by reducing the yield per ha by 20% of that of large scale commercial production given in **Table 5.2**.

Table 5.4: Income Generation from Irrigated Farming by Medium Scale Farmers

Total Area ha	Maize Output MT	Maize Value US$ million	Veg Output MT	Veg Value US$ million	Total Value US$ million	Maize Gross Returns US$ million	Veg Gross Returns US$ million	Total Gross Retunrs US$ million
2,500	9,000	1.35	31,875	5.23	6.58	0.73	2.41	3.14
5,000	18,000	2.70	63,750	10.46	13.16	1.46	4.82	6.28
10,000	36,000	5.40	127,500	20.92	26.32	2.91	9.64	12.55
15,000	54,000	8.10	191,250	31.38	39.48	4.37	14.46	18.83
20,000	72,000	10.80	255,000	41.44	52.64	5.83	19.28	25.11
25,000	90,000	13.50	318,750	51.90	65.80	7.29	24.10	31.39
30,000	108,000	16.20	382,500	62.36	78.96	8.75	28.92	37.67

From **Table 5.4**, it is seen that medium scale farmers taking up 50% of the expanded irrigated acreage for each scenario will produce between some 32,000 and 382,000 tonnes of vegetables and 9,000 and 108,000 tonnes of maize. At March 2003 prices, this will amount to a gross value for vegetables of between US$5.2 million and US$62.4 million with gross returns ranging from US$2.4 million to US$28.92 million. For maize, the gross value will range from US$1.35 million to US$16.20 million with the respective gross returns ranging from US$0.73 million to US$8.75 million. The combined gross returns (i.e. the output value less variable costs) of growing vegetables in winter and maize during the rainy season will range according to the respective scenario form US$3.14 million to US$37.67 million.

Table 5.5 shows that the combined output of large and medium scale farmers of irrigated wheat, maize and vegetables yields greater outputs value ranging from US$12 million to US$143 million, exceeding what is obtained if only cereal production under large-scale commercial production is targeted.

Table 5.5: Combined Value of Large and Medium Scale Irrigation

Wheat Output LS (MT)	Wheat Value US$' m	Maize Output LS (MT)	Maize Value LS US$' m	Maize Output MS (MT)	Maize Value US$' m	Vegetable Output MS (MT)	Vegetable Value MS US$' m	Total Value US$' m
13,750	3.72	11,250	1.69	9,000	1.35	31,875	5.23	11.99
27,500	7.42	22,500	3.38	18,000	2.70	63,750	10.46	23.96
55,000	14.85	45,000	6.75	36,000	5.40	127,500	20.92	47.92
82,500	22.28	67,500	10.12	54,000	8.10	191,250	31.38	71.88
110,000	29.70	90,000	11.81	72,000	10.80	255,000	41.44	95.84
137,500	37.12	112,500	13.50	90,000	13.50	318,750	51.90	118.80
165,000	44.54	135,000	15.19	108,000	16.20	382,500	62.36	142.76

Note: LS = Large scale farmers; MS = Medium scale farmers

Growing vegetables is much more profitable than maize and from the income point of view, it will make sense for medium scale farmers to abandon the use of their facilities for supplementary irrigation altogether to grow maize in the rain season. Although the values will not necessarily double due to reduced yields for vegetables during the rainy season, the resulting income for medium-scale farmers will be much greater with two cycles of vegetables in a year. However, the maize vegetables combination is still retained here because it helps to demonstrate that besides the increase in incomes for medium scale farmers, household food security that includes the increased growing of a staple could also be secured from irrigation.

A question that arises is whether the markets could absorb such an anticipated expansion in vegetable production. It should be emphasised that the calculations used here are not to imply that this whole amount of additional irrigated land will be taken up by the eight vegetables listed in **Annex…** (???No annex attached yet) There is a wide range of other vegetables that could be grown under irrigation by medium-scale farmers. Although many vegetables are substitutes, others may be consumed at the same time and should not necessarily compete. At the same time, the market for vegetables has been improving in recent times as commercial farmers in the Mkushi block opt out of the cultivation of vegetables to focus on wheat irrigation by centre pivots as electrification of the area is extended.

It may even be expected that some of the irrigated land for vegetables would be used to produce vegetables of export with a higher value than those produced for domestic consumption. Zambia, as a small exporter, could reasonably assume the international market to be infinite meaning that markets would cease to be a binding constraint on additional vegetables' output. Although the number of smallholder farmers producing export vegetables is at present not significant, this has been on the rise in recent years, especially for areas near Lusaka. Lack of irrigation facilities has been the biggest constraint. Models of how smallholder farmers could gain the skills and necessary level of management to produce vegetables meeting the required standards are beginning to emerge. Established vegetable exporters are going into outgrower arrangements with smallholders, providing them with the required extension and inputs.

5.3 Conclusions

By taking only one aspect of Zambia's potential, i.e. abundant land and irrigation potential, this chapter has demonstrated that Zambia is capable of feeding herself as well as turn agriculture into the driver of export growth. What is missing from the realisation of this potential is the support that agriculture receives with respect to good sector policy implementation, macroeconomic stability, the regulatory framework, infrastructure development and funding both public and private. The cost in terms of imports and lost export opportunities and economic growth is very high. Agriculture needs a stepwise development going through three stages which are not mutually exclusive:

- Get the big number of smallholder farmers out of the vulnerability net by first feeding them where necessary and then making them able to produce enough to feed themselves;

- Significantly raise the production capacity of farmers so that they can consistently produce for the markets while reorienting the marketing and business skills so that agricultural activities are turned into a business rather than just a way of life; and,

- Focus agriculture production on regional and overseas export markets so that production does not become a binding constraint.

CHAPTER 6

THE CASE FOR INCREASED SUPPORT TO AGRICULTURE

6.0 Introduction

The case for increased support for Zambia's agriculture rests on the fact that: (i) Zambia has been unable to meet her food requirements from domestic production; (ii) food imports have not sufficiently filled in the shortfall in food requirements and at the same time may be having a negative impact on agricultural development; and, (iii) as a result of all these, the food security situation has deteriorated to levels where the negative impact on Zambia's human wellbeing has reached catastrophic levels. In addition, it is generally agreed that agriculture offers Zambia the best potential for broad-based sustainable growth and has special merits for poverty reduction and contributing to the resolving of Zambia's balance of payments difficulties. Therefore, investing in agriculture development in Zambia makes sense even when factors other than the attainment of adequate access to food are considered.

Chapter 6 brings to conclusion the study by arguing out the points made above by which the case for increased support to agriculture is made. It points out that the implicit policy of relying on food imports to supplement domestic food production has failed and is not sustainable and that Zambia's only option is to develop her agriculture sector. Based on this, **Chapter 6** summarises the various strategies that have been advocated in the study to address the inadequate access to food by a large proportion of Zambia's population, arrest rising food insecurity vulnerability and develop the sector more generally as a meaningful strategy for economic development.

6.1 The Inadequacy of the Food Import Policy

The study has established that Zambia's domestic cereal supply consisting of maize, wheat, sorghum and millet only met the nation's cereal requirements in three years out of the fourteen years considered. Therefore, Zambia's energy supply in 2001 was 36% lower than the recommended 2,250 calories per capita per day, having declined from 1,539 calories per capita per day in 1990. This situation could perhaps be tolerated if such deficits could be met by food imports. Indeed Zambia has had an implicit policy of relying on food imports, both commercial food imports and food aid, to meet shortfalls in domestic supply. This policy is not explicit and the official stand is that Zambia must attain self sufficiency in staple foods. However, food imports take place every year even in non-emergency situations that this could be justifiably considered as an important strategy in meeting Zambia's food requirements.

The study has demonstrated the difficulty of relying on a food import policy to meet food requirements. Taking the case of maize, Zambia's main staple, both food aid and commercial food imports met only 41% of the gap in domestic production and total national maize requirements between 1996 and 2001. Specific problems in pursuing such a food import policy arises from three factors.

The *first* is that the policy assumes that the country would generate sufficient resources from other economic activities to import food on a sustainable basis. However, the economic problems Zambia has faced starting in 1975 have meant that her economic base is not adequate to support a sustainable importation of food to fill the gap arising from insufficient domestic food supply. The decline in the mineral revenues after the first ten years of

Zambia's independence has not been filled by the export of alternative commodities, even if there has been some improvement in recent years given the rise in non-traditional exports. And despite an aggressive pursuit of reforms, the economy failed to rebound in the 1990s such that Zambia was classified as one of the poorest countries in the world. Among many other problems, Zambia faces balance of payments difficulties. It means that there would be difficulties for a long time for the country to generate sufficient foreign exchange to buy food from external sources.

Second is that the policy of relying on commercial food imports assumes that the majority of the people have adequate cash income to buy food. Although Zambians increasingly continue to be drawn into the cash economy, many people's livelihoods are still not able to support a large reliance on purchased foods. Particularly in rural areas, the consumption of own produce is the only meaningful option. This is even though during serious food shortfalls many rural households sell some of their assets (e.g. small livestock) to generate cash for the purchase of food. It is also admitted that projections for food aid have at times underestimated the extent to which even rural households could turn to the markets to purchase food. However, this option is not available to the majority of rural households on a sustainable basis as such assets are difficult to replenish when there is a continuous draw down.

The *third* aspect to consider is the unreliability of food aid which perhaps could be looked at as able to address the two points made above. Zambia has no authority on the amount and type of food aid she receives as these are dependent on the good will of other countries and outside agencies. Neither does Zambia have control on the timing of food aid. The main problem is that food aid, like all types of aid, is subject to Zambia's relations with donors which can easily deteriorate when circumstances not favourably perceived by donors emerge.

Perhaps the clearest indictment of Zambia's policy of relying on food imports to fill in the gap between national food requirements and domestic production lies in the high levels of food insecurity Zambia suffers today. The percentage of children who were stunted, a good indicator of long-term failure to meet food requirements, rose from 40% in 1991 to 53% in 1998 according to the Living Conditions Monitoring System. Other surveys indicate that the situation may have remained at the same level in 2003. It was also observed that 54% of Zambia's households expected to run out of food by September 2003. For some parts of the country, more than 80% of the households expected to run out of food by December 2003. It is important to note that 2003 had good rains although the fact that it followed a drought year meant that a portion of Zambia's population remained vulnerable to food scarcity.

Such widespread difficulty in accessing food adequate for a significant share of the country's population is worrying because it demonstrates that food insecurity in many parts of the country is no longer transitory but chronic. Also worrying is the fact that food shortages at household level are worst in January and February when agriculture activities are supposed to peak. This is also the period when the incidence of diseases escalates. Zambia thus has a cycle of lock-in factors with respect to food security vulnerability – people remain vulnerable to food insecurity even in a relatively good year because their productivity is undermined by both hunger and disease peaking at the time when demand for labour is highest.

Also of great concern is the fact that food insecurity vulnerability is deepening as a result of many other variables besides the inability to produce adequate food at household level. The study has shown that long term trends, occurrence of shocks and seasonality factors have worked in a mutually reinforcing way to deepen food insecurity vulnerability. Poor

economic performance over the past thirty years leading to decline in real incomes due to loss of jobs and rising prices (including food prices), the devastating impacts of HIV/AIDS, poor human capital formation, gender discrimination, labour scarcity in productive periods, continued depletion of natural resources that supported varied livelihoods in rural areas and harsh agronomic conditions in some areas combine to undermine people's resilience to shocks such as droughts and outbreak of animal diseases. Therefore, although rainfall failure has been a feature in Zambia even in previous decades, particularly in the first three decades of the 20th Century when similar droughts as those experienced in the 1990s occurred, the human impact of such failure is now much more devastating due to this declining resilience.

6.2 The Need for Concerted Effort to Boost Agriculture Performance

The inadequacies of a food import policy pursued by Zambia as pointed out in **Section 6.1** and the rising food security vulnerability for the majority of Zambians are important reasons for Zambia to put in place policies that would help to raise the performance of the agriculture sector, especially among small scale farmers. It is necessary to note that agriculture has the potential to contribute towards resolving of many aspects of Zambia's development that have undermined people's resilience to cope with occasional shocks. Agriculture's huge potential is largely underutilised but is such that its growth can help to return the economy to a sustainable growth path. This is given in Zambia's vast resource endowments in terms of land, water and a favourable climate.

Linked to this is agriculture's potential to contribute to the widening of Zambia's tax base and revenue and consequently to capacity for increased government spending in areas that would boost the economy further. The sector has also demonstrated that it has great potential to contribute to the country's export revenue given its contribution to the phenomenal growth in non-traditional exports in the past ten years. But perhaps more importantly is the fact that, as the sector that employs over 65% of the country's labour force, agriculture has the highest capacity to contribute to poverty alleviation through broad-based growth in the sector.

All these attributes raise the profile of the sector in the search for strategies to resolve Zambia's development constraints. Policies thus far have not been supportive of agriculture. The liberalisation of the sector which took place without ensuring conditions that would help small farmers benefit from the new policy strategy is a clear example. The demise of rural institutions that helped farmers to participate in agriculture markets without anything to take their place as well as poor rural infrastructure meant that liberalisation had a marginalising tendency for many small scale farmers, particularly those in remote areas. The unstable macroeconomic environment and poor regulatory framework undermined the extent to which the private sector that was expected to drive agricultural growth could respond to the new policy strategy.

There may be difficulties in arriving at clear conclusions regarding the impact of the food import policy on agricultural development due to data inadequacies. However, the study has shown that, due to problems of targeting and the underestimating of people's ability to cope with occasional food shortages, food relief may be having negative effects on production decisions in some rural areas which have been declared vulnerable areas where food relief efforts are concentrated. Food aid may also be perpetuating maize dependency even in areas where other crops like cassava are the main staples consumed because it is largely maize that is distributed as food relief. Given that cassava and other tubers have been emerging strongly in recent years and offer a good option for household food security, any slowdown in this emergence due to the negative impact of food relief should be viewed with great

concern. The timing of food imports which tend to last until April each year shortly after the harvest of the local produce has started may be undermining long-term investments in agriculture. Farmers investing in supplementary irrigation targeting the period just before rain fed maize becomes available, the period when prices are supposed to be highest, are unsure whether prices would peak as expected due to food imports. Government may views this effect of food imports favourably because they are used as a price stabilisation instrument but the long term impact should be of concern.

A main observation regarding the impact on agriculture is that food imports which supplement domestic food supply create complacency in government as it searches for strategies to develop the sector. Food imports could be undermining the urgency to provide more support to agriculture so that the sector attains to its potential to drive the development of the Zambian economy, secure viable livelihoods for the majority of Zambians, contribute to balance of payments and be the foundation for poverty reduction. Food imports may have induced a mind set that has led to erratic and low levels of agriculture expenditure leading to programmes to help address constraints farmers face being poorly funded and ineffective.

6.3 Towards Sustainable Agriculture and Food Security

Given the high levels of poverty and food insecurity and the overall economic crisis that Zambia is undergoing, the urgency of developing the agriculture sector to address this tripod of issues cannot be disputed. As argued above, relying on food imports is not a viable option for Zambia and has failed to help address Zambia's human crisis depicted in the high levels of malnutrition. In order for agriculture to play its role in resolving the many dimensions of Zambia's development challenge, actions are required that will do the following: (i) Rebuild people's livelihoods and enhance their livelihoods security; (ii) Create a supportive environment for agriculture development; and, (iii) Raise food production and agriculture diversification. An outline of each of these areas of actions is presented below.

6.3.1 Take Actions to Rebuild People's Livelihoods

Improving overall development will help to create jobs and contribute to sustainable livelihoods. However, the human crisis in Zambia has devastated people's livelihoods to such an extent that direct actions are now required to help resuscitate these livelihoods and provide a capacity to respond to incentives and opportunities presented by the improving economic environment. This recognises that resilience to shocks such as crop failure due to droughts has dropped for many people and should now be rebuilt. In this regard, actions are required in three main areas:

- ***Strengthen the level of preparedness to shocks.*** This in particular means that Zambia puts in place systems for Early Warning and Disaster Management to forecast and plan for the occurrence of shocks. The objective is to be able to forecast such occurrences and respond to them in such a way that the negative impact on people's livelihoods is not devastated as much as possible, improving their chances to recover in latter seasons. In this regard, Zambia should invest adequately in weather forecasting. In particular, the Meteorological Department should be helped to link to international bodies that will help it access information on the most up to date developments in weather patterns and implications for the many facets of Zambia's development activities particularly decisions that farmers should take. Crop forecasting should be improved as well and complemented with strong national, district and community institutions to manage emergency relief when this is required. In addition, information on food vulnerability

must be improved with a view to design well targeted interventions to minimise unintended negative impacts on agriculture production.

- ***Support Diversification.*** Strategies such as drought rehabilitation and livestock restocking can be very important where people have already succumbed to previous shocks and are struggling to get back. The Food Security Pack Programme implemented by the Programme Against Malnutrition and the cattle restocking measures for Southern Province are good examples. However, there is a need to go beyond the agriculture sector and incorporate non-farm livelihood activities in order to widen the scope for resilience against shocks.

- ***Strengthen safety nets for the vulnerable.*** Zambia's communities have employed a variety of social safety nets to help the vulnerable in society, central to which has been the extended family system. Unfortunately, these social safety nets are under serious strain as the human crisis faced in the last two decades mount. The mounting impacts of HIV/AIDS at a time when livelihoods have been seriously weakened is weakening safety nets traditionally employed. There is now need for institutional responses to help revitalise the safety nets so that orphans, the aged, the disabled and widows can be taken care of without falling into destitution.

- ***Strengthen the productivity of existing assets.*** The erosion in people's assets through the cumulative effect of past shocks means that practices that require farmers to first and foremost adopt sophisticated technologies are likely to fail in the majority of cases. This study has proposed a technological revolution that helps farmers to increase their area cultivated as well as land productivity by mainly changing the coefficient of technologies currently in use. An example of this is conservation farming which helps farmers cultivate a larger area and improve on the management of land under cultivation even with the use of hand hoes and oxen. The main drawback is that suitable conservation techniques have not been promoted for high rainfall areas in the north of Zambia. It is thus recommended that support be given to the Conservation Farming Unit of the Zambia National Farmers Union that has popularised CF in lower rainfall areas. The progress being made with CF is an example of how strategies that make the existing assets more productive can help address food vulnerability and farm incomes. Similar such strategies are required in other areas.

6.3.2 Creating a Supportive Environment for Agriculture Development

Because agriculture is mainly driven by the private sector that includes farmers, the main role of government is to create conditions that will induce favourable response from producers and service providers. Government will also need to focus on ensuring that limitations that producers and service providers face are being addressed, paying particular attention to the constraints small farmers face. In order to create a favourable environment for agriculture development and food security, actions in five areas have been recommended:

- ***Attain macroeconomic stability and move the economy to a sustainable growth path***. In particular, the rate of inflation must be brought down to single digits to allow a substantial decline in interest rates to help secure long-term investments in the sector undermined by an unstable macroeconomic regime. Returning the economy to a sustainable growth path with a stable macro-economy would work to resolve a number of aspects that reinforce the country's food security vulnerability context such as declining real incomes while food prices continue to rise. It will also raise demand for agriculture products and thus create conditions that stimulate domestic production.

- ***Improve the policy, institutional and regulatory frameworks for the sector***. Inconsistencies that have characterised the application of the liberalised policy strategies should be resolved by adopting a national agriculture sector policy. The national agriculture policy must also state government's position and intentions on food security and food imports. Further, there is need for clarity in the allocation of roles and functions. A core functions analysis would help to determine the roles of the public sector and other players. It is important that government actions are predictable and avoid sending conflicting messages to the other players. In addition, steps are required to strengthen the regulatory framework particularly through the revision of outdated statues and improving on the enforcement of existing provisions. This is important for some players such as intermediaries who want to be assured that contracts entered into could be enforced.

- ***Increase budgetary allocations to the agriculture sector.*** Three problems need to be addressed in this regard. *First,* the level of allocations and disbursement to the sector is inadequate to fund the range of activities that the Ministry of Agriculture and Cooperatives sets out to do and must be raised. *Second,* erratic funding that has undermined the credibility of the budget as an instrument for planning must be resolved by moving away from a cash release system towards a medium-term approach in resource allocation. The adoption of the Medium-Term Expenditure Framework (MTEF) is a step in the right direction but must be accompanied by improved accountability by overhauling the public sector financial management system. *Third*, MACO's activities should be streamlined to allow expenditure to address problem areas that are core to its functions and roles. This also means that resources must be directed at areas where greatest impact is likely to be achieved which entails that more be spent at grassroots rather than headquarters.

- ***Reduce the high transaction cost of doing business in rural areas***. This mostly refers to rural infrastructure – roads, electricity and telecommunication – which is in a deplorable state or non-existent and must be improved. Zambia must also promote well functioning rural institutions such as farmer groups as these can help to reduce the cost of doing business in rural areas.

- ***Improve access to rural finance by small rural producers***. Focus should not only be on agriculture but to encompass other rural producers such as handcrafts, timber, honey, community based tourism and fishing. A number of ways in which rural finance can be achieved include promoting self-managed savings and credit associations that could be allowed to grow up to village banks. If such associations become widespread, it would help to instil credit discipline in the rural community whose absence has undermined rural finance in the past. In addition, rural banking must be promoted. As macroeconomic conditions continued to be unstable, many banks withdrew from rural areas. Therefore, improving macroeconomic stability is an important pre-condition for this. However, deliberate effort to promote rural banking such as the recapitalising of the National Savings and Credit Bank and reopening of the Cooperative Bank will go a long way in helping rural producers access to banking services. Lastly, the concept of contracted small producers as in outgrower schemes must be enhanced and allowed to extend even to remote areas. Thus far this has applied only to agriculture production which has restricted this facility to the more accessible areas. Some remote areas endowed with natural resources could benefit from such a facility once non-farm activities are also considered. As pointed out above, reducing food security vulnerability entails that we focus on non-farm economic activities as well.

6.3.3 Actions to Raise Food Production and Agricultural Diversification

Raising food production as the foundation for combating hunger in Zambia must incorporate emerging opportunities in Zambia's agriculture. As these become increasingly visible, Zambia faces challenge of finding ways to scale up what is working on the ground for widespread impact. The actions required to achieve this are presented below for some of the opportunities that have been observed in the study.

- ***Increase diversification away from maize***. This has the advantage of raising resilience to rainfall failure as diversification so far has mainly been in the direction of raising the share of roots and tubers and small grains in total area cultivated. Given that these crops are more tolerant of rainfall failure, their promotion has provided an answer to food vulnerability in rural areas and the spreading adoption must be further supported. Roots and tubers and small grains have the additional advantage of being low inputs and farmers have a long history of cultivating them and thus require little additional skills. It is important that Zambia invests in research for roots and tubers and small grains. For example, after the research in roots and tubers that produced short maturing and high yielding varieties for cassava and sweet potatoes, research has now fallen behind as there are now no viable programmes for this. The new varieties were the basis for the rise in the production of roots and tubers. However, there is now a risk that this achievement could be wiped out once there is an outbreak of disease given the narrowness of varieties available to farmers.

  Diversification should not be a result of stagnation in maize production as has been the case so far. There is room to achieve this even where maize production is rising. Part of the constraint in diversification has to do with dependence on rain fed agriculture. Zambia needs to promote irrigation much more aggressively because it has great potential which has been hardly tapped. Supplementary irrigation during the rain season could raise maize yields as it helps to smoothen out the variations in rainfall distribution. Pockets of rainfall failure at critical times of the season have the potential to drastically reduce yields. Irrigation could also allow farmers grow other crops on the same land. Given these advantages, there is need to place great stress on irrigation because it has potential to increase farm incomes and food security as well as contributing to economic growth. A main challenge in promoting irrigation is how to make irrigation technologies accessible to small scale farmers. Fortunately technologies suitable for such farmers have been developed and promoted in recent years. What is required is to scale up these initiatives.

- ***Support entry of traditional crops into markets***. The growing entry into markets of crops such as cassava and sweet potatoes long regarded as food crops rather than cash crops has been recognized as an important step in the commercialization of Zambia's agriculture. It is important that this trend be enhanced by deepening the markets of these crops through strategies that raise their consumption in the main consumption centres and industrial utilization. However, commercialization itself must be deliberately promoted by helping farmers take a business approach to agriculture. This requires that their entrepreneurship skills be raised and reorient them to produce for the markets.

- ***Enhance agricultural exports***. This has demonstrated Zambia's great potential to contribute to economic development and relieving balance of payments constraints, especially in the face of declining mineral revenue. Small farmers are participating through outgrower schemes by which they are contracted to produce agreed quantity and offered in return access to inputs and extension services. Participation in outgrower schemes may have helped to prevent the widespread hunger anticipated after the

drought of 2001/02 because they had generated cash income through cotton sales and could purchase food on the markets. The rise in outgrower schemes must be facilitated further through helping the promoters of such schemes to access credit for inputs and other requirements to give their farmers. Access to special facilities through commercial banks would ensure that such credit is based on sound commercial principles.

- ***Change farming practices***. Years of disappointments with respect to rainfall patterns, livestock diseases and access to modern farm inputs are producing changes in farming practices. These responses indicate what is capable in ensuring that small farmers overcome food security vulnerability. The rapid adoption of conservation farming has resulted from difficulties that farmers underwent in the 1990s because it seems to address various constraints as discussed above. The reversion to the production of traditional crops which are then offered to the markets is also a response to these difficulties. The strategy must be to deepen these responses through measures that have already been described above.

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