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Zambia: Agriculture Dataset

An Assessment
of Trends in
the Zambian
Agriculture
Sector

December, 2002

DFID Department for
**International
Development**

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Contents

LIST OF FIGURES AND TABLES.....	II
ACRONYMS.....	III
EXECUTIVE SUMMARY	IV
A. INTRODUCTION	1
ZAMBIAN AGRICULTURE – LAND USE AND CLIMATE.....	1
POPULATION DISTRIBUTION AND AGRICULTURE	2
B. AGRICULTURAL PRODUCTION.....	3
CROP PRODUCTION	3
LIVESTOCK PRODUCTION	5
C. AGRICULTURAL GROWTH AND PERFORMANCE.....	6
CONTRIBUTION OF AGRICULTURE TO GDP	6
FUTURE FORECASTS.....	7
IMPORTS	8
EXPORTS	8
INPUTS.....	10
D. POVERTY AND AGRICULTURE	11
RURAL POVERTY IN ZAMBIA	11
PEOPLE DEPENDANT ON AGRICULTURE.....	12
IMPACT OF HIV/AIDS ON ZAMBIA	12
DIVERSIFICATION FROM MAIZE.....	13
TRANSACTION COSTS	14
E. THE POLICY ENVIRONMENT & KEY CONSTRAINTS	14
KEY CONSTRAINTS	15
F. COMMERCIAL AGRICULTURE IN ZAMBIA	16
CROPS PRODUCED FOR EXPORT	16
COMMERCIAL FARMING	17
OUTGROWER SCHEMES.....	18
IMPACT OF DECLINE OF COPPER MINES.....	18
G. RECOMMENDATIONS FOR FURTHER ANALYSIS.....	19
REFERENCES	21
SELECTION OF WEB RESOURCES	24
ANNEX 1: STUDY TERMS OF REFERENCE	25
ANNEX 2: LAND USE, CLIMATE AND CROP CALENDAR	27
ANNEX 3: POPULATION DATA.....	29
ANNEX 4: AGRICULTURAL PRODUCTION	30
ANNEX 5: AGRICULTURAL GROWTH AND EXPORT DATA	34
ANNEX 6: POVERTY AND AGRICULTURE IN ZAMBIA	39
ANNEX 7: AGRICULTURAL POLICY FRAMEWORK	44

List of Figures and Tables

Main Report - Tables

Table 1	Rural Households by Agricultural Activity during the 1997/98 Crop Season	3
Table 2	Major Crop Trends 1990-2001	4
Table 3	Livestock Population Trends 1996-1999	5
Table 4	Gross Domestic Product by kind of Economic Activity	8
Table 5	Overall and extreme poverty in Zambia, in rural and urban areas, 1991-1998	11
Table 6	Characterization of Zambian Agriculture, 1999	12
Table 7	Investment commitments by sector, 1995-01 (US\$ million)	16

Main Report - Figures

Figure 1	Zambia political map	vi
Figure 2	Crop Production and Rainfall	2
Figure 3	Changes in Area and Production of Major Crops, 1990-2001	4
Figure 4	Value of Major Crops in Zambia, 2001	5
Figure 5	Contribution to Zambian GDP, 1990-2001	7
Figure 6	Main Agriculture Exports, 1995-1998	9

Annexes - Tables

Table I	Arable Land Use in Zambia, 1990-2000	27
Table II	Area, Population Size, Population Density by Province and Census Year	29
Table III	Crop Production Trends	30
Table IV	Zambia Production of Selected Crops, 1990-2001	31
Table VI	Crop-Growing Households, Area under Crop and Production	33
Table VII	Households Raising Livestock, Change in Number and Average Number Held	33
Table VIII	Main economic indicators, 1996-01	34
Table IX	Agricultural Production and Food Supply – SADC countries	35
Table X	Sectoral Growth Rates / average annual percentage change – SADC countries	36
Table XI	Composition of imports, 1996-00	37
Table XII	Composition of exports, 1996-01	37
Table XIII	Agricultural exports, 1995-98 (US\$ million)	37
Table XIV	Households Growing Vegetables for Sale, 1997/98	38
Table XV	Breakdown of poverty levels between rural and urban areas	39
Table XVI	Incidence of overall poverty and extreme poverty, 1996 – 1998	39
Table XVII	Contribution to Total Income By Livelihood Sector	40
Table XVIII	The Socio-Economic Impact of HIV/AIDS on Rural Households	43

Annexes - Figures

Figure I	Zambia Meteorological Profile	28
Figure II	Crop Calendar of Zambia	28
Figure III	Zambia map showing Provinces and population density	29
Figure IV	Main Crop Zones	30
Figure V	Area Under Major Crops, 2001	32
Figure VI	Production of Major Crops, 2001	32
Figure VII	Zambia: Agricultural Real Growth Rates, 1990 - 2000	35
Figure VIII	Proportionate Energy Production From Smallholder Food Crops by Crop Type	41
Figure IX	HIV Prevalence, Ages 15 to 49, By Province in 1998	42

Acronyms

CFS	Crop Forecast Survey
CSO	Central Statistics Office
FAO	Food and Agriculture Organisation of the United Nations
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
MAC	Ministry of Agriculture and Co-operatives
MAFF	Ministry of Agriculture, Fisheries and Food
MDC	Mpongwe Development Company
MOFED	Ministry of Finance and Economic Development
PHA	Post-harvest Survey
PRSP	Poverty Reduction Strategy Paper
SADC	Southern Africa Development Community
UNDP	United Nations Development Programme
WTO	World Trade Organisation
ZEGA	Zambia Export Growers' Association
ZNFU	Zambia National Farmers' Union

Executive Summary

- A. Social and economic data showing trends in the Zambian agriculture sector are occasionally inconsistent across the various major sources (FAO, World Bank and Government ministries). Almost all the latest data available are only from 2000, and a poor 2001 harvest can also distort potential longer-term growth indicators. Nonetheless, the broad cross-section of literature and data used does find useful trends and indicators that potentially impact agriculturally-based livelihoods.
- B. Although Zambia has a relatively high urban population within the region, approximately 45% of the total population (4.6 million people) are poor people in rural areas dependent on agriculture. The share of the population living below the poverty line increased from 70% in 1991 to 75%, with much higher rates in remoter rural areas. HIV/AIDS has also contributed to this situation, with a drastic impact on skilled labour supply, savings and investment, and ultimately potential growth.
- C. Increased unemployment (now at 50% in the formal sector), is coincident with the decline in mining. A trend of increasing numbers of households in the small-scale subsistence category is also noted, while the numbers of medium- and large-scale farmers have remained unchanged.
- D. Much literature emphasises Zambia's under-utilised resources that appear to offer the country many alternatives for diversifying the economy away from the mineral sector and increasing agricultural production. Growth in the small-scale agriculture sector would potentially impact poverty reduction and national economic growth, based on the strong linkages between agriculture and poor people's livelihoods in Zambia, provided that sufficient numbers of the rural poor are actually able to access the benefits of agricultural commercialisation.
- E. The sector's contribution to real GDP averaged 18% over the past decade, making up 39% of earnings from non-traditional exports, though this has fluctuated significantly mainly due to the dependence on seasonal (unreliable) rainfall. Net resource flows into agriculture have exceeded mining in the 1995-2001 period, with 232 projects worth US\$ 302 million from Zambian and foreign commitments (excluding official aid-related flows).
- F. Between 1990 and 2000, agricultural growth has been around 4.5%, increasing against the industrial sector as a proportion of total GDP. Average growth to 2004 is forecast at 3.2%. This is above the declining population growth rate, now around 2.3%. However, annual fluctuations in productivity vary dramatically (increasing or decreasing by as much as 30%) according to rainfall. Poor farmers dependent on rainfed crops are extremely vulnerable to these fluctuations.
- G. There would appear to be opportunities for small-scale farmers to diversify from maize into more marketable crops, and this is confirmed by a pattern of declining maize production. Trends also show increases in more profitable, drought resistant food crops such as sorghum, cassava, millet and tubers that use less chemical fertilisers. Increases in area and production of cassava, groundnuts and millet have been particularly strong (20-50%) in the last decade. However, over 70% of households still grow maize as the major staple crop. Increasing use of fertiliser does show improved productivity for smallholders, but usage is still less than 15% nationally, with increasing prices making it difficult to afford on a commercial basis.

- H. Poultry and pigs are noted as potentially profitable for poorer producers if the cost of feeds and occurrence of diseases make it viable. Significant cattle losses have been experienced in recent years due to livestock disease, which has been attributed to declining rural services. Small-scale dairying has also shown recent growth, with the milk produced sold raw via local markets.
- I. The most outstanding trends in terms of production and potential economic growth come from the commercial sector. Increases in the yields and production of sugar cane have been exponential, with wheat and cotton showing similar patterns. In terms of export production, growth in horticulture and floriculture production are especially exciting. However, most high potential crops for market are only viable prospects for the rural poor if they are able to join out-grower schemes or otherwise access the necessary markets and services.
- J. Increasing poor farmers' access to irrigated land could mitigate the effects of unreliable rainfall experienced in the recent past, and enable access to production of higher value crops and marketing channels. The country has great irrigation potential, and where technical and management expertise can be extended to smallholder farmers through out-grower and other schemes, this would provide significant opportunities in these prime areas.
- K. Despite the trends and consensus regarding changes and potential opportunities for agriculture in Zambia, the multiple constraints facing poor people mean that access to improved opportunities through higher value agricultural production is often limited or non-existent. Significantly, the highest proportions of the rural poor are based in Provinces away from the line of rail, where higher transaction costs and poor infrastructure can greatly restrict access to (and development of) services and market opportunities.

Figure 1: Zambia political map, from Perry-Castañeda Library Map Collection, University of Texas. www.lib.utexas.edu/maps/africa.html



Zambia

Trends in the Zambian Agriculture Sector, 1990-2002

the IDL group
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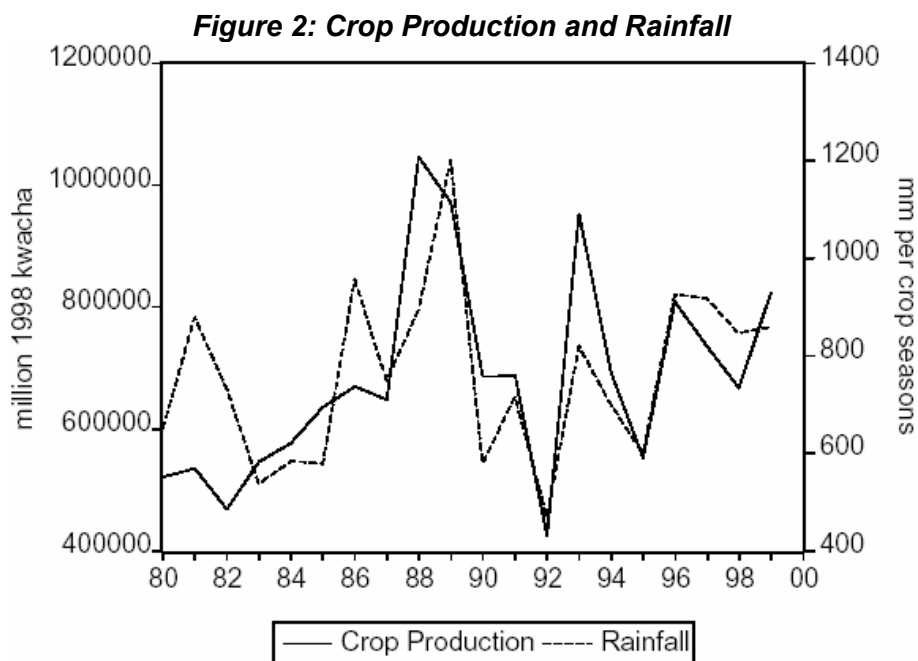
A. Introduction

1. This study (DCP/ZAM/020/2002) aims to provide DFID Zambia with basic data to inform the drafting of the agricultural component of its Country Assistance Plan, following the scoping studies carried out in September and October 2002 (Arthy et al, 2002). All work was carried out as a UK-based desk study between November 14 and December 14, 2002. It has been requested alongside a study on the political economy of agricultural policy-making, which will identify key drivers for change in Zambian agriculture (Farrington and Saasa, forthcoming). See Annex 1 for the study ToR.
2. The purpose of analysing these data is to help quantify the likely development impact of potential DFID engagement in the agricultural sector. With the decline of the mining sector, growth and enhanced productivity of agriculture has been highlighted in the country's PRSP as a priority to revive Zambia's economy (MOFED, 2002). DFID has not engaged in the agricultural sector for some years and as an 'engine of income expansion for the poor' it is clear that a thorough economic understanding of the sector is required – in terms of production, cost, scale, trends and overall competitiveness.
3. An attempt has also been made to identify the key poverty/livelihood linkages in Zambian agriculture. Some data are presented indicating the distribution of poverty according to area and farm type, impact of HIV/AIDS and the key constraints faced by poor people participating in markets. The presentation of data on crop production trends and the commercial sector also has a poverty focus.
4. The scoping studies have asserted that including the poor in agricultural growth is largely a function of public policy. There remain some information gaps in this short study which would ideally inform DFID's contribution to this area, particularly with regards to engaging with the private sector. A number of references are given for accessing further information, with recommendations for specific potential study areas.

Zambian Agriculture – Land Use and Climate

5. There is consensus throughout the literature (MOFED, DFID, WTO, FAO, World Bank, MAFF, etc.) that Zambia's large potential in agriculture remains unexploited. Out of a total of 7.5 million hectares of land, 4.2 million hectares (58%) are classified as medium to high potential for agricultural production. 12% is suitable for arable production, with only an estimated 14% currently cultivated (MAFF, 2001). Table I in Annex 2 shows the pattern of land use for arable crop production, 1990-2000.

6. The Zambian climate is favourable for agricultural production, with abundant arable land receiving 650mm in the southern part of the country and 1800mm in the North each year (MAFF, 2001). Ground water resources are also abundant in the Congo/Zaire and Zambezi river basins. The combined irrigation potential for these areas in Zambia is 523,000 ha, of which only 46,400 (9%) is being used, mostly by commercial farmers cultivating sugar, wheat and plantation crops (Mbumwae and Riddell, 2002). It has been estimated that only 65,000 hectares (13%) of a potential 500,000 has been developed for irrigation. The majority of agricultural production remains rain-fed and figure 2 below shows the variability of production according to variations in rainfall.



Source: CFS data (CSO/MAFF), AMIC for price data (MAFF), Meteorological Department for rainfall data (from Zulu et al, 2000).

7. There is a strong correlation between agricultural production (solid line) and rainfall patterns (broken line). A country-wide drought in 1992, a partial drought in 1995 and the El Niño phenomenon in 1998 have clearly contributed to the observed drops in productivity. (Mean meteorological and corresponding crop calendar charts are provided in Annex 2.)
8. Small-scale farmers account for a large share of the maize crop (more than 60% of Zambia's cultivated area), but they generally lack irrigation capability, so this production is largely rain-fed. This makes the country extremely vulnerable to swings in rainfall, such as the heavy rainfall in 2001 and drought during 2002. In 2002, as a result of the serious food shortage, the Government is planning to encourage large-scale farmers to produce maize under irrigation in order to increase local production (WTO, 2002).

Population Distribution and Agriculture

9. Figure 1 shows the country's political map. The "line of rail" provinces of Copperbelt, Central, Lusaka and Southern, are frequently noted as having comparative advantages in terms of agricultural development, and this is where almost all commercial agricultural activity takes place. Many farmers in this area have relatively good access to urban markets, and particular advantages in maize production. They form part of the wider regional maize belt that stretches south through Zimbabwe and into the northern parts of South Africa.

10. The higher rainfall areas in the north of Zambia are excluded from the advantages of the line of rail Provinces, and Copestake (1997) has commented that in the past issues such as soil acidity and leaching, and the evolution of *chitemene* (slash-and-burn) agriculture have been neglected. The semi-arid valleys and Western Zambia have also historically been largely neglected.
11. Annex 4 shows the country's population distribution by province. The UNDP (2002) calculates the population from 2000 at 10.4 million, and a total projection of 14.8 million by 2015. With 60.4% living in rural areas, the high potential labour resource for agriculture is clear. Overall population density is 13 persons per sq km (34 per sq mi), although much of the northeast and west is sparsely inhabited.

B. Agricultural Production

12. The country has three agro-ecological zones, suitable for the production of a wide range of crops, livestock and fish (MAFF, 2001). Table 1 below summarises numbers and percentage of small and medium-sized agricultural households engaged in agricultural activity by province. Only Lusaka Province has less than 95% of rural households engaged in agriculture. Crop growing is the major activity, with poultry rearing also a dominant activity in all Provinces. Livestock rearing appears less universal, but is still a significant activity for households in the Southern and Eastern provinces.

Table 1: Rural Households by Agricultural Activity during the 1997/98 Crop Season

Geographic area	Total h/holds	% agric h/holds	% Agricultural H/Holds Engaged in:			
			Crops	Livestock	Poultry	Fish farming
Zambia	921,061	97.4	97.8	29.3	67.1	0.3
Central	87,379	95.8	95.9	27.4	70.3	0.0
Copperbelt	39,691	97.3	100.0	14.7	51.7	0.1
Eastern	195,191	99.4	99.3	43.7	62.8	0.1
Luapula	127,701	97.3	95.6	12.9	73.6	0.6
Lusaka	22,579	73.3	97.4	26.5	55.9	-
Northern	168,966	98.4	97.0	25.4	73.6	10.3
North-western	56,930	99.1	99.0	14.2	56.3	0.3
Southern	115,893	98.1	96.7	49.6	80.9	-
Western	106,731	97.0	99.1	21.9	53.1	-

Source: Central Statistical Office (2000)

Crop Production

13. The map in Annex 4 shows the distribution of main crops across the country. Table III in Annex 4 also breaks down the cultivated area and production by crop type from 1996-1999. Main crops produced in Zambia are maize, wheat, sorghum, cassava, rice, millet, groundnuts, soybeans, mixed beans, peanuts, sunflower seed, vegetables, coffee, flowers, tobacco, cotton and sugarcane. The map shows the predominance of maize in the South-eastern half of the country, with the North-west dominated by cassava. The area of wheat production is along the 'line of rail' where larger commercial farmers operate.

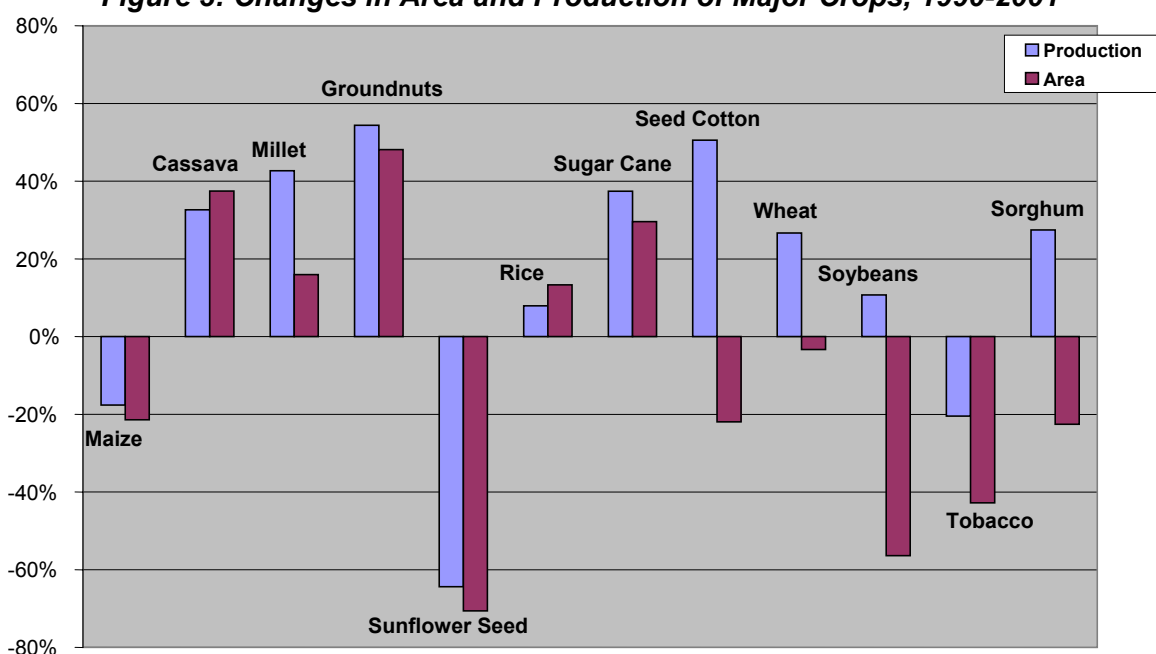
14. There has been a fall in the proportion of maize grown in recent years, due to lower relative profitability, droughts and floods, inadequate or late access to inputs and credits, and low prices and unstable markets for maize. Crops such as millet, sorghum, soya beans, sunflowers, and cassava are more drought-resistant than maize, and provide a wider food base for rural households. Infrastructure remains an important constraint to more intensive use of land for food crops planted, including beans, rice and wheat.
15. Tables IV and V in Annex 4 show FAO data from 1990 to 2001 for crop production and area. The data confirms strong recent patterns including a 21% decline in maize area (163,277 hectares) between 1990 and 2001, although maize is still by far the dominant crop by area. Area and production of the major crops, including changes since 1990, are shown in Table 2 and Figure 3 below. The main visible trends are large increases in area and production of sugar cane, groundnuts, millet and cassava, with decreases in output and area of maize, sunflower and tobacco. Crops such as soybean, seed cotton and sorghum show significant disparities of declining area and increased production. This implies large improvements in yield due to improved technology and inputs, especially irrigation:

Table 2: Major Crop Trends 1990-2001

	Production, 2001 ('000 tonnes)	% Change 1990-2001	Area, 2001 ('000 hectares)	% Change 1990-2001	Price, 1995 (Kwacha)
Maize	900	-18%	600	-21%	9,300
Cassava	950	33%	165	37%	9,100
Millet	55	43%	70	16%	13,200
Groundnuts in Shell	55	54%	135	48%	22,900
Sunflower Seed	7.1	-64%	13	-71%	29,900
Rice, Paddy	10	8%	11	13%	14,800
Sugar Cane	1800	37%	17	30%	900
Seed Cotton	62	51%	50	-22%	26,300
Wheat	75	27%	12.1	-3%	14,500
Soybeans	30	11%	13	-56%	17,400
Tobacco	3.5	-20%	2.9	-43%	106,000
Sorghum	27	27%	37.5	-23%	12,800

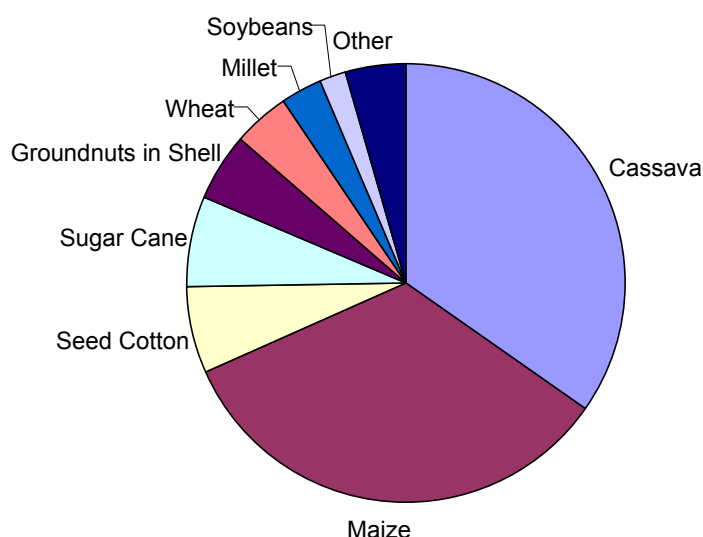
Source: FAOSTAT Databases From: apps.fao.org/default.htm

Figure 3: Changes in Area and Production of Major Crops, 1990-2001



16. Figures V and VI in Annex IV show the proportional share of production and area for the major crops in 2001. Despite the recent decline in production, the area under maize is still over 50% of the country's cropland. The large values for sugar production are misleading, because of the relative prices of crops by volume. By correlating with price information, Figure 4 below shows that cassava and maize are by far the most important crops in Zambia, in terms of value of production. [1995 local currency prices were the latest available through FAO]

Figure 4: Value of Major Crops in Zambia, 2001



17. Table VI in Annex 4 shows the area and production that the small and medium scale sub-sectors have under crop production. According to available CSO (2000) data, 70.3% of households grow maize, 38.8% groundnuts, 40.1% cassava and 18.5% millet.

[See Zulu et al (2000) for a comprehensive breakdown and analysis of crop production trends at the Provincial level.]

Livestock Production

18. Main livestock species are cattle, goats, pigs, sheep and poultry. Most small-scale farmers are involved in the production of livestock at varying levels. Cattle is the major livestock product, although between 1996 and 1997, the total cattle population decreased from 5.5 million to 2.7 million animals (see Table 3 below). It has been said that this does correlate with declining rural services. Losses were attributable mainly to poorer small-holders suffering frequent outbreaks of infectious diseases. The livelihood impact of this loss is considerable, impacting the net worth of families and their ability to cultivate, as well as restricting access to external lucrative markets (MAFF, 2001).

Table 3: Livestock Population Trends 1996-1999

	Number (000)			
	1996	1997	1998	1999
Cattle	5446	2700	1746	3625
Sheep	152	84	67	72
Goats	1613	722	891	954
Pigs	629	318	311	343

Source: MAFF (2001), using Agricultural Statistical Bulletin 1999/2000

19. Table VII in Annex 4 shows the average number of animals held by small and medium-scale producers, and how numbers changed over the 1998 harvest period. It shows that goats are the most widely-held livestock (kept by 59.6% of households), compared to 44% who keep cattle and 35.5% who keep pigs. Despite the dominance of cattle in the figures above, it would appear that goats are more important to poorer producers throughout the country.
20. Unlike the relatively stagnant cattle numbers of preceding decades, estimates show that there has been an increase in the production of sheep and goats. Production of commercial poultry has increased almost three-fold while that of traditional poultry has increased by 50 percent between 1995 and 2000 (Hantuba, 2001). Production of day-old chicks has doubled from 12 million in 1995 to 25 million in 2000, and production of eggs is estimated to have increased from 265 million in 1995 to 470 million in 2000.¹
21. Milk production from the commercial and smaller-scale farmers increased from an estimated 109.5 million litres in 1995 to 136.3 million litres in 2000. Whereas commercial milk is usually pasteurised and packaged, milk produced in the traditional sector is marketed raw via local markets (Hantuba, 2001).²
22. Fresh water fish production in Zambia is concentrated in the northern, western and southern parts of the country and along major rivers and lakes. The contribution of fish farming (aquaculture) is still insignificant. Total annual fish production increased from 54,000 tonnes in 1983 to 70,000 tonnes in 1994 and 1995. Since then estimated production has been declining (Hantuba, 2001).

C. Agricultural Growth and Performance

Contribution of agriculture to GDP

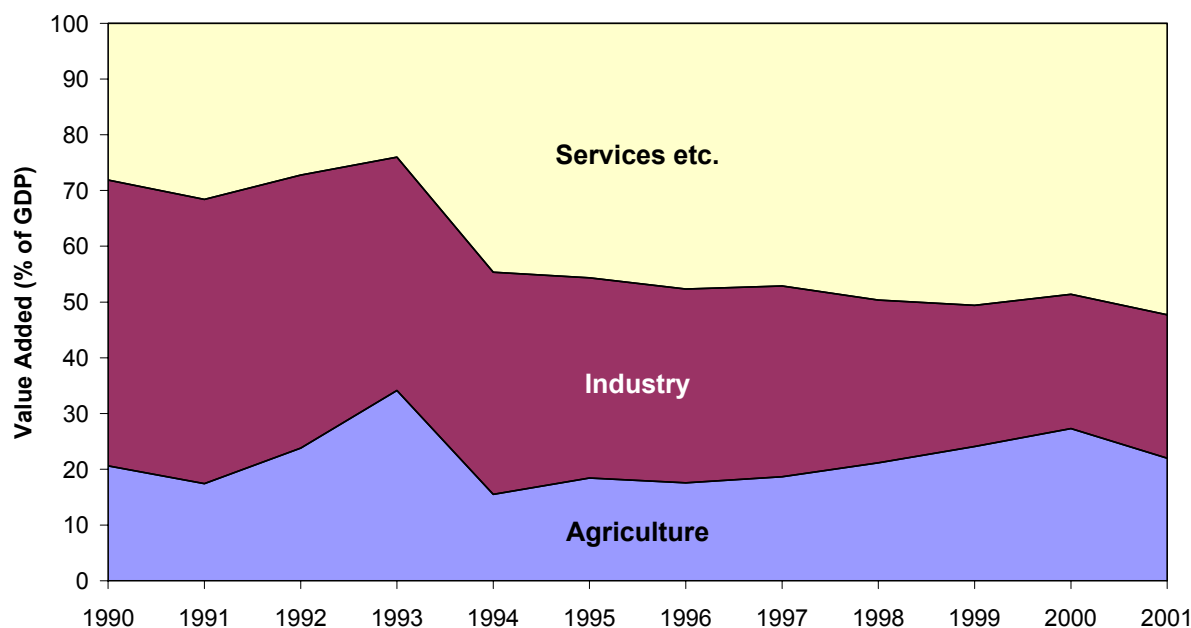
23. The sector's contribution to real GDP averaged 18% over the past decade (PRSP) and 39% of earnings of non-traditional exports, though this has fluctuated significantly mainly due to the dependence on seasonal (unreliable) rainfall. Marketed crop production in Zambia in the 25-year post-independence period increased at an average annual rate of 2.5 per cent, considerably below the population growth rate of 3.7 per cent (Jansen and Rukovo, 1992). Between 1990 and 2000, agricultural growth has been much more positive at around 4.5%, exceeding average population growth of 2.6% (World Bank, 2002). Fluctuations in agricultural growth rate are shown in Figure VII of Annex 5, showing a correlation with the fluctuations in rainfall, as above in Figure 2.
24. A major trend is that the number of households in the small-scale category has been increasing, while the numbers of medium- and large-scale farmers have remained unchanged. Increased unemployment (now at 50%) has led people into agriculture as small-scale farmers (World Factbook, 2002).
25. Values and growth rates of agriculture compared to other sectors in the economy are shown in Table VIII of Annex V. Figure 5 below shows the share of agriculture within national GDP.

¹ Major producers of day-old chicks include Hybrid Poultry Farms, Ross Breeders, and Nulaid. Yielding Tree are producers of point-of-lay pullets (Hantuba, 2001).

² Dairy products are processed in major urban markets such as Livingstone (Finta Dairies), Lusaka (Parmalat, Galaunia) and the Copperbelt (Parmalat and Cedrics). The major beef producers include Zambeef, Keembe Meat Corporation, Realmeat and Galaunia Holdings.

Figure 5: Contribution to Zambian GDP, 1990-2001

Zambian Economy - Contribution to GDP



N.B. There is some inconsistency in World Bank data: the figures for 2000 for agriculture, industry and services are published online as 22.3, 25.3 and 52.4%, as opposed to figures above from the World Development Indicators (2002) report 27.3, 24.1 and 48.6%.

Source: World Bank (2002)

26. Tables IX and X in Annex 5 shows the growth rates of Zambia’s agriculture sector compared to other mainland SADC countries. The figures show overall growth for agriculture in the period 1990-2000 has been 4.5%, behind Malawi, Namibia and Zimbabwe for that period.

Box 1: The Current Crisis and Economic Growth

In the near-term lies the threat of famine, along with all its attendant humanitarian implications. According to the UN Food and Agriculture Organization (FAO) and the World Food Programme (WFP), crop assessments in six Southern African countries, including Zambia, point to the region facing its worst food crisis since the 1992 drought: provisional figures suggesting that as many as 2.3 million people, i.e. 21% of Zambia’s population, will be in need of food relief through March 2003. According to UNICEF, 59% of Zambian children under five were already malnourished in 2000. Projected increases in food prices, the main component (over 50%) of Zambia’s consumer price index, and the cost of relief measures are expected to place a heavy burden on public finances.

Source: WTO, 2002

Future Forecasts

27. Table 4 below shows the projected growth of agriculture against other sectors in the Zambian economy, assuming the continuation of current trends. Improvements are envisaged after the poor returns of 2001, and the sector will continue to exceed population growth rates.

**Table 4: Gross Domestic Product by kind of Economic Activity
(in percent of previous year's value)**

Kind of Economic Activity	1999	2000	2001	2002 Proj.	2003 Proj.	2004 Proj.	Ave. Proj.
Agriculture, Forestry and Fishing	10.1	1.6	-2.6	2.0	3.5	4.0	3.2
Mining and Quarrying	-24.8	0.1	14.0	3.0	3.0	2.5	2.8
Metal Mining	-25.3	-0.3	15.0	3.5	3.0	3.0	3.2
Other mining and quarrying	-2.2	15.6	-15.0	8.0	6.5	5.0	6.5
Manufacturing	2.8	3.5	5.8	5.0	4.0	4.0	4.3
Electricity, Gas and Water	2.6	1.1	12.6	6.5	4.0	4.0	4.8
Construction	3.2	6.6	11.5	7.5	4.0	4.5	5.3
Wholesale and Retail trade	4.4	2.3	6.0	4.0	4.0	5.0	4.3
Restaurants, Bars and Hotels	-6.1	12.1	24.3	10.0	10.0	6.0	8.7
Transport, Storage and communications	5.8	2.3	2.9	3.0	4.0	5.0	4.0
Financial intermediaries and insurance	2.5	-0.6	0.1	2.0	4.0	3.0	3.0
Real estate and business services	13.7	16.9	3.5	7.0	4.0	3.0	4.7
Community, Social and personal services	8.4	-0.5	5.8	2.3	2.0	1.5	1.9
Less: FISIM	2.6	2.5	2.5	2.5	2.5	2.5	2.5
Total Gross Value Added	3.1	3.4	4.9	4.2	3.9	5.5	4.5
Taxes on Products	-4.5	5.2	7.0	5.0	5.0	5.0	5.0
Total GDP (at market prices)	2.23	3.6	5.2	4.3	4.0	4.0	4.1
Real GDP per capita (1994 prices) (in Kwacha)	1.2	2.6	2.2	1.4	1.1	1.1	1.2
Consumer price inflation (annual average)	26.8	25.9	21.7	16.4	10.9	6.3	11.2
Terms of trade (annual percent change)	-5.7	2.1	-3.8	-1.8	6.4	3.6	1.0
GDP deflator (expressed as a factor change)	1.3	1.28	1.30	1.22	1.15	1.11	1.2
Nominal GDP (in Kwacha billion)	7480	10075	13079	15987	18439	20386	18271

Source: Central Statistical Office and MoFED (from MOFED, 2002).

Imports

28. Agricultural food imports consist mainly of feedstuffs such as wheat and wheat flour, rice and in years of poor yields, maize and maize meal (cereals make up 70% of the country's calorie intake). Food supply in recent years has been erratic, leading to food deficits. To meet these deficits, food imports comprising mainly maize, wheat and rice are acquired in the form of food aid and commercial packages. Cereal import requirements for 2002 are estimated at 626,000 tonnes, with 225,000 tonnes coming from donors. Emergency supplies of seed are also needed (Edmunds, 2002).

29. Table XI in Annex 5 shows the composition of imports, 1996-2000. Agro-chemicals, including fertilisers, machinery and implements account for the bulk of agricultural imports by value (Hantuba, 2001), and the fluctuations in fertiliser from 0.2% of total value to 13% shows how much policy changes can impact economic activity.

Exports

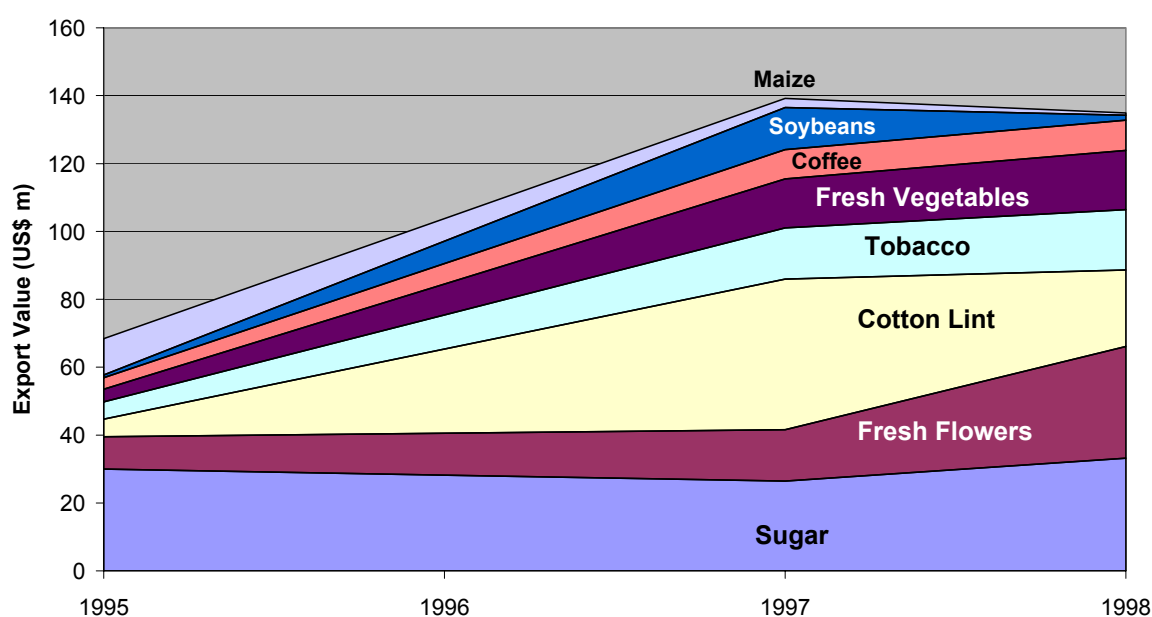
30. The contribution of the agriculture sector towards the balance of payments has been low. However, there has been a significant increase in the variety and value of agricultural exports, and (although relatively modest) the overall growth in the sector shown above has largely resulted from agricultural exports. The WTO (2002) remarks that Zambia's efforts to diversify from metal exports into non-traditional exports (agricultural, and agri-processing exports in particular) should translate into improved

longer-term economic prospects. Table XII in Annex 5 shows Zambia's main agricultural exports.

31. The largest exports and highest contribution are in primary agricultural products (maize, sugar, tobacco and cotton) and floricultural and horticultural products. Other important exports include coffee (Arabica), fuzzy cotton seed, paprika, and soybeans. In some years, maize, marigold meal, groundnuts, and seeds have brought important export values, but the performance of these products seems to be erratic (WTO, 2002). Between 1995 and 2001 total non-traditional agricultural exports increased from US\$43 million to US\$122.1 million. As a result, the contribution of the agricultural sector to non-traditional exports increased from 23% in 1990 to 39% in 2001 (MOFED, 2002).
32. MAFF (2001) notes that the government has put in place incentives such as an appropriate exchange rate regime, financing facilities, duty exemptions and lower duty rates to stimulate production for export markets. The variety of agricultural exports has consequently increased, as has their increase in value (see table XIII in Annex 5). Figure 6 below shows the export value of major agricultural products – horticulture and floriculture products have shown continued strong growth.

Figure 6: Main Agriculture Exports, 1995-1998

Non-traditional Agricultural Exports by Product (US\$ millions)



Source: Agricultural Statistics 1999/2000, from MAFF (2001) [N.B. no data for 1996]

33. The PRSP highlights a number of products where Zambia has a comparative and competitive advantage, including: coffee, cotton, groundnuts, flowers and paprika. Data in these tables show how non-traditional (i.e. non metal) exports have increased as a proportion of the country's total merchandise export. Most notable is the healthy increase in horticultural, floricultural and primary agricultural products (mainly cotton, tobacco and sugar). Horticultural exports have grown from US\$ 4m to US\$ 60m in the last 10 years.
34. Export crops are mainly grown by emergent, large- and medium-scale farmers, who are also maize producers and use modern methods. Some commercial farmers are involved in fishing activities; however this remains mainly in the hands of artisanal fishermen.
35. About 2,700 hectares of land are under cultivation with export flowers and vegetables, which the PRSP has cited as offering greatest opportunities to small-

holders. Productivity is increasing – in 1998, 8,000 tonnes were exported and by 2001 production was 10,000 tonnes, worth \$68.5m (£44.5m) to the economy. Table XIV in Annex 5 shows the breakdown of horticultural products by small and medium-scale farmers. Cabbage, rape and tomatoes are the most widely grown horticultural crop, representing 85% of vegetables grown for sale in 1998 (CSO, 2000).

Inputs

[The most recent survey data from the CSO (unavailable), including Agricultural and Pastoral Production Survey (APPS), will provide the most up-to-date information on household investments, input costs, constraints to accessing market information, extension advice by type and source etc.]

36. Fertiliser and seed are the major inputs in Zambian agriculture, with a fundamental impact on food production. Fertiliser consumption consists mainly of basal (D, X, and C compounds) and top dressing (Urea and Ammonium Nitrate) fertilisers. Prices have generally risen in line with the exchange rate over the last 10 years, with consumption increasing from 20,181 tonnes in 1997/8 to 35,128 in 1999/00 (Govereh et al, 2000). Most of the fertiliser is imported while local production consists of a small portion of total consumption. Donated fertiliser is a significant proportion of the total supply and in some years exceeds commercial imports. Distribution of fertilisers is mainly through the sector with key suppliers such as Omnia and through the Food Reserve Agency (FRA).
37. Results of Post Harvest Survey data collected by CSO in the last three years show that fertilizer used by smallholder farmers has been increasing each year during the three year period 1997/98 to 1999/00. In 1997/98, only 13% of small and medium-scale farmers used fertilizer. This proportion rose to 16% in 1998/99 and 22% in 1999/00. In volume terms, smallholder farmers used 20 000 tonnes in 1997/98, the volume rose to 26 000 tonnes in 1998/99 and rose again to 35 000 tonnes in 1999/00. During the same period maize output by these farmers increased as well (MoAC, 2002).
38. Several private sector suppliers market seed. While the bulk of the seed is locally produced, a substantial amount is imported from within the region and from beyond. Agro-chemicals are supplied mainly by the private sector. Household data from the Post Harvest Survey for 1998 (CSO, 2000) show that 77% of rural households reported using seed/seedlings from own retentions. Southern province and Lusaka Province were the only provinces where less than 70% of households retain seed.

Box 2: Agricultural Credit and Investment

Since the government's removal of support to traditional agricultural credit parastatals and cooperatives in the early 1990's, availability of agricultural credit from financial institutions has improved considerably. However, poorer farmers have limited chances of obtaining loans from financial institutions. This is mainly due to the high risks and transaction costs associated with lending to small-scale farmers. A vicious circle of high interest rates and limited financial resources for agricultural credit makes it difficult for most small scale farmers to procure inputs in a timely fashion. Thus they depend on government supported input credit, donor funded projects and micro-credit from NGOs. Out-grower schemes targeting specific crops provide limited amounts of credit.

The government through the Zambia Investment Centre has continued to promote both local and foreign direct investments in all sectors of the economy by providing various incentives under the Investment Act as well as through fiscal measures. Available figures on investment pledges in US dollars indicate that the sector is among the top recipients of investment pledges. Pledges declined, however, from US \$30 million in 1999 to US \$26.4 in 2001. But the relative share in total investment pledges has increased from 19 to 24 percent in 1999 and 2001 respectively.

Source: Hantuba (2002)

D. Poverty and Agriculture

Rural Poverty in Zambia

39. Zambia's GDP per capita was US\$ 302 in 2000 but the share of its population living below the poverty line increased from 70% in 1991 to 75% in recent years (MOFED, 2002).³ Severe health problems including malaria and HIV/AIDS have contributed to this situation. Data from 1997/8 cite 921,061 households in rural areas of the country, with female-headed households making up 23% of this number (CSO, 2000). It is widely known that female-headed households suffer a considerably higher likelihood of living in poverty. Western Province has the highest proportion of female headed households at 29%, with Lusaka Province the lowest at 18.2%.
40. Table 5 below shows the percentage of the Zambian population living in poverty from 1991-98. Poverty datum lines are determined by the CSO at K32,861 and K47,188 for moderate and extreme poverty respectively. It shows that poverty is more prevalent in rural areas, where most livelihoods are agriculture-based. The notable decline in rural poverty has been attributed in part to a shift towards cash crops (PRSP, p.50).

Table 5: Overall and extreme poverty in Zambia, in rural and urban areas, 1991-1998 (Percentage population)

Year	Zambia		Rural Poverty		Urban Poverty	
	Overall	Extreme	Overall	Extreme	Overall	Extreme
1991	69.7	58.2	88	80.6	48.6	32.3
1993	73.8	60.6	92.2	83.5	44.9	24.4
1996	69.2	53.2	82.2	68.4	46	27.3
1998	72.9	57.9	83.1	70.9	56	36.2

Source: CSO: Living Conditions in Zambia 1998; The Evolution of Poverty in Zambia 1990-1996. from PRSP

41. World Bank data (2002) for 2000 estimates that 56% of the population live in rural areas. With an estimated 97.4% of the rural population engaged in agriculture (CSO, 2000), and 83% in poverty, this equates to 45% of the total population – **approximately 4.6 million poor people dependent on agriculture.**
42. Surveys used in the PRSP (Living Conditions Monitoring Surveys, 1996 and 1998) show that poverty levels have generally increased throughout the decade.⁴ Table XV in Annex 6 shows the breakdown of poverty levels between rural and urban areas, and the nine provinces. Provinces outside the country's main line of rail have a higher concentration of poverty; although lower population density means that they often have lower proportion of Zambia's poor. The more remote Eastern, Luapula, Northern and Western provinces show the most extreme poverty rates. It is notable that the poorer performing crops are those produced mainly by small-scale farmers in these areas (see Annex 3).
43. Table XVI in Annex 6 shows the categories of population suffering poverty. Small-scale farmers remain one of the poorest groups in Zambia, with little change in their condition. Causes of poverty in Southern, Western and central provinces have been attributed to cattle disease, where small-scale farming has been hit hardest. Rural 'low

³ Data cited by the African Development Bank (2002) from 1998 notes that 63.7% of the population live on less than US \$1 per day and 91.7% less than US\$ 2 per day.

⁴ The Central Statistical Office (CSO) determines the poverty line as the amount of monthly income required to purchase basic food to meet the minimum caloric requirement of a family of six. Extreme poverty is fixed at K32,861 and moderate poverty at K47,188, per adult equivalent unit per month

cost' areas away from the line of rail also suffer poorer access to health services, safe water, quality education and infrastructure. Remoteness from urban areas can also explain the lack of credit and access to inputs characteristic of the small-scale sub sector (ZNFU, from CopperNET).

People dependant on agriculture

44. As previously stated, CSO (2000) data from 1998 estimates that 97.4 % of rural households are engaged in agriculture, and this equates to 45% of the total population – approximately 4.6 million poor people dependent on agriculture. Table 6 below illustrates the three broad categories of farmers in Zambia – small-scale (or subsistence farmers), medium and large-scale farmers. Out of the estimated 600,000 farmers, 76 percent are small-scale subsistence farmers. It is also estimated that a quarter to a third of these farming families live within 10km of the line of rail.

Table 6: Characterization of Zambian Agriculture, 1999

Characteristics	Small scale	Emergent	Medium scale	Large scale
Number of farmers	459,000	119,200	25,230	>40
Area per holding (hectares)	0.5-9.0	10-20	20-60	>60
Crops grown	Food crops	Food/Cash crops	Food/Cash crops	Cash crops
Production focus	Subsistence	Commercial/ Subsistence	Commercial/ Subsistence	Commercial

Source: MoAC: Agriculture Bulletin 2000. From MOFED (2002).

45. The commercial farmers' (medium and large scale) focus is on cash crops with farm sizes above 20 ha. Only an estimated 740 commercial farmers (less than one percent) have farm holdings in excess of 60 ha. Hantuba (2001) also notes the trend that the number of households in the small-scale category has been increasing while numbers of the medium and large-scale farmers have remained more or less the same.
46. Within the labour force of 3.4 million, 85% are employed in agriculture, 6% in industry and 9% in services. Agriculture serves as the main source of income for the rural population and especially women, who constitute a higher proportion of the rural population and agricultural labour force. With the unemployment rate around 50% (2000 estimates, World Factbook, 2002), agriculture is often the only potential source of livelihood or income within the informal sector.
47. Table XVII shows a detailed breakdown of total income source by livelihood sector at the district level. Cash crops are clearly very significant in some districts, but the importance of cereal production remains the main activity for most producers.

Impact of HIV/AIDS on Zambia

48. Zambia has suffered the devastating spread of the HIV/AIDS pandemic, which has already reduced life expectancy, sharply - from 54 years two decades ago to 38 years today. Currently 20% of the population between the ages 15-49 is thought to be infected with HIV, and 54% if these are women (UNAIDS, 2002). Figure IX in Annex 6 shows HIV prevalence by Province. As a result, health facilities in Zambia are seriously challenged and high absenteeism, steeper health care, pension and funeral costs, and loss of productive workers are a challenge to business prospects. Some hopeful signs have emerged, with HIV prevalence among Zambians in their late teens appearing to drop: in the capital, Lusaka, prevalence fell from 28% in 1994 to 15% in 1999, among 15-19 year olds. The impact of the disease on skilled labour supply, savings and investment, and

financial intermediation is expected to have a significant effect on potential growth over the medium term (WTO, 2002).

49. Population growth rate has slowed from 2.5% in 1997, to 2.1% in 2000 and 1.9% in 2001 (World Bank, 2002). This has been attributed to excess mortality due to AIDS, resulting in lower life expectancy, higher infant mortality and death rates, lower population and growth rates, and a different population distribution by age and sex than would otherwise be the expected (July 2002 est., World Factbook 2002).
50. The problem of HIV/AIDS is becoming a major constraint to the agriculture sector. The disease has a profound impact on agricultural production in that it debilitates productive labour. Table XVIII details the impact that HIV/AIDS has on rural households, in terms of farming organisation, productivity and individual welfare. The Government is trying to address this problem through preventative efforts and other approaches, including the promotion of animal draught power and conservation farming.

Box 3: Economic Impact of AIDS on Agriculture

The loss of a few workers at the crucial periods of planting and harvesting can significantly reduce the size of the harvest. In countries where food security has been a continuous issue because of drought, any declines in household production can have serious consequences. Additionally, a loss of agricultural labour is likely to cause farmers to switch to less-labour-intensive crops. In many cases this may mean switching from export crops to food crops. Thus, AIDS could affect the production of cash crops as well as food crops.

In a study of 29 agricultural organizations, significant effects of HIV/AIDS were found, including increased absenteeism; an increase in the number of deaths, especially in the management categories; and increased expenditures for both medical costs and terminal benefits.

The reliance on female labour for crucial agricultural tasks such as planting, weeding, and fertilizing crops will result in a fall in agricultural production once the women need to spend more time caring for AIDS patients. The combined effect of drought and AIDS made it difficult for farms to recover from the 1992 drought.

Little evidence of the impact of HIV/AIDS on agricultural production was found by the FAO in 1993. The authors hypothesize that this is due to the fact that the agricultural systems that are most vulnerable to labour supply interruptions are, in Zambia, the systems with the lowest HIV prevalence. In Zambia, the men are responsible for managing the household and marketing agricultural produce; thus their loss affects the cash resources of the household. The major impact of HIV/AIDS on the commercial estate sector in this study was its negative effect on the supply of skilled and educated members of the work force; little effect on production had been felt.

Source: Bollinger L and Stover J (1999)

Diversification from maize

[See Tables XIII and XIV in Annex 5 for alternative horticultural crops]

51. The PRSP notes that diversification within the agricultural sector has accelerated due to the increasing number of outgrower schemes in the country. Zulu et al (2000) also note this is a response to the decline in heavy subsidies on maize production and marketing in the 1990s. The preceding crop data illustrate the clear pattern of declining maize production, with other products increasing in output and area under cultivation. The data confirm strong recent patterns including a 21% decline in maize area (163,277 hectares) between 1990 and 2001.
52. Maize is still the major staple food for most Zambians; small and medium scale farmers still account for 70% of the maize consumed in Zambia (MAFF, 2001). Figure

VIII in Annex 6 illustrates how the energy production from maize grown by smallholders has declined significantly since the early 1990s. Nonetheless, in 1999/2000 small and medium-scale farmers planted 960,000 hectares, of which maize accounted 58.5%, cassava 13.6%, and millet 17.9%.

53. The production of export-oriented crops is dominated by commercial farmers, although small-scale farmers also are periodic exporters of "low-investment" crops, such as groundnuts and tobacco. The realistic potential for poor people to diversify out of maize must be put in context with the discussion above – in terms of access to the necessary marketing and service infrastructure, appropriate soil and ecological conditions and the potential for irrigation. For example, Zambia's largest horticultural exporter Agriflora is only able to take on outgrowers within a 50km radius of its Lusaka operations.

Transaction costs

54. As a land-locked country, Zambia does have inherently high transaction costs. Low population density away from the 'line of rail' means that infrastructural development is less likely to be economically viable; this is where high concentrations of poor farmers operate. Bad roads, long distance to markets, lack of inputs and the collapse of channels for providing credit all impact poor people operating in these areas.
55. Transaction costs in fertilizer marketing are particularly high and especially sensitive to transportation costs. The small number of firms participating in the import and wholesale stages of distribution also limit price competition; double handling/ reshipment and high fuel taxes further increase the farm gate price of fertilizer to smallholders (MoAC,2002).
56. Fuel pump prices show high costs in Zambia relative to other neighbouring SADC countries. Gasoline and diesel is respectively US\$ 0.53 and US\$ 0.49 per litre, compared to South Africa (0.43 and 0.39), Botswana and Namibia; although Zambian prices do compare favourably against Malawi and Mozambique for example (Metschies, 2001).

[Annex 7 details the main duty costs applicable to agriculture in Zambia]

E. The Policy Environment & Key Constraints

[The parallel political economy study to this work will look at the policy context of Zambia in depth (Farrington and Saasa, forthcoming). A summary of the agricultural policy framework by the WTO (2002) is provided in Annex 7.]

57. Zambia's agricultural policy is aimed primarily at food security, poverty reduction, and the promotion of cash crops mainly as non-traditional exports (MoAC 2002). The PRSP notes 'inconsistency between policy pronouncements and implementation', and the historical lack of clarity in agricultural policy which has weakened private/public sector partnership and created uncertainty in agricultural production and marketing. Current agricultural input and output marketing, rural/microfinance, and agribusiness development (processing, agro-service provision such as mechanisation etc.) need to be improved (PRSP, p. 55), and the sector is served by weak public sector institutions and legal/regulatory environment.

Extension Advice

58. The most recent available data (1998) show that small-holders claim radio (22%) and fellow farmers (41%) as principal sources of extension advice. Only Eastern Province reports more than 20% (23%) of households receiving advice from Extension Officers (CSO, 2000). Advice is most commonly sought regarding crop husbandry and diversification, marketing, household food security and storage of farm produce (CSO, 2000).

Key constraints

59. Below is an overview of the key constraints facing agricultural producers (particularly the poor) in Zambia. Annex 7 supplements the factors listed below with an overview of the policy framework for agriculture, and the results of various government initiatives on the agricultural sector:

- **Environment:** Zambia is the victim of tropical storms (November to April), dry spells and drought, and increasing incidence of livestock diseases. There are also human-related problems of chemical runoff into watersheds, deforestation, soil erosion and desertification (World Factbook, 2002).
- **Infrastructure:** Poor roads, limited credit facilities for small-scale farmers, high nominal interest rates, and the narrow range of export crops continue to affect agricultural performance (WTO, 2002).
- **Gender inequality:** Female-headed households among agricultural households increased from 20 percent in 1998 to 23 percent in 2001. In spite of the predominance of women in agriculture, their participation in commercial production is inhibited by lack of access to production inputs such as land, capital and extension services (MOFED, 2002).
- **Low productivity:** The sector requires considerable investment to expand markets, provide adequate support services and improve technology to make agriculture competitive. Unsustainable agricultural practices are also frequently cited in the environmental literature. There is also often a lack of incentives for utilisation of idle land (e.g. cumbersome procedures in obtaining title deeds).
- **High production costs:** High prices of inputs, especially energy and fertiliser.
- **Trade and investment:** The PRSP cites 'unfair trade practices with the country's regional neighbours; low competitiveness; and an overall reduction in investment flows in the sector' as the most significant constraints to growth. It also notes an increasing crime rate, raising the costs of farm security, weak contract enforcement and weakness in business confidence attributable to the limited progress in the developments of markets for land.

F. Commercial Agriculture in Zambia

[The study has been unable to obtain data showing a detailed breakdown of the commercial agriculture sector. Recommendations for further analysis are made at the end of the report. Data on the commercial sector are often highly sensitive, and less accessible externally than macro-level economic data.]

60. Large-scale private sector activities in agriculture are limited to a few areas, largely a result of the physical, economic and policy-related constraints detailed above. Box 4 below summarises some of the frequently cited factors that discourage investment in Zambia's agriculture sector. At the same time, it must be noted that corporate taxes in the agricultural sector are just 15%, compared to 35% in other sectors.

61. Table 7 below shows the share of investment commitments (Zambian and foreign direct investment (FDI)) by sector. These figures exclude large official aid transfers to Zambia. FDI flows constitute a relatively small fraction of overall net resource flows of 26% in 2001. The WTO (2002) ranks South Africa, UK, US and Australia as leading sources of investments. Investment in agriculture has exceeded mining in the 1995-2001 period, but appears less attractive to investors than the manufacturing and services sectors.

Table 7: Investment commitments by sector, 1995-01 (US\$ million)

		Agriculture	Mining	Manufacturing	Services	Total
1995	No. of projects	79	5	87	69	240
	Value	64.1	2.4	73.7	108.0	248.2
1996	No. of projects	39	0	39	35	113
	Value	101.5	0	53.4	30.3	185.2
1997	No. of projects	33	1	61	49	144
	Value	28.1	5.5	107.1	121.2	261.9
1998	No. of projects	25	1	53	55	134
	Value	43.4	245.0	145.5	579.3	1,013.2
1999	No. of projects	20	4	43	44	111
	Value	29.7	10.2	29.6	81.6	151.1
2000	No. of projects	21	3	47	40	111
	Value	9.0	2.3	39.7	31.2	82.2
2001	No. of projects	15	6	28	26	75
	Value	26.4	14.5	35.2	34.2	110.3
1995-01	No. of projects	232	20	358	318	928
	Value	302.4	280.0	484.2	985.6	2,052.2

Source: Data provided by the Zambia Investment Centre. From WTO (2002)

62. About 2,700 hectares of land are under cultivation with export flowers and vegetables, in both large-scale farms and through outgrower schemes. Productivity is increasing – in 1998, 8,000 tonnes were exported; by 2001 production was 10,000 tonnes, worth \$68.5m (£44.5m) to the economy (Edmunds, 2002).

Crops produced for export

Horticulture

63. Production of fresh vegetables and flowers for export has increased in recent years. Medium scale and large commercial (both corporate and individual) farmers have

invested in all-year round irrigated production of horticultural products as well as fresh flowers. There has been a marked increase in the export of horticultural products, especially with the expansion in number of outgrower schemes. Specialty vegetables include baby corn, mangetout, fine beans, sugar snaps, baby carrots, chillies, patti pans, okra and green asparagus. Of Zambia's cut-flower exports, roses (55 varieties) account for 95% of production (ZEGA, 2002).

64. Zambia's horticultural exports represent a significant part of the economy, often demonstrating exponential growth in recent years (Agriflora Ltd. more than trebled its output in the 1999-2001 period). The Zambian Export Growers Association (ZEGA) is the country's main player, with 38 members (34 flower farms producing 4,000 tonnes annually, mainly for the Dutch market; and 4 vegetable farms producing 8,000 tonnes mainly for the UK). Excluding outgrowers, the sector employs 15,000, generating US\$ 60million in export revenue. Agriflora employs a further 1,200 people through 300 outgrowers, with a turnover of around \$30 million.

Organic Production

65. There is also a growing trend in organic output. Agriflora has a fresh organic vegetable production of 500 tonnes with total value of US\$2.5 million. In 2000 Ecocert certified a total of 2,500 ha for organic production (large commercial and small-scale farms) as well as 8,000 ha of forest and bush-land for wild harvesting of mushrooms and bee keeping areas. There are in total 23 organic operators: 21 farms (including three large commercial ones) and two producer groups (of small farmers).⁵
66. The main certified crops include several kinds of fresh export vegetables such as baby corn, baby carrot, fine beans and chillies; furthermore mushrooms, coffee, groundnuts, soybean, sesame, sugar cane, safflower, herbs (for dried leaf and essential oils) such as melissa, jasmine, Echinacea, lemon verbena, annatto, rosemary, lemon grass, citronella and honey are grown organically (FAO, 2001).

Box 4: Constraints to Private Sector Investment in Agriculture

There has been some improvement in promoting private-sector participation in agriculture and improved private/public-sector partnership. The main remaining problems include: poor infrastructure, such as roads, bridges, and lack of storage facilities; lack of or poor access to credible marketing institutions; inadequate credit facilities; low priority given to agriculture as reflected in budgetary allocation to this sector; low output and high input prices; poorly implemented agricultural policies; macroeconomic instabilities, reflected in high inflation and high interest rates; and poorly remunerated staff and lack of incentives for field staff.

Source: WTO, 2002

Commercial Farming

67. The Mpongwe Development Company (MDC) was set up by the Commonwealth Development Corporation (now CDC Capital Partners owned by DFID) with about US\$ 10 million in the early 1980s. The company employs close to 2,000 (560 permanent farm staff, about 55 at Kitwe flour mill and 1,140 seasonal workers, e.g. for coffee picking). Housing and other benefits such as schools, clinics, shops and social facilities are provided for staff. The farm is located in central Zambia (about 250km from Lusaka) and at 65,000 hectares is the largest farm in Africa. Total investment on the farm to date has been around US\$ 40 million.

⁵ Forest Fruits, Agriflora Ltd. and York Farm are the main players in Zambia's organic sector.

68. Turnover for 2002 is forecast to be US\$ 20.4m, up from US\$ 15.4m last year. The farm is currently profitable, but this has only been the case in recent years. This dramatic increase is a direct result of the increased price of maize due to drought. Production is principally in wheat and maize (sold domestically), coffee (for export) and soyabean (export regionally). The company aims to continue growth by increasing (irrigated) production area. With a national net deficit of wheat, there is significant scope for further local expansion at import parity pricing. Major constraints to further investment include the high cost of land clearing, sub-optimal roads and other infrastructure such as telecommunications, and government macro-economic and trade policies that limit commercial opportunities.
69. Other major players in large-scale commercial farming include APC Zambia (coffee), National Milling (Lusaka), and Olympic and Antelope (both in Copperbelt) for wheat.

Outgrower Schemes

70. The main principle with outgrower schemes is the provision of extension services, inputs, credit and marketing by the private sector, all linked to timely payment. They have become a popular method of providing extension services for high value export crops, such as those in the horticultural industry, and on a limited scale in the production of the staple crop maize. It is also being used in many other crops including sunflower and castor oil.
71. Dunavant Cotton (formerly Lonrho and the Lint Company of Zambia (Lintco)) is the largest cotton buyer, with Swarp Textiles and Clark Cotton being the other main players. Dunavant buys approximately 57% of the national crop, and has 100,000 outgrowers with holdings averaging 1.2 – 1.4 hectares. It has also just had another scheme approved which will access an additional 40,000 outgrowers over 20,000 hectares in the Southern Province. Lonrho and Clark initiated outgrower programs to 'expand the production base and benefit from the significant scale economies that exist in cotton ginning', providing participating farmers with inputs and extension services on loan (Govereh et al, 2000). However, it is important to note that both cotton and non-cotton producers mainly use their own resources to finance fertilizers (CSO, 2000).
72. The limitations of such schemes is that they can only cover production situations where the buying firm can establish efficient (i.e. single) marketing channels, which in most cases are more relevant in urban/peri-urban agricultural areas where infrastructure is more developed.
73. Also, crops such as sugar, tobacco, cotton, horticulture, floriculture, dairy production, tea and tree crops are technically complex, requiring quality control and frequent advice and supervision. Outgrower schemes could never cover the main food and industrial grain, legume and oil seed crops on a large scale, and so are often not relevant for the large mass of poorer smallholders. Despite the many exciting potential trends in this area, it must be remembered that the poorest producers face such daunting livelihood challenges that they will be unable and unwilling to participate in the higher risk, specialised, input-intensive technologies required for much cash crop production.

Impact of Decline of Copper Mines

74. The country has been historically dependent on copper mining. The WTO (2002) states that the decision by the Anglo-American Corporation (the main asset owner in the

mining and quarrying sector) to discontinue funding of mining operations in Zambia 'further darkens the country's prospects'. The sector still accounts for 70% of the total value of merchandise exports and is still the backbone of the Zambian economy. The PRSP states that the 'predominate superstructure of economic development is built upon mining and its products (PRSP, p.72).

75. The recent withdrawal of Anglo American Corporation has created immediate uncertainty in the mining industry. 'The case for successful diversification from copper mining has never been more urgent, and commercial agriculture is envisaged to play a major role in this.' (MOFED, 2002)
76. Over the last 2 decades, copper production has declined because of declining copper ores, poor re-investment in new and existing mines, and unsupportive management practices. Prices on the world market have declined by more than 40% since the Asian crisis of 1997. Production has declined by 50% since 1970, with resulting falls in investment and low economic growth – at around 1% per year on average during the 1990s, the lowest growth rate within SADC (WTO,2002).
77. Mining contributes 40,000 jobs out of 470,000 in formal sector employment (MOFED, 2002). With the privatization and restructuring of copper mining, the Copperbelt has a substantial pool of skilled and semi-skilled manpower, which could be redirected to the agricultural sector. Land resettlement schemes, such as the Lufwanyama Resettlement Scheme initiated by the former ZCCM, offer opportunities to absorb this pool of labour, which is otherwise under employed or totally unemployed (Hantuba, 2001).
78. Another aspect of the mining sector is that it provides inputs for agriculture (e.g. lime) and agro-chemicals, and raw materials for industry.

G. Recommendations for Further Analysis

79. Many of the global trade issues facing developing countries apply to the Zambian agriculture sector, and some specific data analyses are recommended that may assess the following:
 - the stability of markets for exports (including price stability, the role of multinational corporations, location of processing, competition with synthetic substitutes etc.)
 - corporate responsibility in agriculture (methodologies, policy environment, legal issues, potential livelihood impact etc.) and donor opportunities
 - price trends for potential export commodities
 - long-term access to inputs needed by import
 - ability to pay for imports
 - the role of food aid and its potential negative (incentive depressing) effects as well as positive effects on agricultural productivity
 - competition with highly subsidised temperate zone products (e.g. cane versus beet sugar)
80. The following resources were unavailable and would undoubtedly add some depth, and in cases more up-to-date, data:

- FAOSTAT 2002 CD-ROM: FAO Statistical Databases, Rome. (Incorporates statistical information up to September 2001, covering 210 countries and territories and 3 000 items in agriculture, fisheries, forestry and nutrition.)
- Within the Ministry of Agriculture and Co-operatives, the Policy and Planning Branch (PPB) contains an Agricultural Policy Analysis and Statistics Section. A major task of the Section is to collect and constantly update vital agricultural statistics. It also carries out crop monitoring surveys and food security assessments. Latest Data required e.g. the Crop Forecast Survey (CFS), and the Agricultural and Pastoral Production Survey (APPS) otherwise known as the Post-Harvest Survey (PHA) and 'Characteristics of Zambian agriculture'.
- Milimo JT, Njobvu CA & Tembo SPM (1997) Listening to Farmers: Participatory Assessment of Policy Reform in Zambia's Agriculture Sector Paul Francis. World Bank Technical Paper 375. World Bank, Washington D.C.
- Latest Zambia Investment Centre (2001/2), Annual Report.
- SADC Regional Human Development Report. 'Highlights common governance issues, as well as opportunities, challenges and threats to SADC regional co-operation and integration.'
- Aggregate company data (by sector), perhaps available through the appropriate industry bodies. Larger operations, such as those in partnership with NGOs and donors may have relevant studies, especially regarding outgrower schemes.

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www.boz.zm/

The Times of Zambia

www.times.co.zm/

UN Statistics Division

unstats.un.org/unsd/

USAID Zambia

www.usaid.gov/zm/facts.htm

SADC Food, Agriculture and Natural Resources - Development Unit

www.sadc-fanr.org.zw/

CopperNET BUSINESS

www.business.com.zm/newsFolder/finance0.php

Southern African Development Community (SADC), Food Security Programme. Food, Agriculture and Natural Resources (FANR) Development Unit in Harare, Zimbabwe.

www.sadc-fanr.org.zw

STATPub.com Agriculture Commodity Market News

www.statpub.com/

International Trade Centre (UNCTAD/WTO)

www.intracen.org/

Omnia Fertiliser Zambia

www.fertilizer.co.za/en/zam.html

The African Development Bank Group - Zambia

www.afdb.org/african_countries/home_zambia.htm

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Annex 1: Study Terms of Reference

DRAFT TERMS OF REFERENCE

TRENDS IN THE ZAMBIAN AGRICULTURE SECTOR, 1992 – 2002

Background and purpose to the study

1. Zambia's PRSP identifies agriculture as the engine of growth for Zambia. With the decline of the copper industry and few alternatives, the government of Zambia has placed a renewed emphasis on developing the agricultural sector as the vehicle for economic growth and for enhancing the lives of the poor.
2. DFID has not engaged in the agricultural sector in Zambia for some years. However, in line with its commitment to supporting the government of Zambia's priorities as described in the PRSP, DFID Zambia is currently examining options for a renewed engagement in the sector to inform its new Country Assistance Plan. Two brief scoping missions have taken place to assess opportunities. Refer to reports from these missions for key findings and recommendations.
3. DFID Zambia requires a dossier of basic data to inform the drafting of the agricultural component of its country assistance plan. The purpose of this data will be to help quantify the likely development impact of potential DFID engagement in the agricultural sector.

Tasks

4. Data should be collected, analysed and presented to inform the following:

Growth, poverty and agriculture

- the pattern of contribution of agriculture to GDP (broken down by crop type where possible)
- the projected growth forecasts for agriculture to GDP and assumptions on which this is based
- the number of people dependant on agriculture as the major source of livelihood (disaggregated where possible by geography, income group, gender, age etc)
- a historical profile of the main crops produced by farmers (for home consumption and for sale) and how this is changing (disaggregated by province and size of holding)
- the pattern of supply inputs to farmers (disaggregated by size of holding and province) and how this has affected value of production
- the projection on potential for diversification from maize (by geographical area, income group etc)
- the pricing of key transaction costs faced by producers (fuel, water, electricity, corporate tax, VAT duties, export duties etc) for agriculture and how this compares to all sectors domestically and similar sectors regionally.
- an overview of the quantifiable analysis emerging from policy analysis on the key constraints to increased income generation from agriculture for the poor
- an overview of quantifiable analysis emerging from policy analysis on the policy distortions that are affecting agricultural growth
- A quantification of the impact on HIV/AIDs on Zambia (disaggregated by location, gender, age etc) and if the data exists, the projected impact on agriculture and food security

Commercial agriculture and the poor

- A historical profile of the main crops produced for export and their value, how this is changing and future projections
- The major corporations and businesses involved in commercial agriculture in Zambia, the value of their turnover, contribution to GDP and their projected growth
- The number of people dependent on agricultural exports for their livelihoods (disaggregated where possible) by location, gender, income group etc
- The number, type and location of outgrower schemes, how many people they employ (disaggregated by gender, age etc), the income generated and projected growth
- A profile of the major markets for exports and projections for future markets
- A quantification of the impact of the decline of the copper mines (numbers unemployed, projected economic impact etc)

Timeframe and outputs

5. This is a desk study which will be carried out over a 10 day period. Core documents for analysis will be provided by DFID Zambia. However, the researcher will be expected to follow up further relevant data sources as they emerge. The study will be completed by the end of November 2002. The researcher will produce a concise report of no more than 20 pages (plus supporting annexes) with an executive summary of no more than 4 pages.

Reporting arrangements

6. The consultant will report to Morgan Mumbwatasai (DFID Zambia) and Beth Arthy (DFID CSA).

16th October 2002

Annex 2: Land Use, Climate and Crop Calendar**Table I: Arable Land Use in Zambia, 1990-2000**

Land Use	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Land area (Millions Ha)	74	74	74	74	74	74	74	74	74	74	..
Arable land (% land area)	7.06	7.06	7.07	7.07	7.07	7.08	7.08	7.08	7.08	7.08	..
Arable land (Ha per person)	0.67	0.65	0.64	0.62	0.60	0.59	0.57	0.56	0.54	0.53	..
Arable land (Millions Ha)	5.25	5.25	5.25	5.25	5.25	5.26	5.26	5.26	5.26	5.26	..
Area under cereal production (Ha)	0.90	0.75	0.80	0.77	0.84	0.66	0.82	0.80	0.56	0.76	0.76
Irrigated land (% of cropland)	0.57	0.57	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	..
Irrigated land (Ha)	30000	30000	46000	46000	46000	46000	46000	46000	46000	46000	..
Other (% of land area)	92.91	92.91	92.91	92.91	92.91	92.90	92.90	92.90	92.90	92.90	..
Permanent cropland (% land area)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	..

Source: World Bank (2002)

Figure I: Zambia Meteorological Profile

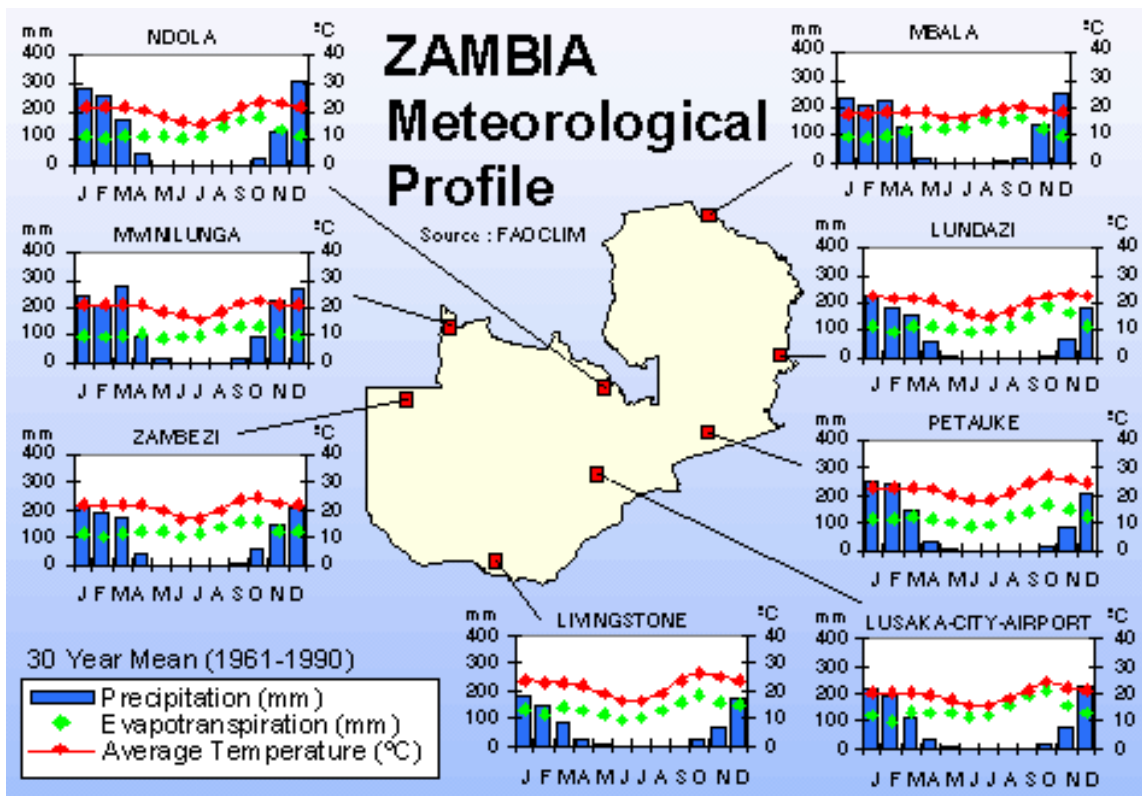
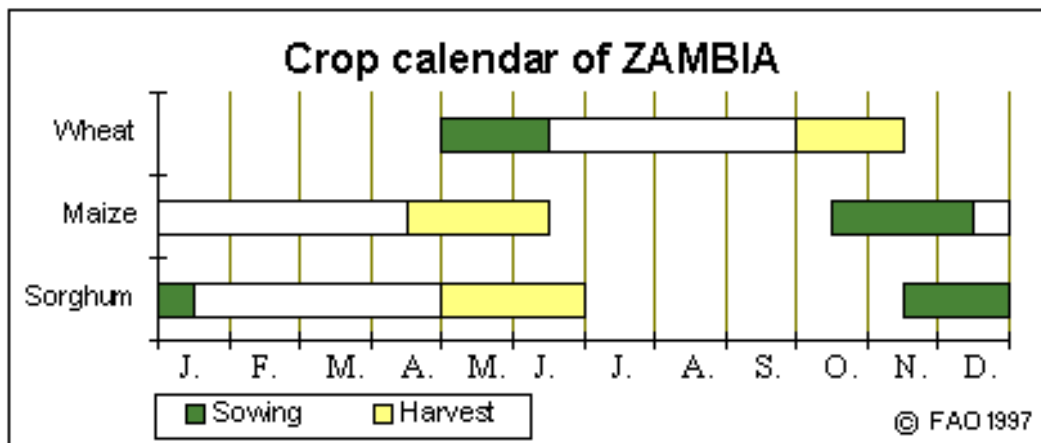
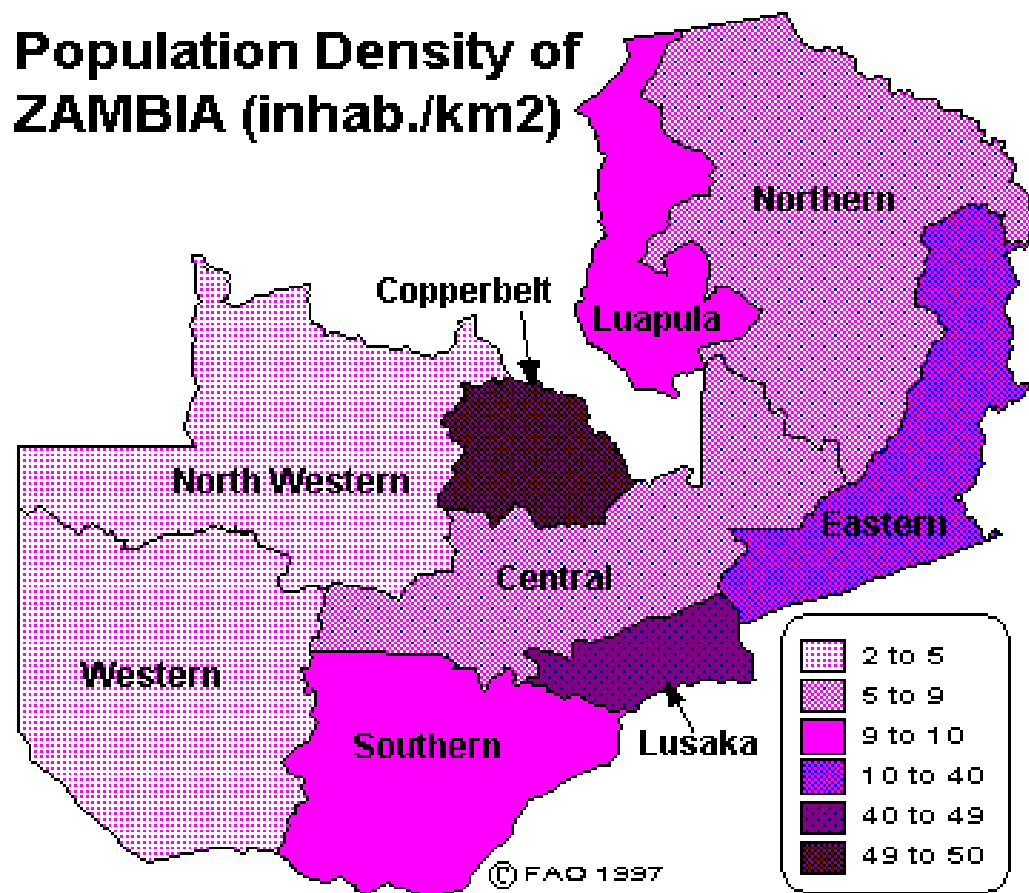
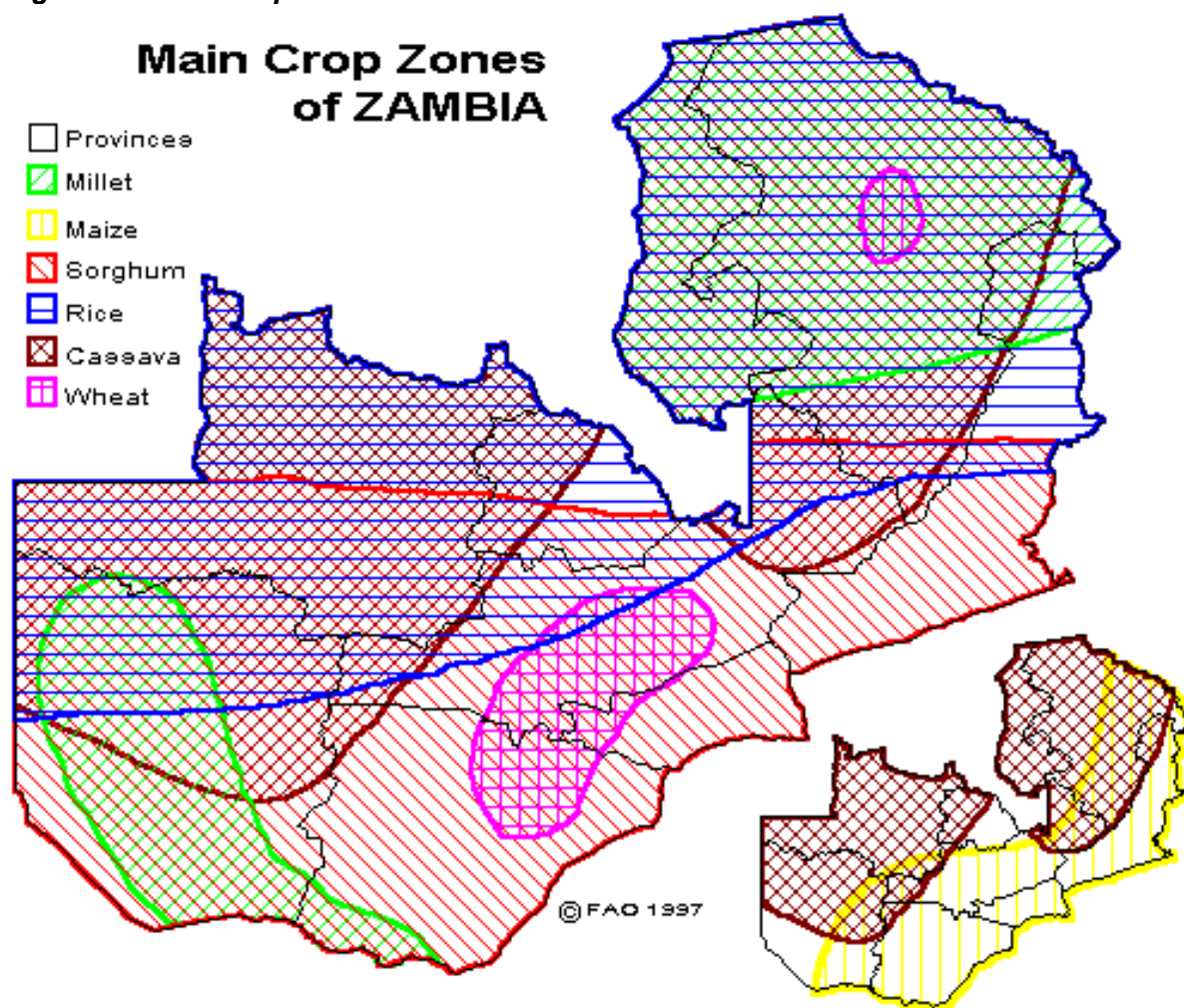


Figure II: Crop Calendar of Zambia



ANNEX 3: Population Data**Figure III: Zambia map showing Provinces and population density****Table II: Area, Population Size, Population Density by Province and Census Year**

Province	Area (sq km)	1990 Census		1980 Census		1969 Census	
		Pop. size('000)	Density/sq km	Pop. size('000)	Density/sq km	Pop. size('000)	Density/sq km
Zambia	752,612	7,383	9.8	5,662	7.5	4,057	5.4
Central	94,394	721	7.6	512	5.4	359	5.4
Copperbelt	31,328	1,427	45.6	1,251	39.9	816	26.1
Eastern	69,106	966	13.9	651	9.4	509	7.4
Luapula	50,567	525	10.4	421	8.3	336	6.6
Lusaka	21,896	987	45.1	691	31.6	354	16.2
Northern	147,826	855	5.8	675	4.6	545	3.7
N/Western	125,826	388	3.1	303	2.4	232	1.8
Southern	85,283	907	10.6	672	7.9	496	5.6
Western	126,386	607	4.8	486	3.9	410	3.3
Source: CSO							

Annex 4: Agricultural Production**Figure IV: Main Crop Zones****Table III: Crop Production Trends**

Crop	Cultivated area (000 Ha)				Production (000)			
	1996	1997	1998	1999	1996	1997	1998	1999
Maize (90 kg)	676	649	410	588	15660	10668	7217	3509
Sorghum (80 kg)	48	45	36	37	396	341	828	283
Paddy rice (80 kg)	10	12	9	16	166	156	80	184
Millet (90 kg)	77	86	90	96	610	679	692	774
Sunflower (50kg)	48	21	16	13	524	149	114	135
Groundnuts (80 kg)	90	127	155	141	434	573	712	637
Soybeans (90 kg)	25	17	12	12	445	326	138	297
Mixed beans (90 kg)	43	42	35	39	265	155	155	183
Cotton (ton)	66			106	41		105	80
Burley tobacco (ton)	2			6	2			6
Virginia tobacco (tons)	2			2	19			21
Irrigated wheat	10	11	11	10	640	787	710	769

Source: MOFED (2001) Macroeconomic Indicators, May 2001 (from MAFF, 2001)

Table IV: Zambia Production of Selected Crops, 1990-2001

Product	Production (Metric Tonnes)											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Maize	1,092,671	1,095,908	483,492	1,597,767	1,020,749	737,835	1,409,485	960,188	638,134	855,868	881,555	900,000
Cassava	640000	682000	682000	744000	744000	744000	744000	702000	816963	970823	815248	950000
Millet	31,531	25,573	48,029	37,394	62,643	54,501	54,858	61,129	62,236	69,617	43,153	55,000
Groundnuts in Shell	25,086	28,188	20,504	42,301	34,740	36,119	34,755	45,859	56,934	50,965	55,000	55,000
Sunflower Seed	19,966	10,645	1,492	21,176	10,336	21,000	26,786	7,983	5,708	6,748	7,041	7,100
Rice, Paddy	9,213	14,602	8,693	13,993	6,358	11,699	13,296	12,473	6,399	14,698	8,835	10,000
Sugar Cane	1,126,540	1,150,000	1,300,000	1,220,040	1,311,000	1,310,000	1,400,000	1,500,000	1,550,000	1,650,000	1,600,000	1,800,000
Seed Cotton	30,666	48,721	25,899	58,324	25,900	50,000	37,074	64,000	59,000	66,700	62,000	62,000
Wheat	55,011	65,236	57,599	71,230	43,000	50,000	57,595	70,810	63,925	89,743	75,000	75,000
Soybeans	26,791	27,713	7,006	28,026	24,630	21,094	40,050	29,292	12,376	26,695	30,000	30,000
Tobacco Leaves	4,400	5,500	2,308	6,652	4,000	2,500	3,842	3,026	3,053	3,500	3,500	3,500
Sorghum	19,591	20,939	13,007	35,448	35,070	26,523	35,640	30,729	25,399	25,493	26,781	27,000

Table V: Zambia Area under Selected Crops, 1990-2001

Product	Area (Hectares)											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Maize	763277	639390	661606	633326	679355	520165	675565	649039	410372	598181	586907	600000
Cassava	103159	110000	110000	120000	120000	120000	120000	113266	131768	170000	165000	165000
Millet	58868	45270	66598	52654	82302	73809	76930	85731	90047	95520	61113	70000
Groundnuts in Shell	70000	70000	55000	65000	85000	80826	80000	110000	135000	130000	135000	135000
Sunflower Seed	44289	36490	32302	39450	15652	32433	47621	20745	15694	13356	12984	13000
Rice, Paddy	9533	13450	14369	13802	7303	9746	9888	12412	9065	16120	10532	11000
Sugar Cane	11974	12000	13500	11497	11986	12000	13000	14000	15000	16000	15000	17000
Seed Cotton	64036	74020	59614	79388	33092	75000	66217	44741	44560	50000	50000	50000
Wheat	12520	14880	13289	17774	10000	10000	10327	10693	11278	12000	12077	12100
Soybeans	29814	29200	22786	19863	19014	21651	25489	17273	11681	11716	13000	13000
Tobacco Leaves	5071	3096	5274	12946	6000	3000	3653	2792	2813	2850	2900	2900
Sorghum	48465	31790	40323	46563	55245	40365	47839	44684	35864	36405	37270	37500

Source: FAOSTAT, from website: apps.fao.org/cgi-bin/nph-db.pl

Figure V: Area Under Major Crops, 2001

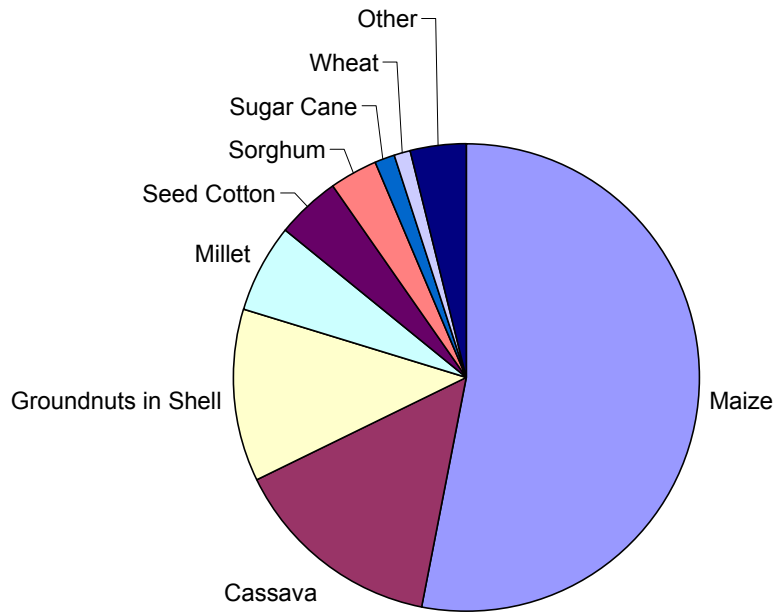


Figure VI: Production of Major Crops, 2001

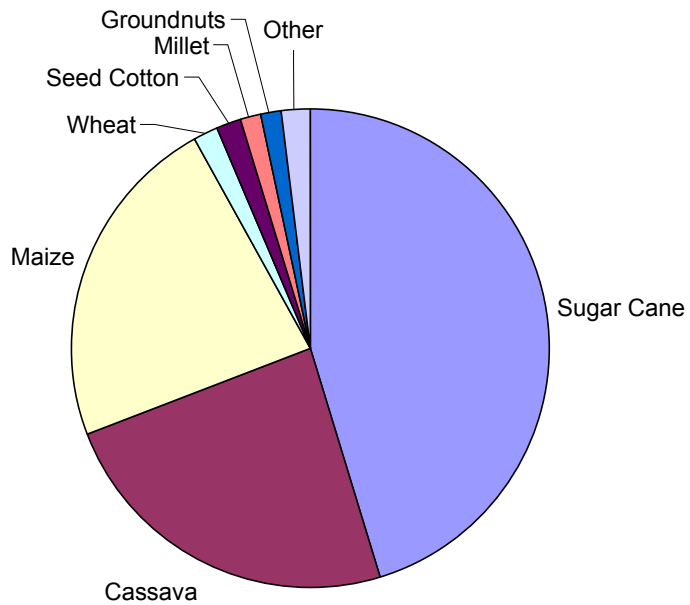


Table VI: Crop-Growing Households, Area under Crop and Production

Crop	Households Reporting	Area Under Crop(Ha)	Average Crop Area Per H/Hold(Ha)	Production (Metric Tons)	Production Per Ha. (Metric Tons)	Average Production Per H/Hold(Metric Tons)
Maize	615,905	521,069	0.85	625,015	1.20	1.01
Sorghum	79,568	36,030	0.45	23,697	0.66	0.30
Rice (Paddy)	23,579	9,608	0.41	7,540	0.78	0.32
Millet	162,309	63,859	0.39	44,730	0.70	0.28
Sunflower	15,653	12,310	0.79	6,129	0.50	0.39
Groundnuts	340,326	120,511	0.35	43,722	0.36	0.13
Soyabeans	9,196	4,909	0.53	2,374	0.48	0.26
Seed Cotton	85,735	79,272	0.92	72,560	0.92	0.85
Irish potatoes	4,804	1,352	0.28	2,167	1.60	0.45
Tobacco (Virginia)	3,268	2,064	0.63	1,175	0.57	0.36
Tobacco (Burley)	4,393	3,464	0.79	3,493	1.01	0.80
Mixed Beans	79,585	24,011	0.30	9,913	0.41	0.12
Ground Beans	14,687	2,550	0.17	1,122	0.44	0.08
Cow peas	6,977	2,265	0.32	486	0.21	0.07
Sweet potatoes	92,724	21,317	0.23	37,842	1.78	0.41
Cassava	351,103	280,637	0.80	231,230	0.82	0.66

Source: CSO (2000)

Table VII: Number of Households Raising Livestock, Change in Number of Livestock Held Over the Period, and Average Number Held per Household

Livestock Type	Households Reporting	As % of Livestock Raising Households	Number Held on 30th September, 1998	% Change In Number Held	Number Held Per Household
Cattle	115,927	44.0	1,015,649	-20.3	9
Pigs	93,482	35.5	363,144	-11.9	4
Goats	156,891	59.6	861,775	-14.8	5
Sheep	4,151	1.6	16,546	-5.0	4
Donkeys	193	0.1	459	19.2	2

Source: CSO (2000)

Annex 5: Agricultural Growth and Export Data

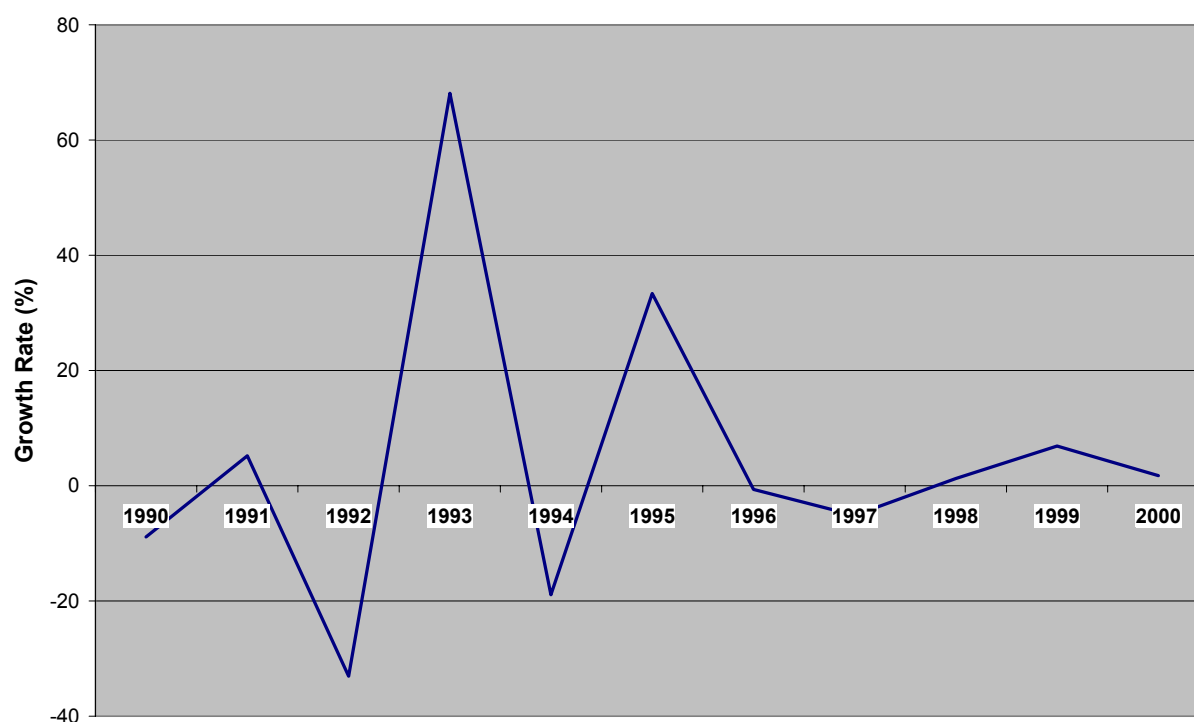
Table VIII: Main economic indicators, 1996-01

	1996	1997	1998	1999	2000	2001 ^a
Miscellaneous						
GDP at market prices (US\$ billion)	3.29	3.92	3.24	3.13	3.24	3.62
GDP at market prices (K billion)	3,970	5,156	6,033	7,480	10,075	13,079
Per capita GDP (US\$)	348	401	321	301	302	..
Real GDP (percentage change)	6.5	3.5	-1.9	2.4	3.6	5.2
Consumer prices (percentage change) ^b	46.3	24.8	24.5	26.8	26.1	21.7
Treasury bill rate ^c	52.78	29.48	24.94	36.19	31.37	44.28
Lending rate ^d	53.78	46.69	31.8	40.52	38.80	46.23
Exchange rate (K/US\$) ^e	1,207.9	1,314.5	1,862.07	2,388.02	3,110.84	3,610.94
Real effective exchange rate (percentage change) ^f	4.7	19.8	-8.7	-2.2	1.2	7.9
Monetary Sector	(percentage change)					
Narrow money (M1)	19.4	31.0	16.8	23.6	51.2	34.2
Global monetary resources (M2)	35.0	25.1	25.6	27.7	73.8	13.6
Share of real GDP	(percentage)					
Agriculture	17.2	15.8	16.3	17.5	17.2	16.0
Mining and quarrying	12.0	11.8	9.0	6.6	6.4	6.9
Manufacturing ^g	16.9	18.1	18.2	18.3	18.4	18.9
Services	53.9	54.3	56.5	57.6	58.0	58.2
Government finance	(percentage of GDP)					
Overall public budget ^h	-2.4	-9.5	-5.5	-3.7	-7.0	-8.1
National accounts	(percentage of GDP)					
Public and private final consumption	68.0	73.7	96.0	100.9	96.9	..
Gross fixed capital formation	43.1	37.4	14.9	17.9	18.3	..
Increase in inventories	1.6	1.4	1.6	0.1	0.0	..
Exports of goods and services	31.2	30.1	26.7	22.6	30.6	..
Imports of goods and services	43.1	42.6	39.2	41.5	45.8	..
Memorandum						
International reserves (US\$ million)	222.7	239.1	69.4	45.4	244.8	183.4
International reserves (months of imports)	..	..	0.4	0.5	1.0	0.8
Trade in goods (percentage of GDP)	62.2	61.5	55.2	54.2	53.5	59.4
Terms of trade (percentage change)	..	..	-13.9	-5.9	3.9	-3.8

.. Not available.

a) Provisional; b) Annual average for the period; c) For short-term securities; d) For short-and medium-term loans to the private sector; e) Average for the period; f) Negative sign indicates depreciation; g) Including electricity, gas, water, and construction; h) Public deficit (-) or surplus (+)

Source: IMF (2002), International Financial Statistics, July 2002; World Bank (2001), Zambia at glance. From WTO (2002)

Figure VII: Zambia: Agricultural Real Growth Rates, 1990 - 2000

Source: World Bank, 2002

Table IX: Agricultural Production and Food Supply – SADC countries

Country	Agricultural Production Per Capita (Indices: 1989-91 = 100)			Food Production Per Capita (Indices: 1989-91 = 100)			Daily Calorie Supply Per Capita		
	An. Avg. Growth			An. Avg. Growth			An. Avg. Growth		
	1995	2000	1995-2000 (%)	1995	2000	1995-2000 (%)	1995	1999	1995-2000 (%)
Zambia	82.7	81.8	-1.1	82.5	80.9	-1.4	1 950	1 934	-0.1
Angola	103.0	102.3	-0.7	104.1	104.1	-0.7	1 810	1 873	1.1
Botswana	97.0	77.6	-1.1	97.0	77.7	-1.0	2 317	2 288	-0.3
Congo (DRC)	75.4	60.8	-6.3	75.6	61.8	-6.1	1 933	1 637	-3.2
Lesotho	87.5	77.3	-4.3	80.0	77.5	-3.0	2 284	2 300	0.6
Malawi	102.0	120.7	6.4	98.0	134.4	8.7	1 989	2 164	2.6
Mozambique	91.4	91.6	3.0	91.0	90.1	2.9	1 754	1 939	3.8
Namibia	95.2	91.1	-0.2	95.2	90.8	-0.2	2 017	2 096	0.2
South Africa	79.2	90.7	0.1	80.5	93.6	0.3	2 837	2 805	-0.1
Swaziland	75.0	70.2	-2.9	80.7	72.1	-3.5	2 410	2 698	1.4
Tanzania	86.3	74.4	-1.9	84.8	74.5	-1.8	1 943	1 940	-0.3
Zimbabwe	73.8	102.2	2.8	66.4	93.7	2.3	1 968	2 076	0.4
Africa	95.6	96.8	0.3	95.9	97.3	0.3	2 277	2 319	0.6

Source: African Development Bank (2002).

Table X: Sectoral Growth Rates / average annual percentage change – SADC countries

Country	Agriculture		Industry		of which Manufacturing		Services	
	1990-1999	2000	1990-1999	2000	1990-1999	2000	1990-1999	2000
Angola	-1.3	9.3	3.2	1.9	-2.4	8.9	-2.3	0.4
Botswana	-0.1	-8.8	3.2	9.4	5.1	3.3	8.5	4.0
Congo Dem. Rep.	1.6	-5.5	-11.6	-4.0	-11.8	-10.0	-12.3	-10.0
Lesotho	1.6	-1.9	7.0	13.9	6.0	4.4	4.3	-0.2
Malawi	8.6	4.5	2.4	3.5	0.0	2.3	3.5	1.9
Mozambique	4.4	1.5	11.8	3.4	7.9	14.9	3.2	-2.8
Namibia	12.6	11.4	4.9	-0.6	10.4	4.5	13.3	3.9
South Africa	0.5	7.3	0.3	2.7	0.1	5.1	2.2	3.5
Swaziland	0.8	0.2	4.7	1.4	4.1	1.4	4.8	4.9
Tanzania	3.4	3.4	3.8	6.9	2.5	4.8	2.9	5.8
Zambia	4.8	1.8	-2.7	4.6	1.8	13.5	1.9	3.0
Zimbabwe	4.9	3.0	0.8	-9.8	1.0	-10.5	3.7	-5.4
Africa	3.1	1.4	2.0	4.2	1.8	4.4	2.5	3.4

Source: African Development Bank (2002).

Table XI: Composition of imports, 1996-00

	1996	1997	1998	1999	2000
	(percentage of total value of merchandise imports)				
Petroleum	7.4	8.2	4.3	13.2	17.5
Metals	22.4	27.4	22.8	13.9	16.9
Fertiliser	7.6	4.7	5.6	0.2	13
Maize	2.4	1.1	11.1	0.0	0.0
Others	60.2	58.5	56.3	72.6	64.4

Source: Information provided by the Zambian authorities. From WTO (2002)

Table XII: Composition of exports, 1996-01

	1996	1997	1998	1999	2000	2001
	(percentage of total value of merchandise exports)					
Metal exports ^a	75.7	71.0	66.8	60.6	66.4	65.4
Non-traditional exports	24.3	29.0	33.2	39.4	33.6	34.6
of which engineering products	3.7	3.7	3.4	3.0	2.6	2.4
Floricultural products	1.8	1.9	3.5	5.5	4.3	3.8
Gemstones	1.1	1.3	1.2	1.8	2.0	2.3
Horticultural products	0.9	1.4	2.2	3.1	3.5	4.0
Primary agricultural products	3.8	8.0	6.6	9.4	4.7	5.7
Processed foods	3.4	2.7	5.2	4.3	4.5	4.8
Textiles	4.1	4.4	4.5	4.8	4.6	3.8

a: Copper accounts for about 84% of metal exports in value, and cobalt for about 9%.

Source: Bank of Zambia (2002), *EBZ Exporter Audits 1996-01*. From WTO (2002).

Table XIII: Agricultural exports, 1995-98 (US\$ million)

Product	1995	1997	1998
Beans	0.07	0.03	0.1
Coffee	3.4	8.5	8.8
Cotton lint	5.1	44.4	22.5
Cowpeas	..	0.2	0.02
Fresh flowers	9.5	15.2	32.8
Fresh vegetables	3.7	14.4	17.4
Fuzzy cotton seed	1.7	4.6	3.6
Groundnuts	0.4	1.0	0.8
Maize	10.7	2.7	0.7
Marigold meal	4.0	6.0	0.5
Other seeds	2.2	0.7	0.02
Paprika	0.2	2.3	1.5
Rice	0.04	0.4	..
Seed cotton	..	0.01	0.04
Sorghum	0.06	..	..
Soybeans	0.7	12.4	1.3
Sugar	30.0	26.4	33.2
Tea	0.08	0.4	0.5
Tobacco	5.0	15.0	17.7
Wheat	0.03	0.2	0.9
TOTAL	77.5	155.4	143.1

Source: MAFF (2001), from WTO (2002)

Table XIV: Households Growing Vegetables for Sale by Type of Vegetable Grown, and Amount Realized from Sales During the 1997/98 Agricultural Season.

Vegetable Type	Households Reporting	Value Of Sales (K'million)	Value Of Sales (%)
Cabbage	27,940	2,611.6	31.8
Rape	41,477	2,054.3	25.0
Spinach	2,612	80.7	1.0
Tomatoes	29,442	2,275.0	27.7
Onions	6,562	343.9	4.2
Okra	1,600	145.2	1.8
Egg Plant	2,333	85.8	1.0
Pumpkins	1,510	28.4	0.3
Chilies	887	80.5	1.0
Chomolia	240	0.8	*
Cauliflower	448	6.8	0.1
Carrots	1,193	75.7	0.9
Green Beans	1,954	69.1	0.8
Green Maize	6,969	322.7	3.9
Other Vegetables	1,064	27.0	0.3
TOTAL		8,207.5	

Source: Central Statistical Office (2000)

Annex 6: Poverty and Agriculture in Zambia**Table XV: Breakdown of poverty levels between rural and urban areas, and the nine provinces**

Location	Distribution of Zambia's Poor (% National Population)		Overall Poverty Rates (% Provincial population)	
	Overall	Extreme	Overall	Extreme
Overall				
Rural areas			83	70
Urban areas			56	36
'Line of Rail' Provinces				
Central Province	10	11	77	63
Copperbelt Province	18	15	65	47
Lusaka Province	15	9	52	34
Southern Province	13	13	76	60
Remaining Provinces				
Eastern Province	13	15	80	66
Luapula Province	7	8	81	69
Northern Province	12	14	81	67
Northwestern Province	5	6	76	63
Western Province	7	10	89	78

Source: CSO Living Conditions in Zambia 1998 (adapted from PRSP, 2002)

Table XVI: Incidence of overall poverty and extreme poverty and percentage change between 1996 and 1998

Stratum	Overall Poverty		% change 1996-98	Extreme Poverty		% change 1996-98
	1996	1998		1996	1998	
Small-scale farmers	84.4	84	-0.4	70.5	72.1	1.6
Medium-scale farmers	65.1	71.9	6.8	49.7	56.4	6.7
Large-scale farmers	34.9	15.6	-19.3	15	13.3	-1.7
Non-agricultural households	72	79.3	7.3	52.1	66.6	14.5
Low cost areas	51.1	61.2	10.1	31.4	40.8	9.4
medium cost areas	32.4	49.4	17	15.7	27.7	12
High cost areas	23.8	33.5	9.7	10.8	19.4	8.6

Source: CSO Living Conditions in Zambia 1998

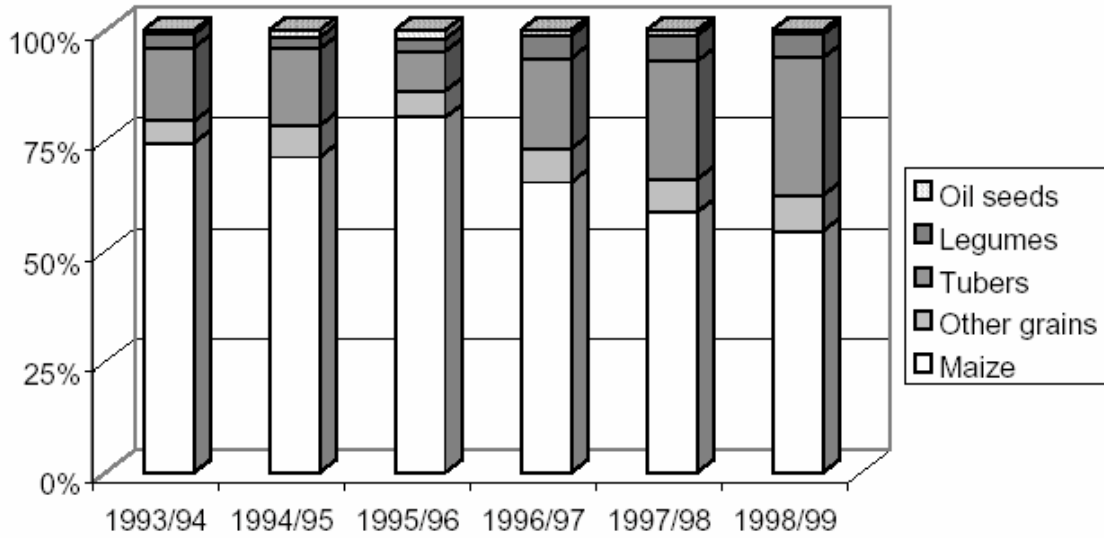
Table XVII: Contribution to Total Income By Livelihood Sector

Districts	Contribution to Total Income in Kwacha and Percent of Total									
	Cereals		Cash Crops		Livestock		Other		Total	
	Kwacha	%	Kwacha	%	Kwacha	%	Kwacha	%	Kwacha	%
Luangwa	22847	99.9	0	0.0	0	0.0	30	0.1	22877	100
Lufwanyama	18496	87.1	2740	12.9	0	0.0	0	0.0	21236	100
Mpika	31414	90.9	3145	9.1	0	0.0	3	0.0	34562	100
Milenge	22491	86.3	3573	13.7	0	0.0	0	0.0	26064	100
Chavuma	15432	60.1	10241	39.9	0	0.0	0	0.0	25673	100
Isoka	34914	91.0	3441	9.0	0	0.0	0	0.0	38355	100
Itezhi-tezhi	37274	97.2	1093	2.9	0	0.0	0	0.0	38368	100
Mwinilunga	19095	69.0	8588	31.0	0	0.0	3	0.0	27686	100
Kasama	32721	80.8	7785	19.2	0	0.0	0	0.0	40506	100
Chiengi	26272	84.3	4897	15.7	0	0.0	0	0.0	31168	100
Mporokoso	32963	76.5	10133	23.5	0	0.0	4	0.0	43100	100
Chinsali	37922	87.9	5245	12.2	0	0.0	0	0.0	43167	100
Kabompo	20452	65.1	10982	34.9	0	0.0	6	0.0	31440	100
Luwingu	40601	85.7	4520	9.5	0	0.0	2260	4.8	47381	100
Kawambwa	23463	63.0	10527	28.3	0	0.0	3247	8.7	37236	100
Mufumbwe	28551	82.1	6222	17.9	0	0.0	7	0.0	34780	100
Chongwe	37590	74.9	12528	25.0	0	0.0	95	0.2	50214	100
Kafue	34778	65.8	17159	32.5	0	0.0	941	1.8	52878	100
Shangombo	37988	97.5	928	2.4	0	0.0	62	0.2	38978	100
Masaiti	30521	77.6	8790	22.4	0	0.0	0	0.0	39311	100
Chadiza	28132	55.9	17640	35.0	4594	9.1	0	0.0	50366	100
Kaoma	19341	47.1	4768	11.6	16908	41.2	12	0.0	41029	100
Zambezi	17608	42.7	20585	49.9	3092	7.5	4	0.0	41289	100
Serenje	31892	56.8	4128	7.4	20138	35.9	0	0.0	56158	100
Mansa	23124	46.7	5017	10.1	0	0.0	21386	43.2	49528	100
Mwense	27641	52.5	4331	8.2	0	0.0	20643	39.2	52614	100
Kazungula	30516	43.0	3713	5.2	36735	51.7	35	0.1	71000	100
Mbala	41591	57.4	6433	8.9	0	0.0	24498	33.8	72521	100
Chama	46803	70.9	10758	16.3	8442	12.8	0	0.0	66003	100
Mpulungu	61438	81.3	14122	18.7	0	0.0	0	0.0	75560	100
Kasempa	42922	81.9	9501	18.1	0	0.0	10	0.0	52433	100
Kapirimposhi	47382	67.1	11367	16.1	11854	16.8	0	0.0	70604	100
Sinazongwe	23869	27.9	163	0.2	54713	63.8	6951	8.1	85696	100
Chilubi	19622	30.5	4078	6.3	0	0.0	40719	63.2	64419	100
Chipata	39068	48.9	34161	42.7	6698	8.4	8	0.0	79935	100
Mongu	19790	31.7	850	1.4	41793	66.9	50	0.1	62483	100
Mungwi	65894	72.9	24508	27.1	0	0.0	0	0.0	90403	100
Nyimba	45171	54.4	8419	10.1	29521	35.5	0	0.0	83112	100
Mambwe	24998	29.8	58804	70.2	0	0.0	0	0.0	83802	100
Solwezi	22691	32.5	23950	34.3	23278	33.3	7	0.0	69926	100
Petauke	37023	39.7	3966	4.3	52339	56.1	0	0.0	93329	100
Sesheke	18188	24.9	2156	3.0	52701	72.1	29	0.0	73074	100
Senanga	17237	23.3	30	0.0	56672	76.6	7	0.0	73946	100
Lundazi	34423	35.8	8546	8.9	53256	55.3	0	0.0	96225	100
Samfya	19998	24.9	4913	6.1	0	0.0	55360	69.0	80271	100
Kaputa	53790	49.7	4257	3.9	0	0.0	50280	46.4	108327	100
Nakonde	96078	88.0	13114	12.0	0	0.0	0	0.0	109192	100
Mkushi	30765	29.8	2057	2.0	70556	68.3	0	0.0	103378	100
Kalabo	19753	23.0	0	0.0	65972	77.0	9	0.0	85734	100
Nchelenge	24521	24.6	1885	1.9	0	0.0	73305	73.5	99711	100
Lukulu	19870	20.9	228	0.2	75037	78.9	38	0.0	95174	100
Kalomo	25444	18.3	3426	2.5	110395	79.3	0	0.0	139265	100
Choma	45721	31.5	13032	9.0	86209	59.5	14	0.0	144977	100
Monze	38629	26.2	7239	4.9	99963	67.8	1607	1.1	147438	100
Gwembe	23727	15.8	2600	1.7	109439	72.8	14501	9.7	150267	100
Mumbwa	37497	28.3	8440	6.4	86561	65.3	0	0.0	132498	100
Mpongwe	56767	52.2	51712	47.6	0	0.0	228	0.2	108707	100
Siavonga	30235	19.3	0	0.0	119891	76.5	6533	4.2	156659	100
Katete	41758	28.1	14718	9.9	92325	62.0	0	0.0	148800	100
Mazabuka	77116	44.7	12519	7.3	77099	44.7	5940	3.4	172674	100
Chibombo	115028	60.6	24684	13.0	50147	26.4	19	0.0	189877	100
Namwala	32836	14.5	5676	2.5	147988	65.4	39620	17.5	226143	100

Source: Vulnerability Assessment Mapping Report (MAFF, 2000)

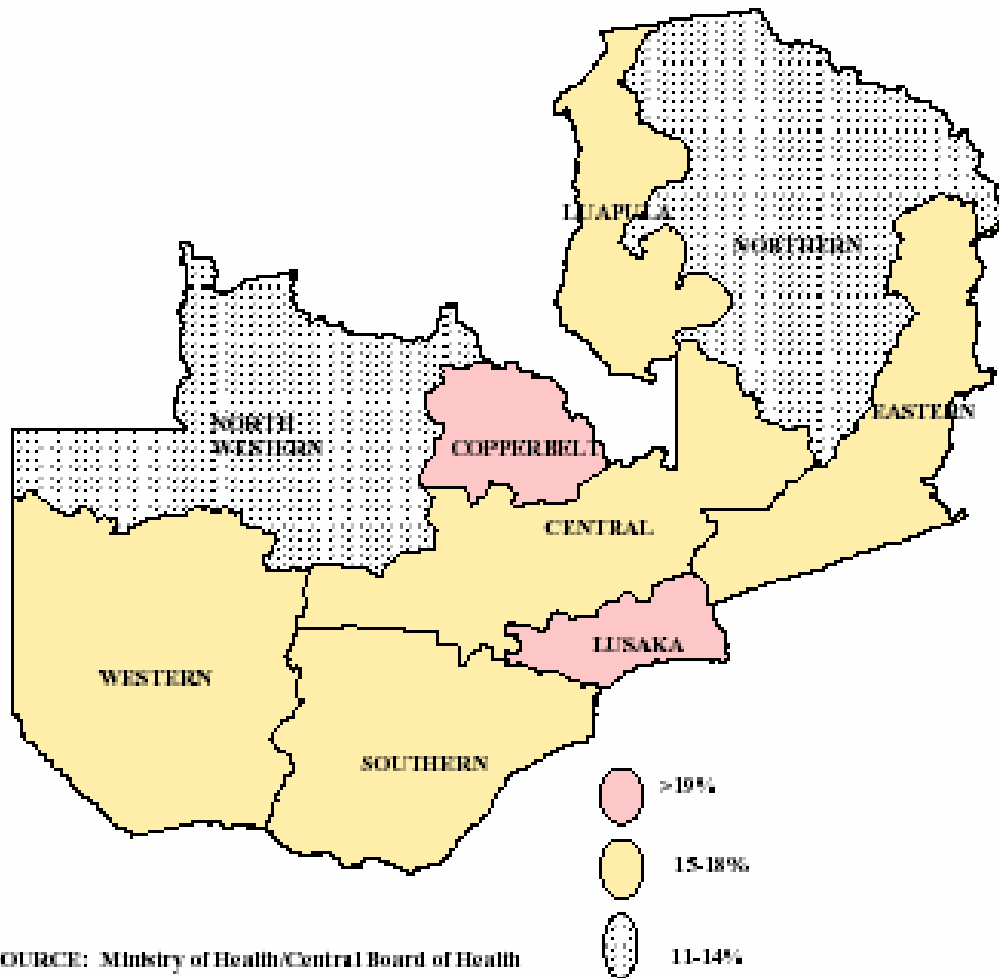
Figure VIII: Proportionate Energy Production From Smallholder Food Crops by Crop Type in Zambia

Energy Production In Rural Areas From Smallholder Food Crops - Zambia (%)



Source: Zulu et al (2000)

Figure IX: HIV Prevalence, Ages 15 to 49, By Province in 1998



Taken from Vulnerability Assessment Mapping Report (MAFF, 2000)

Table XVIII: The Socio-Economic Impact of HIV/AIDS on Rural Households (Waller, 1998)

Stages of Illness	Changes in Household Structure	Changes in Domestic & Farming Organization	Changes in Agricultural Production & Individual Welfare
Stage 1: initial period of illness in and out migration of ill person and caregiver through 1-3 episodes *	<ul style="list-style-type: none"> • urban/rural or/and rural/rural in- • migration of ill person and children over 1-3 episodes • additional dependent members • out-migration of care giver 	<ul style="list-style-type: none"> • decreases in ill person's and care giver's productivity • increase in work day for care giver • decreases in time allocated to farming and domestic chores for care giver • increase in workload for teenagers • hire labour • rotation of care giving between women cross-generationally and between households 	<ul style="list-style-type: none"> • less labour available to meet labour demands in prime planting and harvesting periods • decrease in area cultivated • emotional and physical strain for care giver • reduced yields • loss of cash to medical/transport costs • reduction in farming inputs • decrease in market gardening for women • children taken out of school temporarily • poorer nutrition • sale of household labour • increase in sale of livestock
Stage 2: death and bereavement	<ul style="list-style-type: none"> • loss of adults in prime productive years • new episodes of illness with in-migration of ill person • out-migration of care giver 	<ul style="list-style-type: none"> • increase in workload for women • increase in workload for older generations • pooling of resources between HIV/AIDS afflicted and affected to supply labour and satisfy caring needs 	<ul style="list-style-type: none"> • loss of cash income and cattle to pay for coffin and funeral expenses • reduced yields • reductions in area planted • decrease in range of crops • emotional strain for all members • reaffirmation of kin ties • feuds over inheritance • ritual cleansing
Stage 3: longer term orphans	<ul style="list-style-type: none"> • additional dependent members • additional productive members • possible illness of seropositive child • households amalgamating or splitting 	<ul style="list-style-type: none"> • increase in workload for grandparents • increase in work day • increase in work load for teenage orphans 	<ul style="list-style-type: none"> • diversion of cash income to feed and care for orphans • increasing yields as orphans mature • poorer diet • loss of educational opportunities for children

Annex 7: Agricultural Policy Framework

From: WTO Trade Policy Review – Zambia, Report by Secretariat, 25 Sept, 2002

In early 2002, Zambia reviewed developments in its economy and noted the failure of its agricultural policy to enhance food security on a sustained basis. This was attributed to inability to harness abundant water, arable land, and human resources. Agriculture is now considered as the prime engine for achieving broad-based economic growth and poverty reduction.

The draft National Agricultural Policy (2001-2010) continues the Government's previous emphasis on liberalizing the agriculture sector and promoting private-sector participation in production, marketing, input supply, and credit. However, as the vast majority of smallholder farmers are poor and need credit for their development, the Government decided to provide credit directly primarily for the purchase of fertilizer. The programme is not yet in place, but its goal will be to encourage small-scale farmers to become medium-scale producers.

Between 1996 and 2001, the development of the agriculture sector was coordinated through the Agricultural Sector Investment Programme (ASIP). While ASIP provided a foundation for the development of the sector, goals were not met, due largely to an unfavourable macroeconomic environment, inadequate resources, poor agriculture infrastructure, and slow private-sector response. In sum, in spite of the huge potential and past interventions, the agriculture sector has not been making a significant contribution to poverty reduction and overall growth of the economy. As part of the government's Poverty Reduction Strategy Paper (PRSP), it was determined that, to meet the target of reducing poverty to 50% of the population in 2004 (from 72.9% in 1998), major attention would be given to agriculture. The result was the creation of an Agriculture Commercialisation Programme (ACP).

The ACP is to focus on increasing income generation through farming and to target government efforts on farmers aspiring to commercialize their activities. The key operational principles for ACP will include a special focus on market linkages and commercialization as well as building a culture of business entrepreneurship and ethics among players in the sector. The main target group is commercially oriented farmers, particularly small-scale farmers.

As part of its Poverty Reduction Strategy exercise, the Government intends to place agriculture as the leading sector for food security, economic growth, and poverty alleviation. In so doing, the Government has slightly revised the objectives of the agricultural policy in place in 1996. The current objectives are to: (a) ensure national and household food security through dependable annual production of adequate supplies of basic foodstuffs at competitive costs; (b) contribute to sustainable industrial development by providing locally produced agri-based raw materials; (c) increase agricultural exports, thereby enhancing the sector's contribution to the balance of payments; (d) generate income and employment through increased agricultural production and productivity; and (e) ensure that the existing agricultural resource base is maintained and improved upon.

In recent years, to achieve its agricultural objectives, the Government has relied on the private sector, mainly large-scale commercial farmers. For this, it is seeking to attract additional investment in agri-processing and in commercial farming. Incentives available for agriculture include: duty-free imports of agriculture machinery for investment certificate holders; in rural areas, an enterprise holding an investment certificate pays one seventh of the normal 35% corporate income tax in its first five years of operation; 15% income tax on export earnings; dividends payable to farmers are tax exempt for the first five years of operation; 15% income tax on farming profits; capital expenditure on farm improvements qualify for an allowance of 20% per annum for each of the first five years; customs duty on agricultural inputs such as bovine semen, animal embryos, and fish has been eliminated; customs duty on greenhouse plastic sheeting, tubes, and hollow profiles has been reduced from 25% to 15%; customs duty

on the medium used for growing roses has been removed; customs duty on cold-room equipment has been reduced from 25% to 15%; full allowance for outlay on land development, conservation, and other costs; "substantial" rate of depreciation to allow farm machinery to be rapidly written off against tax; and "special development allowances" for growing certain crops such as tea, coffee, bananas, and citrus fruit.

The PRSP process has focused on the need to pay closer attention to the vast majority of farmers, who are small-scale producers. This process identified shortcomings in the agricultural liberalization programme in operation since 1989, which has removed quantitative restrictions on imports, eliminated subsidies and monopoly marketing boards for both agricultural inputs and products, and deregulated prices. However, little was done to help the private sector fill the vacuum left by the boards. Three main areas of policy weaknesses and constraints have been identified: the rapid pace of policy reform without transitional measures to mitigate the change; inadequate resource allocation for agricultural services; and unclear and inconsistent policy statements from politicians.

There has been some improvement in promoting private-sector participation in agriculture and improved private/public-sector partnership. The main remaining problems include: poor infrastructure, such as roads, bridges, and lack of storage facilities; lack of or poor access to credible marketing institutions; inadequate credit facilities; low priority given to agriculture as reflected in budgetary allocation to this sector; low output and high input prices; poorly implemented agricultural policies; macroeconomic instabilities, reflected in high inflation and high interest rates; and poorly remunerated staff and lack of incentives for field staff.

The drought situation in 2002 reached crisis proportions, with the Government declaring a national food disaster in May. Domestic stocks were expected to be depleted by September. This clearly indicates the failure of previous efforts to protect against such a situation.

Tariffs remain the main trade policy instrument in the sector. The maximum tariff rate of 25% applies to some 60% of the tariff lines in the sector (up from 56% in 1996); for instance, imports of tobacco and logging products. Food, excluding cereals, is subject to relatively high rates of 15% or 25% (Chart IV.1). The average applied rate for agriculture (Major Division 1 of ISIC Revision 2) is 18.7% (up from 18.2% in 1996), with a standard deviation of 9.4%; the overall average rate is 13.4%. Like other WTO Members, Zambia has bound all its tariff lines in agriculture; a ceiling binding of 125% is applicable to about 97% of lines.