

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

**FOOD SECURITY AND REGIONAL
INTEGRATION IN THE SADC REGION**

7

SUBMITTED BY SHANNON MARIA TAGG

In partial fulfilment of the requirements for the degree of Master of
Commerce in Economics

School of Economics
University of Cape Town

May 2002

TABLE OF CONTENTS

ABSTRACT	1
LIST OF ABBREVIATIONS	2
INTRODUCTION	5
PART 1: FOOD SECURITY	9
1.1 FOOD SECURITY	9
1.1.1 FOOD SECURITY DEFINED.....	9
1.1.2 A GLOBAL AND AFRICAN PROBLEM.....	10
1.1.3 DETERMINANTS OF FOOD SECURITY	10
1.1.4 THE FUNDAMENTAL CAUSE OF FOOD INSECURITY	11
1.2 POVERTY, FOOD AND AGRICULTURE IN SADC	11
1.2.1 QUANTIFYING THE SITUATION	11
1.2.2 GENERAL OBSERVATIONS	14
1.2.3 ECONOMIC TRANSFORMATION	14
1.2.4 COUNTRY-SPECIFIC OBSERVATIONS.....	15
1.2.4.1 The Island States	15
1.2.4.2 South Africa.....	15
1.2.4.3 The Other Non-Low Income Food Deficit Countries (LIFDCs).....	16
1.2.4.4 The War-ravaged Economies	16
1.2.4.5 The Other LIFDCs	16
1.2.4.6 Net Food-Importing Developing Countries (NFIDCs).....	17
1.3 CHALLENGES FOR FOOD SECURITY IN THE SADC REGION	17
1.3.1 SLOW GROWTH IN THE AGRICULTURAL SECTOR	17
1.3.2 POPULATION GROWTH AND GENDER ISSUES.....	18
1.3.3 ENVIRONMENTAL DAMAGE	19
1.3.4 LIMITED INTRA-REGIONAL CO-OPERATION	19
PART 2: POLICY	20
2.1 INTRODUCTION	20
2.2 TOWARDS AN IMPLEMENTABLE PLAN OF ACTION	21
2.2.1 THE COMPONENTS OF A PLAN	21
2.2.2 IMPORTANT CONSIDERATIONS WHEN FORMULATING A PLAN	22
2.3 RATIONALE FOR A REGIONAL PLAN?	22
2.3.1 Regionalism Versus Exclusive Nationalism	22
2.3.2 The Appropriateness of a Regional Plan.....	23
2.4 FOOD, AGRICULTURE AND NATURAL RESOURCES IN THE SADC FRAMEWORK	24
2.4.1 ORGANISATIONAL STRUCTURE OF SADC	24

2.4.2	SECTORAL CO-OPERATION	25
2.4.3	THE CLUSTERING OF THE SECTORS.....	26
2.4.4	THE FANR DU	26
2.4.4.1	The New Cluster of Sectors.....	26
2.4.4.2	The FANR Objectives.....	26
2.5	THE POLICY CONTEXT	27
2.5.1	DEFINING FOOD SECURITY POLICY	27
2.5.2	THE CHANGING ENVIRONMENT	27
2.5.3	THE MAIN STAKEHOLDERS	28
2.5.4	TRADITIONAL POLICY MEASURES AVAILABLE	29
2.5.4.1	Producer Support	29
2.5.4.2	Food Consumption Policies.....	29
2.5.4.3	Intervention to Correct for Institutional Failure	29
2.5.5	THE CORRECT POLICY MIX.....	29
2.5.6	FOOD SECURITY POLICY USE.....	30
2.6	MACRO AND AGRICULTURAL SECTOR POLICY	30
2.6.1	MACRO POLICY	31
2.6.2	AGRICULTURAL POLICY	31
2.6.3	INDIVIDUAL COUNTRY REFORM.....	32
2.6.3.1	Botswana.....	32
2.6.3.2	Lesotho.....	33
2.6.3.3	Malawi.....	33
2.6.3.4	Mozambique.....	34
2.6.3.5	South Africa.....	34
2.6.3.6	Swaziland	34
2.6.3.7	Tanzania	34
2.6.3.8	Zambia.....	35
2.6.3.9	Zimbabwe.....	36
2.7	INSPIRATION FOR A PLAN OF ACTION	36
2.7.1	THE 2020 VISION	36
2.7.2	IFPRI'S RECOMMENDED ACTION	37
2.7.2.1	Strengthen Government	37
2.7.2.2	Reduce Poverty.....	38
2.7.2.3	Improve Agricultural Research and Extension.....	38
2.7.2.4	Improve Environmental Practice	38
2.7.2.5	Reform Agricultural Input and Output Markets	39
2.7.2.6	International Co-operation	39
2.7.3	CRITIQUE OF THE RECOMMENDATIONS.....	39
2.8	TOWARDS SADC'S NEW FOOD SECURITY STRATEGY.....	40
2.8.1	SADCC'S EARLY PROGRAMS.....	40
2.8.2	1987 REFORMS.....	41
2.8.3	A CHANGE IN EMPHASIS	41
2.8.4	THE LATEST PLAN	42
2.9	A NEW STRATEGY FRAMEWORK FOR THE FOOD SECURITY SECTOR ...	43
2.9.1	DEFINING FOOD SECURITY TO SHAPE THE PLAN	43
2.9.2	PRINCIPLES ON WHICH THE PLAN IS BASED.....	43
2.9.3	A REGIONAL FOOD SECURITY STRATEGY.....	44

2.9.3.1	Access	44
2.9.3.2	Availability	44
2.9.3.3	Nutrition	45
2.9.4	TOWARDS AN IMPLEMENTABLE STRATEGY	46
2.9.5	INSTITUTIONAL CAPACITY TO IMPLEMENT THE OPERATIONAL OBJECTIVES	47
2.9.5.1	The Regional FANR Co-Ordination and Co-Operation Program	47
2.9.5.2	The Regional Information System (RIS) for Food Security	47
2.9.5.3	The Regional FANR Policy Analysis Network (PAN)	47
2.9.5.4	The Regional Food Security Training Program	48
2.9.5.5	The Regional Drought Mitigation Program	48
2.9.5.6	New Projects.....	48
2.9.6)	CRITIQUE OF THE STRATEGY	48
PART 3: TRADE.....		50
3.1	INTRODUCTION	50
3.2	THE LINKS BETWEEN TRADE AND GROWTH.....	50
3.2.1	THE CASE FOR FREE TRADE	50
3.2.2	POVERTY AND TRADE	51
3.3	LEVELS OF TRADE.....	52
3.3.1	TRADE AND AGRICULTURE IN SADC - OVERVIEW	52
3.3.2	INTERNATIONAL TRADE	54
3.3.2.1	General	54
3.3.2.2	Agricultural Trade.....	54
3.3.3	REGIONAL TRADE.....	55
3.3.3.1	General	55
3.3.3.2	Agricultural Trade.....	56
3.4	BARRIERS TO AGRICULTURAL TRADE	57
3.4.1	BARRIERS TO INTERNATIONAL TRADE	57
3.4.2	BARRIERS TO REGIONAL TRADE.....	57
3.5	TRADE LIBERALISATION.....	59
3.5.1	WHY LIBERALISE?	59
3.5.2	UNFAIR TRADING PRACTICES.....	59
3.5.3	GLOBAL TRADE LIBERALISATION	59
3.5.4	AGRICULTURE IN THE WORLD TRADING SYSTEM	60
3.5.4.1	The AOA	60
3.5.4.2	The General Agreement on Tariffs and Trade (GATT).....	61
3.5.4.3	Uruguay Round.....	61
3.5.4.4	Developing Country Concerns	62
3.5.4.5	Food Security in the Agricultural Negotiations.....	63
3.5.4.6	Reform Progress	64
3.5.4.7	EU and US Domestic Policies.....	64
3.5.4.8	The Lome Convention.....	65
3.5.5	SADC IN THE WTO.....	66
3.5.5.1	General	66
3.5.5.2	Individual country trade reforms	66
3.5.5.3	Agricultural Trade Negotiations.....	67

3.5.5.4	Agricultural Trade Reforms	68
3.6	FREE TRADE IN SADC.....	69
3.6.1	SADC FTA.....	69
3.6.1.1	Trade Protocol	69
3.6.1.2	Sensitive Products.....	69
3.6.2	NECESSARY CONDITIONS FOR A SUCCESSFUL FTA	70
3.6.3	CONSTRAINTS TO THE SUCCESSFUL FORMATION OF A FTA.....	71
3.6.4	PROSPECTS FOR SUCCESSFUL REGIONAL INTEGRATION	71
3.6.5	WHY AGRICULTURAL TRADE LIBERALISATION?	72
3.6.6	WINNERS AND LOSERS IN A FTA	73
3.6.6.1	Regions.....	74
3.6.6.2	Countries	74
3.6.6.3	Households and Individuals	74
3.6.6.4	Sectors and Products	74
PART 4:	A CASE STUDY OF CEREAL AND MAIZE TRADE	75
4.1	INTRODUCTION.....	75
4.2	THE ANALYSIS	75
4.3	CEREAL VOLUME DATA.....	76
4.3.1	CEREAL PRODUCTION	76
4.3.2	CEREAL DEMAND AND SUPPLY	76
4.3.3	NET IMPORTS OF CEREALS AND MAIZE.....	79
4.3.4	INTRA-SADC CEREAL TRADE	81
4.4	CEREAL PRODUCTION AND TRADE.....	83
4.4.1	FACTOR ENDOWMENTS.....	84
4.4.2	PRODUCTION PATTERNS.....	85
4.4.3	CONSUMPTION PATTERNS.....	86
4.4.4	OUTPUT VARIATION.....	86
4.4.5	SCOPE FOR INCREASED CEREAL TRADE	87
4.5	POTENTIAL MAIZE TRADE ASSESSMENT	87
4.5.1	MOTIVATION FOR THE PROJECT.....	88
4.5.2	THE NATURE OF THE PROBLEM.....	88
4.5.3	LAND SUITABILITY AND TRANSPORT MODELLING	89
4.5.3.1	Land Suitability	89
4.5.3.2	Transport Modelling	91
4.5.3.3	Optimisation	92
4.5.4	APPLICATION TO FOOD SECURITY ALLEVIATION	92
4.5.5	FURTHER USES FOR SUCH A MODEL	92
CONCLUSION.....	93	
APPENDIX: FACTOR ENDOWMENTS	95	
REFERENCES	97	

LIST OF TABLES

TABLE 11: SELECTED STATISTICS HIGHLIGHTING THE HETEROGENEOUS NATURE OF SADC.....	6
TABLE 1.1: COUNTRY PROFILES.....	12
TABLE 1.2: PROJECTED POPULATION (IN 1000S).....	18
TABLE 2.1: THE STRATEGIC AND ASSOCIATED OPERATIONAL OBJECTIVES OF THE FSTAU.....	46
TABLE 3.1: SADC'S MAIN EXPORTS AND IMPORTS.....	53
TABLE 3.2: INTRA-SADC TRADE (1996 DATA IN US\$ MILLIONS).....	55
TABLE 3.3: COMPOSITION OF INTRA-REGIONAL TRADE IN SOUTHERN AFRICA, 1992 - THE % OF TRADE WITH COUNTRIES IN SOUTHERN AFRICA.....	56
TABLE 3.4: SELECTED AGRICULTURAL TARIFFS FOR SOME SADC COUNTRIES.....	58
TABLE 3.5: THE REDUCTIONS IN AGRICULTURAL SUBSIDIES AND PROTECTION AGREED IN THE URUGUAY ROUND.....	62
TABLE 4.1: NET IMPORTS (MT).....	80
TABLE 4.2: NET IMPORTS AS A PROPORTION OF NATIONAL PRODUCTION.....	81
TABLE 4.3: INTRA-SADC CEREAL TRADE.....	82
TABLE 4.4: DIFFERENT MEASURES OF ARABLE LAND.....	85
TABLE 4.5: STANDARD DEVIATIONS OF PRODUCTION PER CAPITA (1980 TO 1999).....	85
TABLE A1: LAND ENDOWMENTS (1999).....	95
TABLE A2: MACHINERY AND FERTILISER USE (1999).....	95
TABLE A3: POPULATION STATISTICS (1999).....	96

LIST OF FIGURES

FIGURE 2.1: FLOW CHART SHOWING THE SCOPE OF A FOOD SECURITY STRATEGY	22
FIGURE 2.2: SADC'S ORGANISATIONAL STRUCTURE.....	24
FIGURE 3.1: MODEL FRAMEWORK TO EVALUATE TRADE LIBERALISATION IN A SPATIAL- EQUILIBRIUM MODEL.....	72
FIGURE 4.1: CEREAL PRODUCTION	77
FIGURE 4.2: PRODUCTION, FOOD AND NET IMPORTS PER CAPITA OF CEREALS.....	78
FIGURE 4.3: LAND SUITABILITY MAP FOR MAIZE FOR SOME SADC COUNTRIES.....	90

University of Cape Town

ACKNOWLEDGEMENTS

Thank you to the following people for their help in the completion of this dissertation:

- Trudi Hartzenburg, of the Development Policy Research Unit at UCT, for supervision and support. Thank you for all the opportunities that were afforded to me and I value your insight and advice.
- Theo Kleynhans and Anton Kunneke, of the University of Stellenbosch, for consultations and access to their unpublished report. Thank you for all your time.

University of Cape Town

ABSTRACT

This thesis focuses on food security, policy and trade in the Southern African Development Community (SADC) region. Food security is rigorously defined, and its ideological foundations are examined. Because food security is so intricately linked to poverty and rural development, a discussion of the food security situation renders a study of the socio-economic situation in the SADC region necessary. Food security is not just an agricultural phenomenon, and thus policies to eradicate hunger have to be broad based as opposed to merely concentrating on increasing food production. The policy discussion looks at how the changing perception of the concept of food security has shaped the formation of SADC's food security strategy from 1980 to the present. Agricultural policy reforms, insofar as they are mechanisms to ensure the proper functioning of the agricultural markets in providing sufficient food, are also examined in this context and presented in an appendix.

In the past, self-sufficiency in food production was an important form of national security and political sovereignty, and thus the change in economic mindset required in order to overcome the notion of the equivalence of food security and self sufficiency has been a slow process. South Africa's position as the largest and dominant economy in the region has had major implications for this - the desire for self-sufficiency in the rest of the Sub-Saharan African countries was further fuelled by South Africa's pariah status resulting from its apartheid policies. Meanwhile, South Africa's economic isolation necessitated the development of an agricultural sector far larger than that dictated by its natural resource endowment. Thus, since 1994, as South Africa has become more integrated into the world trading system, a regional plan involving trade has become far more feasible. Because of the political sensitivity of agriculture in the world trading system, regional agricultural trade cannot be discussed in isolation, and thus issues on the global agricultural trade agenda are discussed in detail.

In light of the above discussions, it is concluded that there is scope for a regional plan to address the problem of food security in the region. The implementation of a Free Trade Area (FTA) with its perceived increase in food trade should help make progress in the quest for regional food security. Land suitability assessment and transport modelling can be used in the formation of a regional plan, and thus a presentation of these tools is used to conclude the thesis. The case study of cereal and maize trade is the major contribution of this thesis. Food security policy as outlined in the thesis does not appear to be easily implementable, and thus the use of such measures by regional policy makers may contribute towards a more solid foundation on which to base a food security plan.

LIST OF ABBREVIATIONS

ACP	Africa Caribbean Pacific
ADMARC	Agricultural Development and Marketing Corporation
AG	Agriculture/Agricultural
AGRICOM	Agricultural Marketing Enterprise
AMS	Aggregate Measure of Trade Distorting Agricultural Support
ANG	Angola
AOA	Agreement on Agriculture
APIS	Agricultural Potential Information System
BLNS	Botswana, Lesotho, Namibia, Swaziland
BOP	Balance of Payments
BOT	Botswana
CAP	Common Agriculture Policy
CIA	Central Intelligence Agency
CMT	Committee of Ministers Responsible for Trade Matters
DBSA	Development Bank of Southern Africa
DEST	Destination
DRC	Democratic Republic of Congo
EEC	European Economic Community
EIS	Environmental Information System
EU	European Union
FANR (DU)	Food, Agriculture and Natural Resources (Developing Unit)
FAO	Food and Agriculture Organisation
FEWS	Famine Early Warning System
FSDP	Food Security Database Project
FSNIS	Food Security and Nutrition Information System
FSTAU	Food Security Technical and Administrative Unit
FTA	Free Trade Area
GATT	General Agreement on Tariffs and Taxes
GDP	Gross Domestic Product
GEIS	General Export Incentive Scheme
GIS	Geographical Information System
GMB	Grain Marketing Board
GNP	Gross National Product
HA	Hectare
HDI	Human Development Index

IFPRI	International Food Policy Research Institute
ICM	Instituto de Cereais de Mozambique
IMF	International Monetary Fund
KG	Kilograms
LES	Lesotho
LIFDC	Low Income Food Deficit Country
MAL	Malawi
MAU	Mauritius
MOZ	Mozambique
MT	Metric Ton
NA	Not Available
NAM	Namibia
NAMBOARD	National Agricultural Marketing Board
NAPB	National Agricultural Products Board
NFIDC	Net Food-Importing Developing Countries
NTB	Non-Tariff Barrier
OECD	Organisation for Economic Co-operation and Development
PAN	Policy Analysis Network
PC	Per Capita
POP	Population
PPP	Purchasing Power Parity
PTA	Preferential Trade Area
R&D	Research and Development
REPA	Regional Economic Partnership Agreement
REWS	Regional Early Warning System
RIS	Regional Information System
ROO	Rules of Origin
SA	South Africa
SACU	Southern African Customs Union
SADC	Southern African Development Community
SADCC	Southern African Development Co-ordination Conference
SAP	Structural Adjustment Program
SEY	Seychelles
STD DEV	Standard deviation
SWA	Swaziland
TAN	Tanzania
TNF	Trade Negotiating Forum

UN	United Nations
US	United States
WTA	World Trade Analyser
WTO	World Trade Organisation
ZAM	Zambia
ZIM	Zimbabwe

University of Cape Town

INTRODUCTION

The Southern African Development Community (SADC) has never been food secure. The reason for this is complex and the failure of the agricultural sector to provide enough food as well as the failure of the other sectors in the economy to provide enough income to buy the food that is available has been well documented in the agricultural and development economics literature.

It is important to understand the relationship between food security and regionalism. Food security at the national level is a social objective for all countries. Given the increasing trend towards regionalism, and the closer economic and political ties that are fostered within these arrangements, countries are becoming more concerned with the welfare of the other member countries. Regional integration¹ should lead to the more efficient use of resources, and thus it can be used as a platform to strive the food security objective across countries.

Regional integration as a means to improved food security in the SADC region forms the analytical section of this thesis. A case study examining initially cereals and then maize production, consumption and trade in the region is the main contribution in terms of data presentation and analysis. The following statement by Von Braun et al (1999: 6) provided the motivation for this thesis:

By facilitating intra-regional trade, food security in the region will be enhanced: single countries do not necessarily have to rely on domestic production in order to meet domestic demand; assortment and availability of foodstuffs are likely to increase; overall incomes of agricultural producers will be higher and opportunities for specialisation will be encouraged.

Improvement of food security is an important component of any poverty alleviation strategy. Food is a special commodity - it is the most basic of human needs and the issues surrounding its demand and supply deserve undivided attention. Food shortages and high prices hurt the poor, while food surpluses and low prices hurt farmers and the rural community. Since survival is impossible without food, and food markets do not always provide the correct signals, the government (through its various policies and strategies) plays an important role in determining food production and consumption. However, the agricultural sector in most developing countries is characterised by both policy failure and market failure and thus there is significant scope for economists to improve on the existing policy framework.

¹ Regional integration can be described as the reduction in barriers between countries in order to facilitate transactions and the flow of goods, capital and labour. There are varying degrees of regional integrations (from free trade areas, to customs unions and ultimately to common markets), and these arrangements include the harmonisation of laws, regulations and standards (Deardoff's Glossary of International Economics, 2002).

The SADC Region

The SADC region is comprised of the following fourteen countries: Angola, Botswana, the Democratic Republic of Congo (DRC), Lesotho, Malawi, Mauritius, Mozambique, Namibia, the Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe. SADC was formed in 1992 and evolved out of the Southern African Development Co-ordination Conference (SADCC) that was established in 1980. The SADCC consisted of ten member countries with Mauritius and South Africa joining SADC in 1994 and the DRC and Seychelles in 1998.

Economic co-operation in SADCC was based on a sectoral approach while SADC has shifted its focus to include trade integration with the signing of the Trade Protocol in 1996 and the movement towards a Free Trade Area (FTA). How regional integration, in the form of increased trade as well as policy co-ordination, will help improve the situation forms the bulk of this thesis while the production, consumption and trade of staple food forms the backbone of the data analysis.

The SADC countries are an extremely heterogeneous group of countries and the food security situation in the region is not uniform. The fourteen countries vary in size from 455 square kilometres (Seychelles) to 2 345 410 square kilometres (the DRC); in population from 79 326 people (Seychelles) to 51 964 999 people (the DRC); and in income - GDP ranges from \$296.1 billion in South Africa to \$590 million in Seychelles. The statistics are shown in the table below²:

Table II: Selected statistics highlighting the heterogeneous nature of SADC

	Total area (km ²)	Population	GDP (in PPP US\$)
Ang	1246700	10145267	\$11.6 bil
Bot	600370	1576470	\$5.7 bil
DRC	2345410	51964999	\$35.7 bil
Les	30355	2143141	\$4.7 bil
Mal	118480	10385849	\$9.4 bil
Mau	1860	1179368	\$12.3 bil
Moz	801590	19104696	\$18.7 bil
Nam	825418	1771327	\$7.1 bil
Sey	455	79326	\$590 mil
SA	1219912	43421021	\$296.1 bil
Swa	17363	1083289	\$4.2 bil
Tan	945087	35306126	\$23.3 bil
Zam	752614	9582418	\$8.5 bil
Zim	390580	11342521	\$26.5 bil

Source: CIA's *The World Factbook 2000* (www.odci.gov/cia/publications/factbook/index.html).

² Note that GDP per capita is shown in table I.1.

These simple statistics highlight the disparities in the region in terms of available land (total area), market size (population) and country wealth (GDP). What is immediately evident from the above table is the dominance of South Africa in the region accounting for about 65% of the regions' GDP.

In addition, the diversity of their endowment of natural resources, settlement patterns and agricultural output has resulted in a food security situation over the region that is definitely not uniform. Some countries produce more food than they require, others do not but can afford to import, whilst some countries lack the necessary foreign exchange to fill the consumption-production shortfall. In addition, access to the available food in the country varies greatly within the population due to the unequal distribution of incomes that characterises the SADC countries.

Thesis Outline

This thesis consists of four parts: Part 1 is titled food security, Part 2's title is policy, Part 3's title is trade and Part 4 is a case study examining cereal and then maize production, consumption and trade.

Part 1 defines food security and then examines the situation prevailing in the SADC countries, as well as the determinants of food security. Since hunger results from people being too poor to either buy or grow enough food, food insecurity and poverty are intricately linked and a discussion of the low level of economic development in the region is necessary to understand food insecurity. A table provides poverty, food insecurity and agricultural sector indicators for each country and a detailed discussion follows.

The reasons for food insecurity in SADC are linked to the lack of agricultural growth, the problem of overpopulation, the resulting environmental damage and limited intra-regional co-operation. How increased co-operation can improve food security is the basis of both Part 2 and Part 3 and thus Part 1 briefly discusses the first three reasons for food insecurity in SADC.

Part 2 examines regional co-operation in terms of policy co-ordination and the components of a regional plan are covered extensively. Food, agriculture and natural resources occupy a priority position in SADC's organisational structure and this sector is discussed in the context of SADC's 'sectoral co-operation' approach. Thus, a top-down analytical approach is used to illustrate how SADC as an organisation is dealing with the food insecure situations in its member states. The environment in which such policy is made is important and thus the discussion then turns to the policy context as well as agricultural and macro reforms in the individual countries. International actions and recommendations have also impacted upon the resultant urgency of SADC to adopt a successful strategy and these initiatives are briefly discussed.

SADC's latest food security strategy and its evolution form the bulk of Part 2. The changing understanding of the concept of food security has resulted in a shift in emphasis from food production to household food security and this change is documented carefully. The food security strategy in place today addresses all three components of food security (as will be defined in Part 1) and these strategic objectives are presented. The institutions in place to carry out the operational objectives concludes this part of the thesis.

Part 3 examines increased intra-regional trade in the form of a Free Trade Area (FTA) as the second aspect of regionalism. Trade is associated with economic growth and poverty reduction and these tenuous links are explored briefly before SADC's trade profile is revealed. This profile covers general and agricultural trade within the region as well as with countries outside SADC. The reasons for the low level of agricultural trade in the region are explored. Trade liberalisation is then discussed and this section focuses heavily on the impact of the World Agricultural Organisation (WTO) on regional reforms. Although this thesis advances increased regional trade as the primary means of achieving food security, the impact of the international trading environment cannot be understated and this warrants this in depth coverage. It is anticipated that a SADC FTA will have a positive impact on food security and how this is to be achieved forms the ultimate section of Part 3.

Part 4 is a case study examining staple food production, consumption and trade. Cereals can be used as a proxy for food, and thus the data presentation and analysis forms a comprehensive survey of the food demand and supply in the region. The scope for increased cereal trade in the region is a platform on which the more detailed micro-study of increased maize trade rests. A land suitability map is presented which serves to illustrate the enormous potential of under-utilised parts of the region. A transport model can then be used in conjunction with this map to determine the feasibility of shifting production to these more suitable areas and then transporting the surplus to deficit areas.

PART 1: FOOD SECURITY

1.1 FOOD SECURITY

1.1.1 FOOD SECURITY DEFINED

Food security exists when everyone has access to safe and nutritious food, and there is sufficient food so that everyone is free from hunger. This concept was defined at the Food and Agriculture Organisation (FAO) of the United Nations (UN) World Food Summit at Rome in 1996, where it is understood to mean the following: a food secure state exists when people at the individual, household, national, sub-regional, and regional levels have physical and economic access to sufficient, safe, and nutritious food, at all times to meet their dietary needs and food preferences for an active and healthy life (Abalu and Hassan, 1998: 477).

'The Rome Declaration on World Food Security and Plan of Action to Combat Hunger' defines food security as: 'food that is available at all times, to which all persons have means of access, that is nutritionally adequate in terms of quantity, quality and variety, and is acceptable within the given culture.' Thus, there are three dimensions to food security - the level of aggregation (household, national and global), the time period (short, medium and long term) and the necessary and sufficient conditions (availability, access and utilisation) (McCalla, 1999: 96).

According to the FAO, food security has three aims: to ensure the production of adequate food supplies, to maximise stability in the flow of supplies, and finally to enable access of these supplies to those that need them. Food security is similarly defined by the World Bank and the European Economic Community (EEC).³

It is important to note that food security is not synonymous with food self-sufficiency. Food self-sufficiency refers to the situation where 100% of a nation's staple food (under all possible weather conditions) is provided by current domestic production and stored grains. Food self-sufficiency does not

³ The World Bank defines food security as: 'access by all people at all times to enough food for an active, healthy life. Its essential elements are the availability of food and the ability to acquire it. Food insecurity in turn is the lack of access to enough food. There are two kinds of food insecurity: chronic and transitory. Chronic food insecurity is a continuously inadequate diet caused by the inability to acquire food...Transitory food insecurity is a temporary decline in a household's access to enough food' (Mkandawire and Matlosa, 1993: 8).

The European Economic Community (EEC) defines food security as: 'Food security can most simply be defined as the absence of hunger and malnutrition. For this to be possible, households, villages or countries must have enough resources to produce or otherwise obtain food. This condition is necessary, but not sufficient, because the resources must be well used' (Mkandawire and Matlosa, 1993: 8).

necessarily imply food security - for example, even countries that are considered to be cereal surplus countries still suffer from food insecurity (particularly in rural areas). This situation is mainly due to the skewed distribution of resources, access and income that is typical of the SADC countries and developing countries in general. Thus, food security implies that food is readily available (through domestic production, storage and/or trade) and accessible (through home production, purchase or transfer).

Food sovereignty is another important concept in the food debate. It is defined as a country having the democratic right to determine what food is produced and consumed and how it is distributed according to the communities preferences and cultural traditions (Madeley, 2000: 30). Trade enters into the equation when food self-reliance is defined - this means that a country produces some of its own food but has the available funds to import what it doesn't produce itself.

1.1.2 A GLOBAL AND AFRICAN PROBLEM

Food insecurity is a global problem - at the beginning of the twenty-first century, approximately 790 million people did not have food security and over 20 000 people a day are dying from the effects of hunger. Today Southeast Asia contains 283.9 million hungry people; East and Southeast Asia, 241.6 million; Sub-Saharan Africa, 179.6 million; Latin America, 53.4 million; the Near East and North Africa, 32.9 million (Madeley, 2000: 26). The twist in the tale is that world food production per capita is higher than ever before. The future outlook also looks grim as the world population shows no sign of stabilising - it is expected to increase by 90 million per annum (IFPRI, 1995: 1).

A food crisis is looming in Africa - populations are continuing to increase, food production is slowing down and requiring the necessary food imports is becoming increasingly difficult as the purchasing power of local currencies is reduced. The result has been widespread hunger and poverty and this crisis situation is well documented and has been rudely brought to the world's attention in recent horror films of famine victims (Mkandawire and Matlosa, 1993: 1).

1.1.3 DETERMINANTS OF FOOD SECURITY

In predominantly rural, developing countries, how an individual or household obtains their food has enormous implications for food security. In Sen's famous 1977 book entitled 'Poverty and Famines', he challenged the traditional view that underproduction of food is the main cause of famine, and instead advocated the idea that a lack of entitlements is the principal cause of hunger. These four 'entitlement' relationships were identified in his literature as follows: The first is production-based entitlements - this is subsistence farming and people grow food as a means to self-sufficiency. The second is trade-based entitlements - this is the trading of agricultural or non-food commodities for food. The third is labour-

based entitlements - rural landless labour and urban dwellers need to sell their labour services to buy or barter food. The last is transfer-based entitlements - these people receive food in the form of 'informal gifts' or transfers from government.

1.1.4 THE FUNDAMENTAL CAUSE OF FOOD INSECURITY

Lack of food security at the household level is a direct result of poverty. Poor people may not have the resources available to buy or grow food and thus they go hungry even if food is available. In addition to this fundamental cause, food insecurity has not been alleviated by conscious attempts to improve food production. For example, the green revolution (resulting from increased water supply, improved fertilisers and technologically advanced higher-yielding crop varieties) of the 1960s, which incidentally escaped Africa, has failed to provide sustainably higher yields in the countries in which it did occur.

1.2 POVERTY, FOOD AND AGRICULTURE IN SADC

Is there a food crisis in SADC? The answer depends on the definition of 'crisis' - however, it is safe to say that for many people in the SADC, hunger is the norm. This section gives a brief overview of the individual SADC country's food, agriculture and economic situations. It aims to explore the relationship between poverty, an underperforming agricultural sector and the resulting food insecurity in a country.

1.2.1 QUANTIFYING THE SITUATION

On the following page table 1.1 is presented displaying certain indicators that aim to provide a general picture of poverty, food and agriculture in the SADC countries. A brief discussion of the indicators follows:

- 1) Low income food deficit country (LIFDC) (Y/N)⁴: LIFDCs are classified as food deficit countries with per capita incomes below the level used by the World Bank to determine eligibility for International Donor Assistance with respect to food aid. In the world, there are 86 nations classified as such. 43 are in Africa, 24 in Asia, 9 in Latin America and the Caribbean, 7 in Oceania and 3 in Europe.

⁴ Y is yes (that is, the country in question is a LIFDC) and N is no.

Table 1.1: Country profiles

	LIFDC (Y/N)	GNP per capita (US\$)	HDI	% of the population malnour- ished	Calories per capita per day	Staple food	Prop of daily calories provided by staple	Agri- culture's contrib- ution to GDP	Agriculture output growth rate	% of labour in agriculture
	1	2	3	4	5	6	7	8	9	10
	1998	1999	1998	1995/97	1995/97	1995/97	1995/97	1999	1989-99	1999
Ang	Y	220	0.419	43%	1900	cassava	35%	6.9%	-4.3%	72.12%
Bot	N	3280	0.613	25%	2230	maize, sorghum, wheat	49%	3.6%	0.4%	44.67%
DRC	Y	110	0.44	55%	1820	cassava	57%	50.2%	2.9%	63.69%
Les	Y	560	0.583	28%	2240	maize	75%	18.2%	1.4%	38.21%
Mal	Y	180	0.393	37%	2070	maize	68%	38%	6.6%	83.31%
Mau	N	3590	0.782	6%	2920	wheat, rice	44%	6.2%	-0.2%	12.18%
Moz	Y	230	0.35	63%	1780	cassava	41%	31.6%	4.2%	80.81%
Nam	N	1890	0.651	30%	2140	maize, millet	49%	12.8%	4.2%	42.06%
Sey	N	6540	0.808	na	2389	wheat	21%	5.1%	-1.4%	9.92%
SA	N	3170	0.718	na	2857	maize	31%	3.8%	0.2%	34.29%(14%)
Swa	Y	1360	0.672	14%	2480	maize	51%	15.8%	-0.6%	80.87%(39%)
Tan	Y	260	0.422	40%	2000	maize	49%	44.8%	3.4%	69.95%
Zam	Y	330	0.429	45%	1960	maize	66%	24.6%	3.4%	63.23%
Zim	Y	520	0.57	39%	2100	maize	62%	14.9%	4.1%	59.81%

Sources: Columns 1, 4, 5, 6 and 7 - FAO (1999). Columns 2 and 3 - SADC (2000). Columns 8 and 9 - World Bank (2000). Column 10 - FAO database.

Notes: Column 10 - percentages in brackets are from New African Yearbook (2000). For the other countries, the two sources were relatively consistent.

- 2) GNP per capita (US\$): This is the simplest measure of the standard of living in a country.
- 3) Human Development Index (HDI): The HDI is an indication of human progress and is constructed using the following indicators (proxy measures in parenthesis): longevity (life expectancy at birth), knowledge (adult literacy and the combined school enrolment ratio), standard of living (adjusted per capita income in PPP US\$). The index ranges from zero to one, with values from 0.0-0.499 indicating low human development, 0.5-0.799 medium human development and 0.8-1.0 high human development.
- 4) Percentage of the population malnourished: Malnutrition refers to a qualitative lack of proteins, vitamins or minerals. Undernourishment is a result of a lack of food, whereas people suffering from malnutrition may not feel hungry but have not eaten enough nutritious food.
- 5) Calories per capita per day: The recommended daily calorie intake is approximately 2500. Chronic hunger is associated with an intake of approximately 1500 calories per day and undernourishment with about 2000 calories per day. On average, developed countries consume about 3400 calories per capita per day, developing countries 2430 and least developed countries 2080 (Delpeuch, 1994: 9).
- 6) Staple food: This is the foodstuff that dominates the diet of a country's representative citizen. It is generally a carbohydrate and in Africa, common staples are cereals (wheat, rice, barley, maize, millet and sorghum) or starchy roots such as cassava, potato and sweet potato. Cereal production, consumption and trade is the focus of part 4, and maize as the most widely consumed cereal is investigated using a recently devised framework.
- 7) Proportion of daily calories provided by staple: These figures indicate how important the staple food is.
- 8) Agriculture's contribution to GDP: This is an indication of how important agriculture is to the wealth of a country.
- 9) Agriculture output growth rate: This indicates if agriculture is increasing or decreasing in importance. This measure together with agriculture's contribution to GDP provides evidence of a country's stage in its economic transformation.
- 10) Percentage of labour in agriculture: This measure indicates how important agriculture is as the provider of wage income.

1.2.2 GENERAL OBSERVATIONS

A number of general observations can be made:

- Maize is the staple food in most countries. The exception is the island states where rice and wheat are the preferred basic foodstuffs, and the very poor countries where cassava dominates consumption.
- The poorer the country, the higher agriculture's share of GDP. Angola, Tanzania, Malawi, Mozambique and Zambia have the largest agricultural sectors. An exception to this generalisation is Angola, with agriculture only contributing a small amount to GDP.
- There is no clear relationship between the proportion of calories provided by the staple food and poverty and food insecurity.
- Most of the SADC countries have bigger agricultural sectors than countries with similar per capita incomes.
- Levels of development can only hint at national food security - household food security is determined by access to income or land. The Gini co-efficient (which measure the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution) may give an indication of how uniform the food security situation is across a country. The Gini co-efficient for SADC as a whole (using data from 1980 to 1998) was 0.58, with Namibia having the highest level of inequality (0.7) and Tanzania the lowest (0.38) (SADC, 2000).⁵

1.2.3 ECONOMIC TRANSFORMATION

In order to discuss the indicators, it is useful to divide the countries into groups displaying similar characteristics. Incorporated in the discussion will be reference to each country's stage in the process of economic transformation. Economic transformation refers to changes in the economic structure of an economy as it proceeds along its development path (that is, as per capita incomes increase). Transformation results in a decrease in agriculture's proportional contribution to GDP coupled with a decrease in the percentage (and ultimately absolute number) of the labour force involved in agriculture.

⁵ A Gini co-efficient of zero represents perfect equality and a co-efficient of one represents total inequality. The Gini co-efficients for the other SADC countries are: Angola - 0.54, Botswana - 0.54, the DRC - na, Lesotho - 0.57, Malawi - 0.62, Mauritius - 0.52, Mozambique - na, Seychelles - 0.47, South Africa - 0.59, Swaziland - 0.51, Zambia - 0.5 and Zimbabwe - 0.63 (SADC, 2000: 234).

Four economic environments can be identified in an economy's transformation process and in each of these periods agriculture has a different role to play. The environments can be categorised as follows: phase one - getting agriculture moving; phase 2 - developing agricultural income and employment linkages; phase three - integrating agriculture into the economy; and phase four - agriculture as part an industrial economy (van Rooyen and Sigwele, 1998: 275).

Whatever phase a country is in, has implications for the way in which food security is secured. In phase one, food security is mainly achieved through subsistence agriculture. In phase two, subsistence agriculture, non-farm employment and remittances from wage labour are all forms of food security. In phase three, food security is mainly from wages and enterprise profits and in phase four, incomes secure food.

1.2.4 COUNTRY-SPECIFIC OBSERVATIONS

1.2.4.1 The Island States

The islands of Seychelles and Mauritius are the top performing economies in SADC in terms of levels of human development. Seychelles has a per capita income far in excess of any of the other SADC countries, and Mauritius is second in this regard. Hunger and malnourishment are not widespread and agriculture's low share of GDP is testament to the higher level of economic development in these two countries. Another indication of the higher income level is the fact that rice and wheat are the stable foodstuffs.

Some areas of Mauritius and the Seychelles are in phase four of their economic transformation, while the more rural areas are in phase three.

1.2.4.2 South Africa

The other countries in the region (bar Mauritius and Seychelles) are significantly poorer than South Africa. South Africa's agricultural sector is small in terms of its contribution to GDP and its employment of labour, yet South Africa is a food surplus country and is the main source of food exports within the region. This is probably due to South Africa's comparative advantage in agricultural technology and human capital and not to its natural agricultural resources. Thus, the present situation in SADC is not environmentally sustainable and SADC cannot afford to rely on South Africa for its food imports for much longer. In addition, although South Africa's economy dominates the region and it has the largest economy, it is still home to many hungry people.

The commercial producing areas of South Africa are in phase four of the economic transformation progress, while the former homelands are in phase three.

1.2.4.3 The Other Non-Low Income Food Deficit Countries (LIFDCs)

Botswana and Namibia are the other SADC countries not classified by the FAO as low income food deficit countries. Agriculture in Botswana and Namibia display the characteristics of both phases two and three.

1.2.4.4 The War-ravaged Economies

Angola, the DRC and Mozambique have all been involved in ongoing civil conflicts that have drained the economy. This has resulted in low levels of human development with the accompanying widespread poverty and hunger. War and conflict are associated with hunger as resources are diverted away from agriculture into the war effort. In addition, land is damaged, agricultural inputs are scarce and food supply distribution is disrupted.

Cassava (a starchy root) is the main staple food in all three countries, with maize the most consumed cereal. The fact that cassava is more widely consumed than maize is indicative of the lower levels of agricultural technology employed in these poorer countries. The agricultural sector plays a large role in all three countries, which is clearly related to their low levels of economic development.

Angola is one of the poorest countries in the SADC and the ongoing war has crippled the economy as a whole including the agricultural sector. Angola is classified as very food insecure, and is dependent on imports and food aid. Pre-independence, Angola was self-sufficient in food production (except for wheat) but the war and subsequent failure of state owned farming operations has resulted in this crisis situation. The DRC's ailing economy is not able to support the food needs of its population, and it relies on food aid for a large part of its consumption needs.

Both Angola and the DRC are in the first phase. Parts of Mozambique are in the first phase while southern Mozambique is in the second phase.

1.2.4.5 The Other LIFDCs

Lesotho, Malawi, Swaziland, Tanzania, Zambia and Zimbabwe are all prone to food insecurity. Maize is the staple in all countries and average calorie intake is below 2500 for all countries.

Lesotho is in phase one. Parts of Malawi are still in phase one while most of it is in phase two. Swaziland is in phase two. Southern Tanzania is in the first phase while coastal Tanzania is in the second phase. Southern Zambia is in phase one while the rest of Zambia is in phase two. North eastern Zimbabwe is in phase one while the northern and central areas are in phase two.

1.2.4.6 Net Food-Importing Developing Countries (NFIDCs)

This is a WTO classification and there are nineteen countries in the world recognised as such. These countries include the SADC states of Botswana and Mauritius. These countries fair well in food security when compared to other SADC members but since most food needs to be imported, these countries are especially vulnerable to developments in world food markets (price shocks and shortages or gluts) plus exchange rate movements.

1.3 CHALLENGES FOR FOOD SECURITY IN THE SADC REGION

1.3.1 SLOW GROWTH IN THE AGRICULTURAL SECTOR

Because of the poor quality of agricultural data in Southern Africa, the state of agriculture is subject to debate (Abalu and Hassan, 1998: 478). In general, agricultural growth has not kept up with population growth. As populations continue to increase, there will be even greater pressure on agriculture.

Poor performance in the agricultural sector is due largely to the quality of the natural resources (in terms of climate, soils, topography and ecology), environmental degradation (soil erosion, desertification, deforestation and environmentally damaging farming practices, for example, overgrazing), inadequate rainfall and water supplies and drought (the three major droughts in recent history were from 1972 to 1974, 1983 to 1984 and 1992 to 1993). In addition, the underfunding of agriculture (in terms of investments and R&D spending) has also limited the development of better crops and farming techniques. The percentage of agriculture's share of GDP invested in agricultural research is an indication of how far Southern Africa lags behind the rest of the world. The figures are as follows: South Africa = 1.0%; Eastern Africa = 0.63%; Southern Africa = 1.04%; North America = 3.27%; the European Union = 2.06%; Australia = 4.02% (van Rooyen and Sigwele, 1998: 273). In addition, inadequate health care expenditure also results in lower productivity and HIV/AIDS is a major concern here. Finally, a high level of foreign debt means that resources are diverted away from agriculture and into debt repayment.

The eighth and ninth columns in the table give some indication of the size of the agricultural sector in each SADC country. In terms of agriculture's contribution to GDP, eight of the countries have

agricultural sectors larger than their manufacturing sectors - Angola, the DRC, Lesotho, Malawi, Mozambique, Tanzania, Zambia and Zimbabwe.⁶ This is obviously an indication of the lower level of economic development in these countries, compared to the other six SADC members.

1.3.2 POPULATION GROWTH AND GENDER ISSUES

It is clear from the table below that populations in SADC are expected to increase dramatically. This trend is expected to hold even given the future consequences of the high HIV infection rate. Increasing populations not only put pressure on agricultural resources, but also raise concerns as to whether there is enough land to grow all the food required to feed the additional people. In 2000, SADC's total population was 197 613 thousand with the urban population equal to 70 884 thousand (36% of total population). By 2020 the total SADC population is expected to increase to 296 415 thousand and by 2025 it is expected to be 326 454 thousand. Urbanisation is expected to increase to 47% of the population in 2020 and 50% in 2025. Urbanisation has major implications for food security as efficient functioning transport networks become crucial and without them food security is threatened.

The table below also shows the total fertility rate in the SADC countries. The total fertility rate for the SADC region averaged 5.1 children per female (in 1997). Fertility rates are linked to economic development, and an examination of table 2.1 in conjunction with table 1.1 provides evidence of the strong correlation between fertility and GNP per capita.

Table 1.2: Projected population (in 1000s)

	Fertility rate	Total population			% of urban population in total population		
		1997	2000	2020	2025	2000	2020
Ang	6.8	12,878	22,357	25,107	34.2	47.4	50.5
Bot	4.4	1,622	2,111	2,242	73.6	89.4	90.1
DRC	6.4	51,654	92,263	104,788	30.3	42.6	45.9
Les	4.8	2,153	3,201	3,506	27.9	42.2	45.5
Mal	6.4	10,925	17,820	19,958	15.4	25.6	28.6
Mau	1.9	1,158	1,344	1,379	41.4	51.7	54.7
Moz	5.3	19,680	27,775	30,612	40.2	54.5	57.4
Nam	4.9	1,726	2,177	2,338	40.8	56.1	58.9
Sey	2.1	77	94	98	58.4	69.1	71.4
SA	2.8	40,377	44,571	46,015	50.4	59.1	61.8
Swa	4.7	1,008	1,631	1,785	35.7	50.3	53.4
Tan	5.5	33,517	52,513	57,918	27.8	41.6	44.9
Zam	5.6	9,169	14,248	15,616	44.5	54.5	57.4
Zim	3.8	11,669	14,310	15,092	35.3	49.1	52.2

Source: Fertility rate - SADC; population - FAO database.

⁶ Source: www.cia.gov/cia/publications/factbook/index.html.

The issue of empowering females is in the process of being addressed in SADC and agriculture is one of the sectors of the economy where gender problems constitute a serious threat. Women's contribution to agriculture is often overlooked, and this is a serious omission considering the fact that women farmers produce approximately 80 to 90% of food in Sub-Saharan Africa (Madeley, 2000: 32). Thus, because rural women are often denied access to resources, agricultural potential is not fully realised.

1.3.3 ENVIRONMENTAL DAMAGE

Poor, infertile soils (as a result of erosion, manure shortages, tilling practices, overcropping and limited crop rotation, overgrazing and deforestation) results in low yielding crops, and the desertification of land results in people having to migrate in search of food. Natural disasters always inevitably result in food shortages and entire crops are sometimes destroyed. Global warming has resulted in dramatic climate changes leading to the damage and destruction of crops. Droughts, floods, strong winds and rising sea levels are all attributed to global warming.

1.3.4 LIMITED INTRA-REGIONAL CO-OPERATION

This brief discussion acts as a platform for Part 2 and Part 3 of the thesis. Firstly, regional integration has been limited in the past due largely to food self-sufficiency objectives, plus an absence of an institutional framework before SADC was formed. Self-sufficiency meant that national surpluses were stored and thus neighbouring deficit countries had to import from abroad. The formation of SADC sees food security issues being addressed in two ways: barriers to trade are in the process of being lifted plus a formal regional food security policy framework is now in place. Part 2 looks at food security policy and Part 3 at trade issues.

PART 2: POLICY

2.1 INTRODUCTION

Part 2 of the thesis looks at how regional integration, in the form of policy co-operation and co-ordination can contribute towards improved food security in SADC. Policy co-operation refers to joint solutions to common problems, whereas policy co-ordination refers to consistent and non-conflicting policies in the different countries. It is important to note at the outset that the formation of the Free Trade Area (FTA), as per the 1996 SADC Trade Protocol, is policy co-operation and co-ordination in one of its greatest forms. The issue of freer agricultural trade is explored in Part 3.

Given the situation outlined in Part 1, an all encompassing food security plan needs to be given priority in SADC. The ultimate aim of a plan would be to increase production and smooth consumption of food. Since its inception, the SADC decision makers have attempted to come up with a plan that increases production and improves access to food in conjunction with a plan to deal with the annual production fluctuations resulting from floods, droughts and civil strife that are so common in SADC.

The focus here is what SADC as an organisation is doing by way of policy prescription and implementation to try and alleviate the situation. The fact that SADC's commitment to improving food security has not seen over-all region-wide results is a cause for concern. Success can only really be measured at the household level and thus improvements for some people go hand in hand with a deterioration of their food security situation for others. At the macro level, however, a large proportion of the SADC community is food insecure.

Policy in the individual SADC countries is presented and supplements this discussion. The reason why this is so important is because domestic policy convergence is a necessary condition for effective regionalism. Agricultural and food market liberalisation in the SADC countries has been an important step towards economy-wide reform. This ties in with Part 3's discussion on the pressure by the international community on all countries to liberalise their agricultural and food markets.

2.2 TOWARDS AN IMPLEMENTABLE PLAN OF ACTION

2.2.1 THE COMPONENTS OF A PLAN

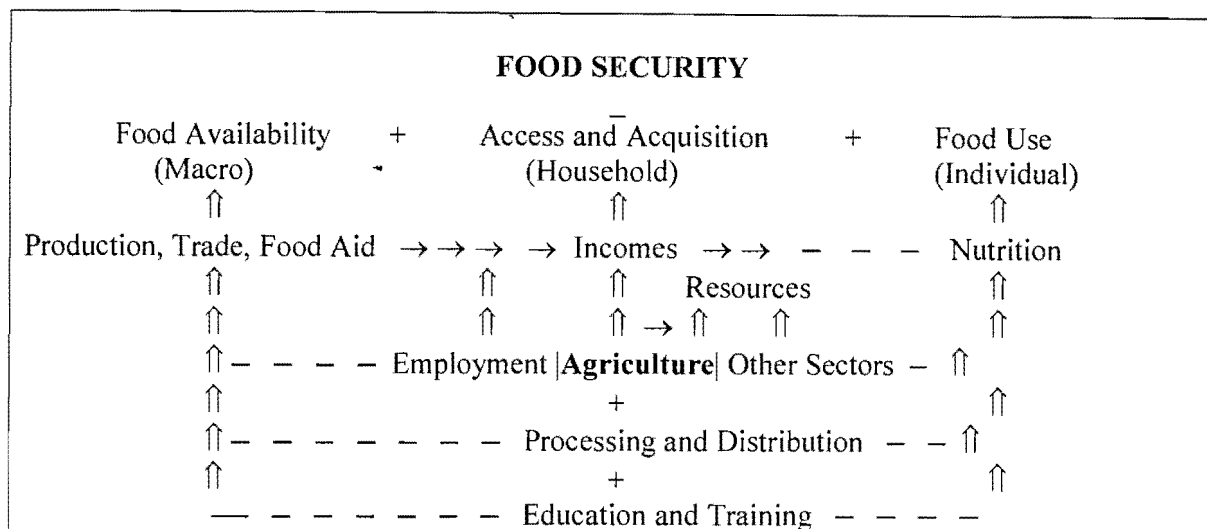
Figure 2.1 provides a useful framework for a discussion of food security and policy. This diagram was used in the Food Security Technical Administrative Unit's (FSTAU's) 'A Food Security Framework' (June 1997) in order to highlight the complicated set of linkages that exist between the agricultural sector and the rest of the economy. An important initial message to be gleaned from the diagram is that food security is not purely an agricultural phenomenon.

The components of this diagram are mentioned briefly in relation to the content of this thesis:

- The regional food security strategy focuses on seven strategic objectives that pertain to the three aspects of food security (availability, access and utilisation). These will be outlined in sub-section 2.9.3.
- Trade is the focus of Part 3, and production is also discussed here.
- Food aid is not treated extensively in this thesis although it has been an important form of food security in the past for many SADC countries.
- The household income levels as well as the state of nutrition in SADC have both been examined in Part 1.
- In terms of resource endowments, these have also been discussed.
- Agriculture is a common theme running throughout the thesis, and its linkages to other sectors of the economy have been highlighted. Its importance as a source of income and employment was made clear in Part 1.
- The distribution of food is discussed in Part three, although processing is not treated in this thesis. Agro-processing has the potential to be a major source of growth in the SADC economies and thus future policy should focus more closely on this.
- Lastly, education and training is important in terms of skills acquisition, and the FSTAU recognises this and has done a fair amount of work in this sphere.

The diagram serves to highlight the key determinants of food security. Although food prices do not enter directly into the diagrammatic representation, it is important to note the relationship between income and food prices. This relationship determines the quantity and quality of food available to households and it links, via food markets, to the notions of national and household food security. In the past price setting was the major policy tool used in agricultural policy and this is discussed in sub-section 2.5.4.

Figure 2.1: Flow chart showing the scope of a food security strategy



Source: Food Security Technical and Administrative Unit (1997: 6).

2.2.2 IMPORTANT CONSIDERATIONS WHEN FORMULATING A PLAN

Any plan to improve food security in the region should have the following as priority items on the agenda:

- Any increase in food production must be done in an environmentally friendly manner;
- Income diversification must be encouraged to try and reduce a large proportion of the population's dependence on subsistence food production;
- Land redistribution must be managed carefully or it has the potential to greatly hinder food security objectives;
- Investment in human capital should be increased;
- Trade as opposed to self-sufficiency must be promoted.

2.3 RATIONALE FOR A REGIONAL PLAN?

2.3.1 Regionalism Versus Exclusive Nationalism

A regional plan is perceived to be superior to a collection of national efforts for a number of reasons. The first is that increased co-operation in all other areas renders it feasible; secondly, regional food production is often less volatile than national production; and lastly, white maize, the staple food of

choice in the region, is not freely available on world markets. The other major maize producing countries grow yellow maize, which in Southern Africa is considered inferior to white maize for human consumption, and is used mainly for animal feed. Regionalism and nationalism in terms of a food security strategy are not mutually exclusive, but national policy would have to conform to the regional policy (as opposed to the other way round). National policy reform is outlined in section 2.6, although the current SADC Food Security Strategy Framework does not offer guidelines.

The two models for economic regionalism are sectoral co-operation and trade integration. Sectoral co-operation has been the main form of regionalism employed by SADC to date. With the inception of the SADC FTA, the two forms of regionalism will co-exist side by side. Another important aspect of regional integration in SADC is its commitment to improving infrastructure. The poor state of infrastructure in the region is one of the most important barriers to increased intra-regional trade. Thus, co-operation in the transport and communications sector will have a direct effect on food security if increased food trade is indeed the key. It is important to note that at the inception of the SADCC in 1980, food security was labelled a priority area, second only to transport and communications. This view has been maintained throughout the existence of the regional community.

2.3.2 The Appropriateness of a Regional Plan

In theory, regional integration in terms of a unified policy regime is a step in the right direction. But, the question needs to be addressed: if a regional food security strategy for SADC is formulated, but then not properly implemented, would individual countries then not have been better off devising and undertaking a strategy on their own? All countries should have in place some form of program to implement in times of food shortage crises. However, the reality is that poor countries lack the resources to make such a plan work. Thus reliance on the regional community is necessary. If however, the SADC food security strategy is not successful, then regionalism has failed in its resolve to treat food security as a priority.

Because of the lack of success SADC's policies have had in treating food insecurity, another question can be asked: can food security be treated independently from poverty alleviation? Thus, lack of success in a food security strategy can be attributed to low levels of development. So, the question raised is, is economic growth a necessary condition for a food security strategy to work?

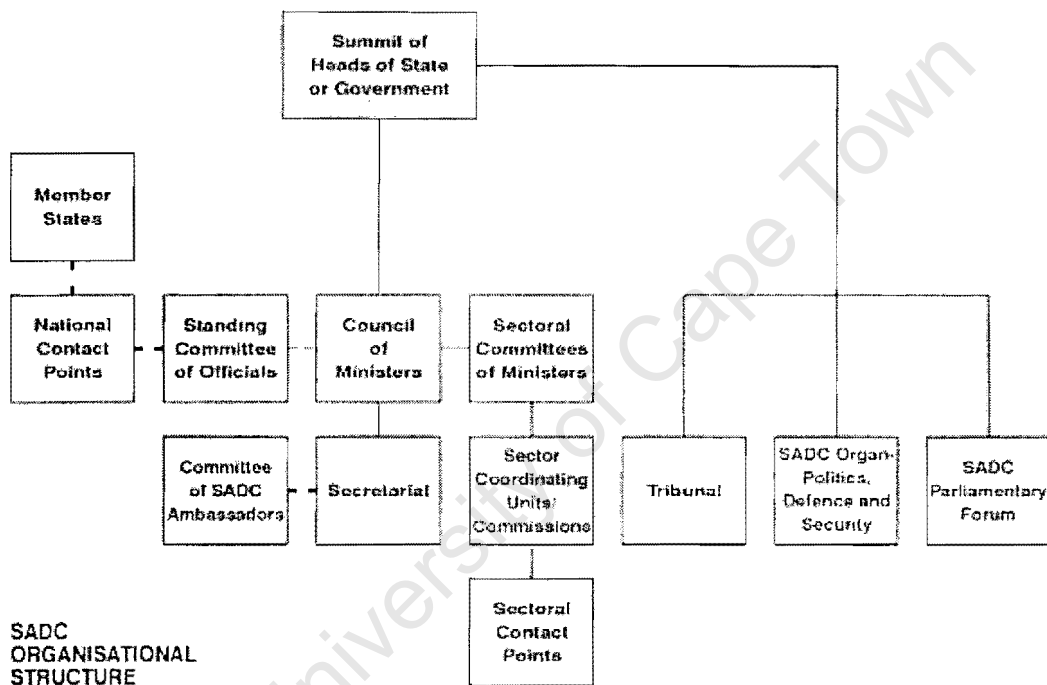
2.4 FOOD, AGRICULTURE AND NATURAL RESOURCES IN THE SADC FRAMEWORK

How the FANR DU fits into the organisational structure of SADC is now examined from a top down approach.

2.4.1 ORGANISATIONAL STRUCTURE OF SADC

SADC's organisational structure clearly represents the sectoral focus of SADC as an institution.

Figure 2.2: SADC's organisational structure



Source: www.sadcreview.com/sadc%20intro%202001/frintro2.htm.

The bodies most relevant to SADC's sectoral focus are discussed below.

- **The Council of Ministers:** One of the major tasks of the Council is to decide upon sectoral areas of co-operation and the allocation of responsibility for carrying out these sectoral activities.

- **Sectoral Committees and Commissions:** Each sector identified in SADC has a Committee which is headed by the country responsible for that sector.⁷ Commissions can be formed at any time and are administered by the committee head and supported by all member states. The Sector Co-ordinating Unit is part of the national government of the sector head and is staffed by civil servants of that country.
- **Sectoral Contact Points:** Each member country has a government member that is the first point of contact for issues pertaining to that sector in the domestic context. These sectoral contact points work closely with the Sector Co-ordinating Units.
- **Secretariat:** This is the principal executive institution of SADC and is headed by the Executive Secretary, who is appointed by the Summit.

2.4.2 SECTORAL CO-OPERATION

Addressing national priorities through regional action describes the backbone of the SADC Program of Action. SADC's main role is to 'help define regional priorities, facilitate integration, assist in mobilising resources and to maximise the regional impact of projects' (www.sadc.int). As mentioned previously, each sector has been allocated to a member state, and this member state is responsible for identifying the sectoral priorities and then proposing a coherent strategy accompanied by the appropriate policies. They are then responsible for planning and implementing the projects, monitoring progress and finally reporting to the Council of Ministers.

Sectoral co-operation is a powerful tool in the formation of a regional food security strategy because of the sharing of resources. It prevents duplication of functions in the individual countries plus information and knowledge is more easily disseminated. In addition, it should enhance the bargaining power of the region at the international level.

Sectoral co-operation does not imply inflicting 'one-size-fits-all' policy on the SADC members. This type of co-operation realises that policy prescription for the region as a whole is difficult because of the heterogenous nature of the SADC. A generic plan is not feasible and thus an appropriate region-wide policy should overlay and work alongside the domestic policies derived from the prevailing macroeconomic, agricultural and food security issues in each country. The importance of getting domestic policies right in order for regionalism to work cannot be overemphasised.

⁷ Zimbabwe has been responsible for the Food, Agriculture and natural Resources sector. This will be discussed in depth.

2.4.3 THE CLUSTERING OF THE SECTORS

The Department of Strategic Planning, Gender and Development and Policy Harmonisation was established to assist the Secretariat in executing its functions, as well as helping them deal with problems resulting from the parallel and independent structure of the Sector Co-ordinating Units. Due to this process the organisational structure of SADC is set to change in the near future, with individual countries relinquishing their role as sector co-ordinators. Instead the SADC Secretariat in Gaborone will assume the ultimate responsibility for all sectoral policy.

The Department of Strategic Planning, Gender and Development Policy Harmonisation is composed of four Directorates under which the approximately twenty sectors are clustered. These are: Trade, Industry, Finance and Investment; Infrastructure and Services; Food, Agriculture and Natural Resources (FANR); Social and Human Development and Special Programmes.

2.4.4 THE FANR DU

2.4.4.1 The New Cluster of Sectors

Prior to August 1999, food security was a sector. At the SADC Council of Ministers meeting held in Maputo this sector was transformed into a Food, Agriculture and Natural Resources Development Unit (FANR DU). Thus, food security ceased to be a sector and has now become 'a policy objective that cuts across many sectors and around which the reconstituted cluster of FANR sectors will be anchored and developed' (www.sadcreview.com).

2.4.4.2 The FANR Objectives

By way of a solid foundation on which to base their projects, the FANR DU adopted the SADC Food Security Strategy Framework in 1997. This will be outlined in 2.9. At this stage it is necessary, however, to present the main aims of the FANR DU. These are as follows (www.sadc.int):

- Development of sustainable food security policies and programs;
- Development, promotion and harmonisation of policies and gender development strategies and programs;
- Development, promotion and harmonisation of bio-diversity, phytosanitary, sanitary, crop and animal husbandry policies;
- Development of measures to increase agricultural output and the development of agro-based industries;

- Development, promotion and harmonisation of policies and programmes aimed at effective and sustainable utilisation of natural resources such as Water, Wildlife, Fisheries and Forestry;
- Development and harmonisation of sound environmental management policies;
- Promotion of trade in agricultural products.

These objectives can be divided into four areas of concern: the role of agriculture, poverty alleviation, smallholder development and the potential role of trade. These form the backbone of any food security strategy that SADC has employed - although, as will be illustrated in section 2.8, the emphasis has shifted greatly over the years. These objectives have led to the adoption of the 1997 strategy framework. How this strategy framework evolved is a reflection of SADC's changing attitude towards the determinants of food security.

The new program is much wider in scope than SADC's previous programs and promotes economic growth and poverty reduction as a means to improved food security. This is in contrast to direct interventions in agricultural and food markets by individual country governments that formed part of SADCC's strategy. This is evidence of the fact that policy makers are beginning to better understand the linkages between agriculture and the rest of the economy.

2.5 THE POLICY CONTEXT

Today's food security strategy has to be drawn up taking into account the policy environment, the people that will be affected by such policy, what measures are available as well as international trends. SADC's past and present food security policy will be examined in this context.

2.5.1 DEFINING FOOD SECURITY POLICY

Food security policy is hard to define and the formation of a strategy involves many different strands of policy. It would be more correct to describe a food security policy as being a plan with broad policy objectives. As is evident from the above discussion, these objectives span agriculture, poverty, rural development and trade. Food security policy thus cannot be divorced from the policies used to uplift all aspects of the lives of the poor.

2.5.2 THE CHANGING ENVIRONMENT

The policy environment in which agricultural and food policy is made has changed in recent years. Firstly, the 'market versus state' mindset has largely been eliminated and there is room for both

private and public institutions and organisations to ensure the efficient functioning of markets. Secondly, the international and regional policy context is changing in SADC due to WTO rules, the proposed FTA, the EU-ACP agreement, aid packages as well as political reforms in the individual countries (Von Braun, Msuya and Wolf, 1999: 2-3).

Regarding aid, developing country governments can expect to rely less on this for assistance for a number of reasons: the end of the cold war (and with it the termination of east versus west development assistance to third countries), the general belief that aid does not benefit the poor but instead corrupt government officials, and a better informed public that puts pressure on governments not to overspend.

Lastly, South Africa joining SADC has increased the depth and breadth of resources available in the region as well as fundamentally changing the primary purpose of SADC - to reduce member states dependence on apartheid South Africa for food (www.sadc.int). Thus, South Africa must now be integrated into the plan. Another consideration is that South African firms have started to invest heavily in the neighbouring countries (because of cheap, productive labour, economies of scale and access to raw materials) which stands to aid technology transfer across the region plus change the organisational structure of industry (including agro-processing).

2.5.3 THE MAIN STAKEHOLDERS

Policy needs to be addressed in the context of the main stakeholders affected by such policy and thus governments and the SADC secretariat must consider consumers, producers and business in policy planning, as well as the strength of the individual country governments. Each government will be concerned with the available budget and resources available to implement policy, the regulatory and legal framework to which policy must adhere, their required provision of social services as well as the accessibility of the regional and international markets.

Food consumers are mainly concerned with consumer prices and the availability of their preferred foodstuffs, as well as the quality and safety standards of the food. Both smallholders and commercial farmers are concerned with producer prices, access to markets, availability and prices of inputs, access to resources (water, land, transport) and the support available. Private sector businesses in the food manufacturing or supply industry look at profits, policy, marketing, transport and finance when formulating business plans. Employees in the agricultural sector are concerned with job security, employment prospects, wages, prices and inflation. These all impact on their ability to secure access to food.

2.5.4 TRADITIONAL POLICY MEASURES AVAILABLE

The following is a list of general measures that developing country governments have used as part of a food security plan. They basically involve support to producers and consumers as well as well-timed and carefully implemented market interventions.

2.5.4.1 Producer Support

Farmers can be helped through either pricing policies or input subsidies. Border measures and domestic price arrangements either serve to increase farm gate prices or lower consumer prices. This obviously affects the food security of farmers and consumers differently. This is why governments often maintain lower prices for the consumer while offering producer subsidies. Input subsidies (on, for example, fertilisers, seeds and fuel) are also used to offset low producer prices.

2.5.4.2 Food Consumption Policies

At the macro level, governments can plan for future periods of insufficient supply by stockpiling cereals or maintaining a fund to purchase food on the international market. On the micro level, social security nets are important for ensuring that the most vulnerable obtain food. Measures used by the government include food handouts, food-for-work, targeted employment programs or the provision of cash to buy food.

2.5.4.3 Intervention to Correct for Institutional Failure

Government intervention is necessary when markets do not work properly to provide incentives to producers. The strengthening of credit and finance institutions as well as land tenure arrangements are both important here.

2.5.5 THE CORRECT POLICY MIX

The next issue is to identify the most effective policy measures for improving food security. There is no clear-cut answer - a mix of policies individually tailored to the relevant country must be used and thus a regional plan cannot be called upon to specify that winning combination. Further complications with policy prescription arise because a country's food insecure will include both producers (farmers) and consumers. Pearce and Morrison (2001: 6) neatly summarise the possible mix of policies that can be used in a food security plan:

...measures used to strengthen institutions governing access to inputs, which may be associated with the provision of input subsidies, are likely to provide the most cost effective, and least distortionary way of enhancing food security. Policies implemented to support the production of domestic food staples are likely to be preferable to those focusing on exportables. Where required, policy measures which provide enhanced incentives to producers via the output price are likely to be more effectively implemented via border measures than by subsidising output price which is more complex to administer. However the greater impact of the former on consumer prices may limit their use unless offset by targeted consumption subsidies. A well-judged mix of these measures may be the most appropriate approach to achieve the best results in terms of efficiency, effectiveness, cost and equity.

2.5.6 FOOD SECURITY POLICY USE

These measures as outlined here do not form part of SADC's current plan, and the reason for this will become clearer later on when the international policy context is described. There is pressure for SADC to adhere to international standards in this crucial period of its integration into the world economy. The effects of globalisation and whether or not it is a good thing will not be examined here. It will be taken as given that SADC wants to be a part of the global economy, and thus it must attempt to conform to international rules and regulations. However, it is important to acknowledge the effect of globalisation and economic adjustment on developing countries' ability to be competitive in the international agricultural trade arena. The greatest challenge for developing countries with respect to agricultural trade is the combination of the distortions that exist in developed countries agricultural trade policies together with the liberalisation of their markets as advocated by the IMF and World Bank.

It will become evident in the discussion on agriculture's position in the WTO that domestic policy impacts on trade and thus distortionary policies are frowned upon in the international arena. There is pressure on all governments to phase out such policies, or alternatively, to reduce the level of support that these measures offer.

Thus the policy measures available are not a true reflection of what tools are available to the regional policy maker. It appears as if these traditional food security measures have been replaced by a more market friendly, long-term poverty reduction approach. This will become more clear as SADC's various approaches to food security over the years is discussed.

2.6 MACRO AND AGRICULTURAL SECTOR POLICY

Food security policies' different strands have been examined on the superficial level, and by way of an introduction into the evolution of the SADC plan of action, an examination of policy reforms from a macro and agricultural sector perspective is useful.

Food security policy integrates overall macro policy as well as agricultural policy. In order for micro reforms and policies to be successful, the macro economy must function properly. Thus, a stable macro environment is a prerequisite for successful policy implementation. As mentioned earlier, food security policy encompasses a lot of different policy strands. The agricultural sector can make a dual contribution to food security in developing countries - it provides food plus it has the potential to be the engine of broad-based sustainable economic development. This section examines macro policy and agricultural policy in a food security policy context, preceded by reforms undertaken in the individual SADC countries.

2.6.1 MACRO POLICY

Poor economic performance, in terms of growth, balance of payments deficits, high rates of inflation, and shortages of commodities, have been the motivation for macro-economic reform in most Sub-Saharan African countries. These economic problems were often attributed to bad governance, external shocks and acts of God (the droughts, for example, severely hampered economic activity). Thus, macro-economic reforms were inevitable and in the 1980s much of Sub-Saharan Africa implemented Structural Adjustment Programs (SAPs) in one form or another. Reforms have been supported by the IMF and World Bank with these organisations providing balance of payments support and structural adjustment loans.

General reforms included the following interrelated objectives:

- Enhancing competitiveness by exchange rate liberalisation;
- Keeping government in check by encouraging the reduction of fiscal deficits as well as the careful monitoring of public investment;
- Opening up the economy by liberalising trade;
- Liberalising markets by reducing government involvement in price setting and marketing;
- Improving the efficiency of the financial sector, the labour markets as well as social services.

2.6.2 AGRICULTURAL POLICY

Because most of the food insecure live in rural areas and most of these people rely on agriculture for income and food, policies targeting agriculture are needed. This is why it is impossible to discuss food security policy in isolation from agricultural policy - they are intricately linked. Agricultural growth results in improved food security and so policies are needed to boost rural income, increase agricultural productivity and food production and improve export earnings potential as a means to import food.

Three conditions must be satisfied if agriculture is to act as a primary source of economic growth. The agricultural sector must be large enough for policy to generate aggregate effects; growth in the sector must be productivity based (that is, based on technological innovation); and, the increased demand for labour must come about because of new investments in agri-business and other non-farming sectors (Mellor (1986) cited in van Rooyen and Sigwele, 1998: 263).

The forging of linkages (both employment and income) between the agricultural sector and the other sectors of the economy is crucial if this transfer of growth is to be realised. Agricultural market reforms have played a major role in the structural adjustment programs (SAPs) advocated by the IMF and World Bank. This is because of the importance of the agricultural sector as the majority of the region's population is dependent on agriculture for its livelihood (see table 1.1).

2.6.3 INDIVIDUAL COUNTRY REFORM

Policy reform in the agricultural sector of the individual SADC countries (for which information is available) is explored here. Domestic market reform is important for regional integration as it promotes policy convergence. Consistent domestic policies are an important foundation on which to foster regional integration. Agricultural policy reform as outlined in this thesis fall into two categories - namely maize market liberalisation and export crop reform.⁸ National trade reform is outlined in sub-section 3.5.5.

2.6.3.1 Botswana

Maize Market Liberalisation

Pre-reform producers set prices on a cost plus basis, and pan-territorial and pan-seasonal pricing was enforced.

Post-reform, there has been a move towards border parity pricing.

Export Crop Reform

Beef - There is still a monopoly over beef exports, but private firms can compete in the domestic market.

⁸ Information was obtained from Cleaver (1993), Jayne and Jones (1997) and Townsend (1999).

2.6.3.2 Lesotho

Maize Market Liberalisation

An example of government intervention in maize markets is the 1980 food self-sufficiency program where producer prices were set well above world prices. Pre-reform (1996/97), pan-territorial pricing was used. Post-reform, domestic and international grain trade has been deregulated and more recently, real producer prices have declined in response to market signals. Imports from South Africa are used to set domestic prices.

2.6.3.3 Malawi

Maize Market Liberalisation

The Maize Control Board (later called the Farmer's Marketing Board) was established in 1947 and the Agricultural Development and Marketing Corporation (ADMARC) was set up in 1971. Until 1971, there was limited price stabilisation intervention, but markets were regulated. By the early 1980s, 1400 marketing points were established by ADMARC - this served to crowd out private trading although smallholder trading was not banned for Africans (it was for Asians). Pan-territorial pricing was introduced (in an effort to encourage production in the north) and smallholder cash crops were taxed in order to subsidise maize producer prices and fertiliser. Agricultural policy reform started in 1987 with the promotion of private maize trade. However, pricing policy was still implemented with premiums set for maize delivered to the main depots and a target for zero loss on the maize account. Also in 1987, legislation governing prices and the location of trade was passed - these provisions were abolished in 1992. In 1995, maize price setting was removed, but price bands introduced. However, today ADMARC only controls about 15% of maize production and consumption activities as many of its parastatals were privatised.

Export Crop Reform

Tobacco - Pre-reform (1995), production and marketing quotas were set at the national level. Marketing still takes place through privately run auctions, characterised by a low degree of price competition. Quotas have now been phased out and replaced by production registration.

Legumes, groundnuts and cotton: marketing restrictions removed in the early 1990s.

Tea and coffee: smallholders no longer required to sell exclusively through crop authorities.

2.6.3.4 Mozambique

Maize Market Liberalisation

In 1981, the Agricultural Marketing Enterprise (AGRICOM) was set up and prices were set on a pan-territorial basis. This encouraged excess production. In 1994, AGRICOM was abolished and the ICM (Instituto de Cereais de Mozambique) was set up as the buyer of last resort. Farmers are now paid the minimum pan-territorial price.

2.6.3.5 South Africa

Maize Market Liberalisation

The Maize Board was set up in 1935 and from its inception its aim was to protect white farmers. Prices were pan-territorial and fixed for both consumers and producers. Co-operatives bought maize from farmers and sold it to registered millers. These rules effectively limited black farmer's access to the main urban markets. Before 1987, prices were set on a cost plus basis, following a single channel fixed price scheme. In 1987 reforms started with the ending of subsidies to the Maize Board trading account. In addition, the fixed producer price was replaced with an advance price plus a supplementary payment in order to ensure that the maize account balanced. In 1993, farmers were allowed to sell direct to millers, given prior approval and subject to a levy and in 1995, maize price controls were removed, private buying and selling was allowed and tariffs on imports were removed.

Export Crop Reform

All marketing boards - these existed for maize, sorghum, oilseeds, wool, meat, cotton, mohair, lucerne, citrus, deciduous fruit, dried fruit, milk and canned fruit - are closed and prices are now market determined.

2.6.3.6 Swaziland

Export Crop Reform

Sugar - Output marketed and the industry is still characterised by government intervention.

2.6.3.7 Tanzania

Maize Market Liberalisation

The Grain Storage Department was responsible for price setting in Tanzania from 1949 to 1955. Government intervention then ceased until 1963 when the National Agricultural Products Board

(NAPB) took over from the National Milling Corporation in order to enforce a single-channel three tier marketing system. Panterritorial and panseasonal pricing was introduced. This was replaced by a two-tier system in 1975 and then in 1981, regional pricing was introduced.

Co-operatives were abolished in 1975 and then reestablished in 1986. 1984 saw the start of maize market liberalisation with the relaxation of grain movement controls. The maize flour price was also decontrolled in that year, followed by the maize grain price the following year and then the maize flour price in 1986. In 1987 movement restrictions were abolished and with regards to pricing policy, the minimum co-operative price was set as the official producer price. In 1988 private traders were allowed to buy grain from the co-operatives. In 1990 all restrictions on the purchase of grain from traders was abolished and in 1991 co-operatives were privatised. Thus, by 1990 this market was fully liberalised all domestic trade is private. The government does, however, manage a strategic grain reserve as part of its food security plan.

Export Crop Reform

Coffee - Pre-reform (1991/92), prices, marketing and exports were controlled. Post reform there is now improved competition, private participation in the market and higher producer prices.

Cashew nuts - Pre-reform (1991) the government intervened in this sector. Post-reform, there has been movement to a more market based system with private firms allowed to trade.

Cotton - The role of the marketing board has diminished in the processing and sale of this crop.

2.6.3.8 Zambia

Maize Market Liberalisation

The Maize Control Board was established in 1936 and served the interests of white farmers by paying a premium fixed price for grain produced close to the railways. There were also restrictions on inter-district maize movements. NAMBOARD (National Agricultural Marketing Board) was formed in 1969. Its pricing policies included consumer subsidies and the expansion of pan-territorial pricing to smallholder farmers. The grain mills were nationalised in 1986, consumer subsidies were removed then later reintroduced (they were abolished in 1993) and inter-district trade was liberalised.

NAMBOARD was abolished in 1989 and the co-operatives took over all marketing functions. From 1989 to 1992, a maize meal coupon program was in operation. In 1992, small scale milling was deregulated and external trade restrictions relaxed. In 1995 a Food Reserve Agency was formed.

2.6.3.9 Zimbabwe

Maize Market Liberalisation

The Maize Control Board was established in 1931 and replaced by the Grain Marketing Board (GMB) in 1950. Its marketing and pricing policies were aimed exclusively at benefiting the white producers. The GMB's marketing policies were extended to smallholders in the 1980s. In the late 1970s, subsidies to both consumers and producers increased and pan-territorial pricing was used. In 1985, consumer subsidies were removed, but were later reintroduced from 1991 to 1993. In 1987, producer prices were allowed to drop - they later increased in 1992 after the drought. In 1991, trade between smallholders was permitted. In 1993, the GMB's status as monopoly-seller was restricted to the large mills and then later abolished in 1994. All producer price controls, import licensing and foreign exchange controls have been removed. However, the GMB is still in operation and is the buyer of last resort. It continues to intervene heavily in the market - especially during drought years.

Export Crop Reform

Cotton - Pre-reform (1993/94) there was a buying monopoly. Post-reform there is now improved competition, private participation and higher producer prices. The marketing board was privatised in 1998.

Tobacco - This industry has always been generally free from distorting government intervention although there has been talk of a multi-national corporation buyers cartel recently. The government does levy an explicit 5% tobacco tax on producers and traders. Prices have generally reflected world prices.

2.7 INSPIRATION FOR A PLAN OF ACTION

SADC's vision of a region free from hunger is consistent with the international initiative to achieve this world-wide. It is useful to examine SADC's policy in this context as well as to compare and contrast the strategy in light of these recommendations.

2.7.1 THE 2020 VISION

The International Food Policy Research Institute's (IFPRI) 2020 Vision was launched in 1993 - the full name of this initiative is 'A 2020 Vision for Food, Agriculture, and the Environment'. It focuses on a wide range of issues - economic development, the environment, R&D, markets, gender as well as issues of safety and security. The Vision is to eradicate hunger and malnutrition using sustainable natural

resource management in partnership with efficient, effective and low-cost agricultural systems. IFPRI states that this world vision will only be realised if 'broad-based economic development is accelerated, particularly in low-income developing countries; if sound practices for managing natural resources are developed; if investments in research, technology, and infrastructure are enhanced; if competitive markets are encouraged; if women have a greater voice in decision making at all levels; if low-income people, especially women, gain greater access to remunerative employment, productive assets, markets, education, and health care; and if armed conflicts and civil strife are limited' (IFPRI, 1995: 23).

2.7.2 IFPRI'S RECOMMENDED ACTION

IFPRI offers support to food insecure countries in terms of a development agenda. Its recommendations are broad sweeping in terms of poverty reduction, but it does offer some important insights in terms of the functioning of agricultural and food markets. The recommendations are discussed and then commented on with reference to the SADC members. These recommendations are at the country level, but this national plan can easily be extended to the region, in terms of the support that SADC as an institution can offer its members for building consistent policy.

2.7.2.1 Strengthen Government

In the SADC region, very few governments have the capacity to design and implement food security and nutrition monitoring systems to collect and analyse information. Thus, this is a crucial role that SADC has to fulfil. To support the SADC initiative, governments need to build capacity so that they can design and implement appropriate strategies to uplift the economy. Policy must be predictable and transparent with emphasis on continuous reform. In addition, governments must be prepared to relinquish functions that are better performed elsewhere (for example, agricultural input and output marketing) (Pinstrup-Anderson et al, 1997: 48). Governments must aim to fulfil the following functions:

- Maintain law and order;

The importance of this cannot be overemphasised, and the food insecure situations of the war-torn economies are evidence of this.

- Establish and enforce property rights;

The impact of land reform on food security is very important and unless land reform is done systematically and fairly, food production is likely to suffer and chaos in the markets will ensue. The current situation in Zimbabwe, where the illegal occupation of land is promoted by government, is an example of how the breakdown of property rights can cripple the farming sector.

- Promote and ensure competition in private sector markets;
The privatisation of the marketing boards is evidence of SADC country governments to do this.
- Maintain an appropriate macroeconomic environment;
The aim of the SAPs was to do this.
- Invest in or facilitate private sector investment in public goods (for example, education and infrastructure);
This forms part of a general development agenda.
- Seek improved access to international markets through trade negotiations.
South Africa, as part of the Cairns Group, has been active in this regard. Those SADC countries that are part of the World Trade Organisation (WTO) are also becoming more involved in international trade negotiations. WTO involvement is discussed in sub-section 3.5.4.

2.7.2.2 Reduce Poverty

An increase in living standards goes hand in hand with improved food security. Action in the following areas is needed to uplift poor communities: access to education and health care; provision of water and sanitation facilities; the status of women; improved access to resources; increased employment; population control; and, transfer programs.

2.7.2.3 Improve Agricultural Research and Extension

Investment in research and extension is inadequate and thus IFPRI suggests that national agricultural research expenditures should increase to a target rate of 2% of the value of agricultural output (IFPRI, 1995: 2).

2.7.2.4 Improve Environmental Practice

Sustainable food production must be done in an environmentally sustainable manner. Thus, natural resource management must be given priority especially in areas with poor soils and rainfall, agricultural potential or widespread poverty. Good environmental practice involves improving soil fertility, pest management, the protection of marine fisheries and improving water supply utilisation. Integrated programs are needed to achieve results in all priority areas. An example of an integrated

program is one to improve soil fertility - such a program would include temporary fertiliser subsidies, defining property rights, improving access to credit and ensuring the proper functioning of plant nutrient markets.

2.7.2.5 Reform Agricultural Input and Output Markets

Policies are needed to transform a heavily managed and protected sector into one governed by the principles of free markets. Reforms include:

- Phasing out inefficient state run firms;
- Promoting competition;
- Removing the bias against large-scale, capital intensive organisations and instead promoting small-scale, labour intensive agricultural practice;
- Improving infrastructure;
- Developing smaller credit and savings institutions;
- Providing technical assistance and training to farmers.

2.7.2.6 International Co-operation

Developed countries have a very important support role to play as food insecure countries start to implement their food security strategies. The 2020 Vision advocates that developed countries should play a paternal role - that is, countries that demonstrate good governance should be suitably rewarded by increased flows of assistance from developed countries. IFPRI suggests that developed countries increase their levels of international assistance to 0.7 percent of their GDP (IFPRI, 1995: 3).

2.7.3 CRITIQUE OF THE RECOMMENDATIONS

SADC's strategy focuses on poverty reduction as the key to improving food security. The importance of agricultural research and extension is acknowledged in SADC's plan, but is not part of the primary focus. Environmental issues are included in SADC's plan insofar as the environment must not be harmed - there has not been much commitment to actively pursuing environmental improvement campaigns. The reform of agricultural input and output markets has already been done on a national basis. The international co-operation issue is an important one for debate - SADC would like to be less reliant on other country imports for food, although it is committed to increased trade of other goods.

2.8 TOWARDS SADC's NEW FOOD SECURITY STRATEGY

This section examines the evolution of SADC's current policy stance and looks at the current food security program. The concept of food security has implications for policy and this is evident in the movement away from policies concentrating on food production to policies designed to reduce poverty. Thus policy has shifted from supply-side to demand-side policies.

Policy prescription for the region as a whole is difficult because of the heterogeneous nature of the SADC members (that is, the different levels of economic transformation within the region). Thus, appropriate policy should be derived from the prevailing macroeconomic, agricultural and food security issues. It is important to realise that getting domestic policies right is a necessary condition for a regional policy to work.

2.8.1 SADCC'S EARLY PROGRAMS

When the Southern African Development Co-ordination Conference (SADCC) was formed in 1980⁹, its original food security objective was to become less reliant on trade (in particular with South Africa) for food. Until 1987, the aim of the various policies proposed was to make SADC self-sufficient as a region. In effect, the emphasis was on helping member states increase food availability by boosting production, reducing losses and improving grain storage facilities (Food Security Technical and Administrative Unit, 1997: 2). This preoccupation with food production can be attributed to the lingering effects of the devastation of the 1972-1974 drought and the realisation that the region had to be equipped to deal with similar circumstances, coupled with the association of food self-sufficiency with national and political sovereignty (for all the countries in SADC).

However, of the nine original projects proposed, less than half were implemented. Some of the proposed projects included: (1) a crop performance monitoring system, (2) an agricultural resources inventory, (3) the formulation of methods to address post-harvest losses, (4) an early warning system, (5) regional food reserve and (6) regional food aid. In this earlier period, food security strategies focused (in turn) on three different concepts of food security in terms of the formulation of policy: growth and stability of output, stabilisation of market supply, and growth and stability of consumption. Projects one to four were concerned with achieving output growth and stabilisation, and projects five and six with the stabilisation of market supply (Hay and Rukini, 1988: 1014-1021).

⁹ At the inception of SADCC, its nine members were Angola, Botswana, Lesotho, Malawi, Mozambique, Swaziland, Tanzania, Zambia and Zimbabwe.

Consumption growth and stabilisation policies emphasise the demand side of the equation. Of the above five projects, only food aid has this as its focus. Income and employment programs plus social security networks are other examples of these types of policies. The shift to these types of policies will be documented in the following discussion.

2.8.2 1987 REFORMS

Because self-sufficiency in the form of increased production did not bring about food security, a regional development package was constructed which aimed to bring about effective access to food supplies in conjunction with increased food availability. This package was a result of a commission of enquiry into SADCC's Food and Agriculture Program, which was undertaken in June 1986. This study initiated a broader understanding of the concept of food security so that the expansion of production and the achievement of regional self-sufficiency were no longer seen as necessary and sufficient conditions for food security. At this stage, the link between poverty and food insecurity was formalised, and rural income generating projects were incorporated into food security plans. Thus, in 1987 Food and Agricultural Policy Reforms were drawn up.

These reforms included the following:

- Increasing the land under cultivation;
- Investing in new technology;
- Skills (managerial, professional and technical) improvement;
- Investments in irrigation and livestock breeding;
- Improved marketing, credit and extension services;
- The importance of a favourable economic climate and intra-regional trade in any strategy to combat poverty and hunger (Saasa, 1998: 520).

2.8.3 A CHANGE IN EMPHASIS

In 1992, a regional policy and strategy for FANR was developed in order to incorporate the new emphasis on household food security issues. According to the Food Security Strategy Framework, these household food security issues consist of 'diversifying smallholders' output, generating technical improvements in processing and rural storage and promoting assistance to vulnerable groups' (Food Security Technical and Administrative Unit, 1997: 2). The objectives of the overall strategy were promotion of agricultural growth with specific emphasis on rural employment and income generation. The strategies outlined in the plan, with the ultimate aim of 'promoting agricultural output' (as opposed to increasing it), included:

- (1) Improving information networks;
- (2) Increasing production capacity;
- (3) Making food storage, delivery and processing more efficient;
- (4) Forming an easily implementable crisis-prevention system to be used in the initial phases of a potential crisis;
- (5) Controlling pests and diseases;
- (6) Developing farming skills in the region;
- (7) Promoting intra-regional trade;

2.8.4 THE LATEST PLAN

The new food security plan was approved in June 1998. It was deemed necessary to draw up this new plan because of the many changes to the political and economic environment in the region, which rendered the 1992 plan out of date. The most important change in the political environment was South Africa's inclusion in SADC, which had the effect of shifting the entire focus of the food security strategy. As mentioned previously, SADC's chief food security aim no longer had to be non-reliance on South Africa for food and instead intra-regional trade could be seen as a viable alternative to self-sufficiency.

The changing policy environment has already been outlined. With regards to the overall economic environment, it is important to outline more fully what changes had been taking place. At this stage, SADC as an institution had been in place for almost twenty years and the concept of regionalism had become more popular in national governments. The SADC Trade Protocol had just been signed, and thus regional together with global trade liberalisation measures were in full swing.

In terms of national reforms, agricultural subsidies had largely been withdrawn and competition in agricultural and food markets had thus increased. The impact of this on food security is complex, especially for poorer households, as the gains from any reform are not evenly distributed and prices determined by market forces are inherently unstable. In addition, higher prices will hurt the poor, while farmers will suffer if prices fall.

The effects of economic growth on food security cannot be ignored. As an economy grows, the importance of agriculture declines and more resources are diverted to manufacturing and services. Thus the agricultural sector becomes less important as a source of income and employment. In addition, all the SADC countries are experiencing rapid urbanisation and this has implications for food security as those that previously lived off subsistence farming have to rely on marketed output.

In 1996, meetings were held to draft the structure of the new policy. It was stressed in the documentation originating at those meetings that efforts must be made to build stronger links between 'FANR and the transport and the finance and investment sectors to improve infrastructure to facilitate (especially north-south) movements to agricultural markets' (Food Security Technical and Administrative Unit, 1997: 4). In 1997, task forces and working groups together came up with policy recommendations.

2.9 A NEW STRATEGY FRAMEWORK FOR THE FOOD SECURITY SECTOR

2.9.1 DEFINING FOOD SECURITY TO SHAPE THE PLAN

To recap, the three components of food security are availability (through domestic production, trade or aid), accessibility (purchasing on the market or subsistence production) and utilisation (in terms of adequate nutrient intake). SADC's new strategy framework focuses on the issue of access. Strategies to improve access include reducing unemployment and increasing income stability. Increased trade is targeted as the means to increase availability of food as production is located according to comparative advantage.

The 2000 SADC Review states that 'to improve availability of food, the program aims to promote increased intra-regional trade, promote increased output and small-holder competitiveness, and enhance the efficient and sustainable use of natural resources. Regarding nutrition, the resource-poor among SADC's population will be a major focus, while standards, packaging and food safety are also important.'

2.9.2 PRINCIPLES ON WHICH THE PLAN IS BASED

The new program is based on five principles. The first is that the public sector should only provide services where no incentives exist for the private or non-profit sectors to supply the services. The second is that policies should be implemented at the local level - only if they cannot be achieved at the local level should they be done at the national level, and only if they cannot be achieved at the national level should they be done at the regional level. The third is that there should be increased emphasis on the role of women in agriculture. The fourth is that there are diverse interests of decision makers in the government, private and non-profit sectors and these must be duly acknowledged. Lastly, no generic plan can be blindly applied to the whole region because of the vast differences in social, economic and climatic conditions. Thus it is up to FANR to decide on the best method to achieve its vision.

2.9.3 A REGIONAL FOOD SECURITY STRATEGY

These policy objectives are outlined in the 1997 document: A Food Security Strategy Framework. They cover the three aspects of food security as outlined in the relevant literature.

2.9.3.1 Access

To enhance access to food, the following strategic objectives have been defined:

Strategic Objective 1: This is to adopt policies which generate the maximum employment gains from each increment of economic growth compatible with local comparative advantage.

Because small-holder agriculture has the most links to the rest of the economy, focus must be shifted here in order to maximise job creation.

Strategic Objective 2: This is to introduce measures which improve income stability compatible with efficiency and equity.

Income insurance mechanisms (in combination with overall economic growth) can help to protect the poor against income fluctuations. Seasonal fluctuations in the income of rural poor needs to be addressed. Drought relief, unemployment insurance, old age pensions¹⁰, cash or food for work schemes all aim to reduce this uncertainty.

Strategic Objective 3: This is to develop income safety nets for vulnerable groups which are efficient, equitable and affordable.

The elderly are the most vulnerable groups and old age pensions will greatly enhance their food security.

2.9.3.2 Availability

The following strategic objectives are in place to improve food availability:

¹⁰ The only SADC countries to have old age pensions are Botswana, Mauritius, Namibia and South Africa.

Strategic objective 4: This is to promote trade.

Regarding increased world trade, integration into world cereal markets implies a more stable inter-annual food supply and lower consumer prices. Note that the document states that ' The region's transport infrastructure has not been developed to serve intra-regional trade in low-value, high-volume food staples. Improvements are an important priority. Increasing competitive pressures are likely to move the region's comparative advantage in cereal production northwards where natural endowments are better but where exporters will face high transport costs unless the transport infrastructure can be improved. This is likely to require significant public and private investment and may also require regional as well as national action.

Strategic objective 5: This is to promote increases in smallholder competitiveness.

Smallholders need to have easier access to markets (both local and export), inputs, technology and information in order to compete with commercial farmers. In addition, supply-side rigidities need to be sorted out if smallholders are to take advantage of increased export opportunities.

Strategic objective 6: This is to promote the efficient use of renewable natural resources.

In the new agricultural policy environment, farmers will make production decisions based on prices. If prices reflect environmental costs, then the pattern of production should change. However, some intervention may be necessary in order to improve farming practice and make it more environmentally friendly. The limits to sustainable agricultural growth are basically environmental degradation. In addition, security of entitlements must be enforced in order to encourage the non-exploitation of land and water resources by farmers.

2.9.3.3 Nutrition

The following strategic objective is in place to improve food nutrition:

Strategic objective 7: This is to promote better levels of nutrition for all members of SADC society.

If people eat better, more nutritious food, labour productivity will be enhanced and less money will be spent on health care.

2.9.4 TOWARDS AN IMPLEMENTABLE STRATEGY

These strategic objectives have been outlined and in order for them to be realised, an implementable plan was drawn up. This implementable plan will be undertaken by the Food Security Technical and Administrative Unit (FSTAU). The FSTAU will carry out activities that cannot be undertaken on a national basis, and will concentrate on services with a high public good content or with positive externalities. The strategic objectives with their associated operational objectives are now outlined.

Table 2.1: The strategic and associated operational objectives of the FSTAU

	Strategic Objective	Operational Objectives
1	To promote debate on the food security situation and draw out policy priorities.	To maintain and expand the network of stakeholders in FANR, and to cater adequately to their needs. To devise a means of measuring food security status, especially of the vulnerable groups. To form strategic alliances with other SADC sub-sectors such as transport, investment and trade. To engage in meaningful contact and dialogue with key stakeholders.
2	To promote best practice in food security policy and policy management.	To commission comparative applied policy research. To develop dissemination mechanisms within a communication strategy.
3	To provide information designed to improve regional food market efficiency.	To inform people of national and international staple food prices. To perform a market advisory role.
4	To promote infrastructural investments as a means of lowering the costs of intra-regional food trade.	To commission studies of the return on investment in new road and rail links. To promote public and private transport investment by providing financial intermediaries.
5	To maintain and develop the capability to be the insurer of last resort against major drought and other hazards affecting food security in more than one member state.	Early warning information systems. To act as insurer of last resort in major food crises
6	To assist in the development of capabilities within the region to improve food security.	To develop training capabilities in the public, private and NGO sectors.
7	To develop the capabilities within FANR to support these objectives.	

Source: Constructed from FSTAU (1997: 10-12).

These operational objectives will be undertaken by the FSTAU. The SADC institutions forming part of the FANR DU will now be examined.

2.9.5 INSTITUTIONAL CAPACITY TO IMPLEMENT THE OPERATIONAL OBJECTIVES

The institutional components of SADC's food security program are presented below. This program aims to concentrate on services with a 'high public-good content' (FSTAU, 1997: 10). That is, FANR will offer services such as information exchange, export advice and training where externalities are generated.

2.9.5.1 The Regional FANR Co-Ordination and Co-Operation Program

This is the core component of the program and is administered by Zimbabwe. Zimbabwe is responsible for developing policy and strategies relating to the sectors under the FANR management. The seven areas under co-operation are agriculture research and training, crop sector, livestock production and disease control, marine fisheries, inland fisheries, forestry and wildlife. Zimbabwe's current food insecure situation may serve to undermine the efforts of the FANR DU as the rest of SADC as well as the international community questions how it is conceivable that Zimbabwe can come up with and administer a plan for ensuring food security in SADC when it is unable to achieve this at a national level.

2.9.5.2 The Regional Information System (RIS) for Food Security

This is a database of regional information on all aspects of food security and the information contained in the database is made available to all SADC members. The main components of the program are the Regional Early Warning System (REWS), the Remote Sensing Component of the Regional Early Warning System, the Regional Agricultural Potential Information System (APIS), the Regional Food Security and Nutrition Information System (FSNIS), the Regional Environmental Information System (EIS), the Regional Food Security Database Project (FSDP), the Famine Early Warning System (FEWS) and the Risk Mapping for Vulnerable Groups. To date, the system has been successful with respect to providing data on crop production and availability of food, as well as climate. Future plans include providing information on prices, livestock production and markets, trade, economic indicators at the household and national level as well as other useful socio-economic and welfare indicators.

2.9.5.3 The Regional FANR Policy Analysis Network (PAN)

This program aims to form a network of policy makers and academic researchers that are working on food security issues and the aim is for research to have an impact on policy making.

2.9.5.4 The Regional Food Security Training Program

This training program aims to increase skills in grain management and food processing.

2.9.5.5 The Regional Drought Mitigation Program

Because of the severity of droughts in the region, a contingency plan is necessary to deal with the potentially devastating effect of drought on food production.

2.9.5.6 New Projects

In addition to these programs, three new projects were added in August 1999. They are the SADC Food Security and Regional Development Hub, the Regional Program for Communication for Development and the Agricultural Potential Information System. The aim of the Food Security and Regional Development Hub is to provide a plan for implementing action when speedy measures are required. This is due to the lack of capacity in SADC to implement policies both under normal circumstances and when a crisis situation occurs. Limited evidence is provided of this in the online SADC Review, which states that:

Since the signing of the Lusaka Declaration that established the SADCC in 1980, SADC has had no standby resource facility that provides for timely mobilisation of human and financial resources needed for the implementation of regional decisions and programmes for food security and rural development. This has proved over the years to be a major obstacle towards realisation of food security and rural development aspirations for the region, especially the reduction of poverty.

The other two recently constructed plans deal with improving the dissemination of information in the region.

2.9.6) CRITIQUE OF THE STRATEGY

Food security has improved in some parts of SADC, but in others it has stayed the same or even deteriorated. A successful regional policy should result in a region-wide improvement of the food security situation. If policy success is measured in terms of the outcome, it must be concluded that SADC's food security strategy has not been successful and the indicators in table 1.1 are evidence of this. However, a policy has to take as given the fundamentals underlying the situation, and thus the strategy may be achieving all that it can achieve, given the scarcity of resources in the region. Thus, a critique solely on the grounds of success may be misleading. In addition, poor policy implementation is often a greater problem than the policy itself. The lack of capacity in SADC as well as the scarcity of resources in national governments has a strong negative impact on what such a strategy can realistically achieve.

The most obvious problem with this strategy is that it appears to be a more long run approach to achieving poverty alleviation with food security then a result of this general improvement in economic development. A more pro-active plan would focus on the very short run objective of providing food to those that will die tomorrow if they do not eat today. These constitute emergency aid measures which are often the domain of international aid institutions as opposed to the regional community.

University of Cape Town

PART 3: TRADE

3.1 INTRODUCTION

Trade is the second sphere of regionalism, as defined earlier. It is envisaged that intra-regional trade will increase under the SADC FTA, and it is hypothesised that increased cereal (and maize in particular) trade will improve food security. To recap, the three dimensions of food security are availability, access and utilisation. Increased trade should enhance the availability and access components of food security as countries are able to better rely on a regional market to augment or replace (if inefficient) domestic production. As the economic mindset of the region's policy makers changes from food self-sufficiency to food self-reliance, trade is set to play an increasingly important role in food security as a means to obtaining food as well as securing the necessary foreign exchange to buy food.

If regionalism is the first and necessary step to globalisation, then regional trade cannot be discussed in isolation from the international trading environment. In addition, international trade in agricultural commodities has been a sensitive issue for many years and is the cause of much tension between developed and developing economies.

Economic theory advocates trade as a means to increased economic growth and thus, at a superficial level, it is easy to see the link between increased trade and reduced poverty as well as increased food trade and reduced hunger. However, care must be taken to make such broad-sweeping statements without justifying them. In terms of poverty alleviation, trade is often seen in both positive and negative lights. The gains from trade must therefore be identified in terms of which members of society are benefiting in order to determine the developmental effect of freer trade.

In this part, a spatial equilibrium model is used to highlight the benefits from trade liberalisation, and a transport model provides an implementable plan.

3.2 THE LINKS BETWEEN TRADE AND GROWTH

3.2.1 THE CASE FOR FREE TRADE

Trade and its effects on economic growth can be analysed from both the international and regional perspectives. In traditional trade theory, in terms of the gains from trade, it is immaterial whether

South Africa, for example, trades with Germany or Tanzania. Trade will aid growth and development if trade creation as opposed to trade diversion occurs. Thus, the transformation from a closed to an open economy will have enormous welfare effects if certain conditions hold.

Trade as an engine of growth is a common theme in the development literature. This literature focuses on identifying the winners and losers, in terms of the distribution of income and wealth, both between and within countries. The issue is what combination of outward and inward-looking policies developing countries should pursue. Inward looking policies refer to protectionist regimes where the element of self-reliance dominates. Outward-looking policies mean a country opening its borders to greater flows of goods, human and physical capital and technology. Regional economic integration is seen as a sensible combination of these two extremes - in terms of globalisation, it is seen as a first and necessary step to full integration into the world economy.

How does trade contribute to growth? From a global perspective, world output and consumption should increase as scarce resources are diverted to their most productive uses. Within a country, sectors in which a country possesses a comparative advantage (in terms of labour efficiency or factor endowments) are rewarded and these sectors grow.

With respect to agriculture and trade, it is a widely acknowledged fact that the Sub-Saharan countries do have a comparative advantage in agriculture in terms of the abundance of land and the supply of labour. But, the land is not always fertile and suitable to agricultural production, and labour is often unskilled and relatively expensive in terms of their productivity. This, together with the numerous factors that were discussed earlier regarding the constraints to fully exploiting agricultural potential, the situation is not clear cut.

In addition to these domestic production constraints, international producer support conditions impact heavily on domestic production in terms of competition from dumped agricultural goods. Thus, the agricultural sector is a complicated sector in which to analyse the costs and benefits of freer trade, as production in all countries is subject to numerous distortions, and these domestic policies have magnified impacts on world markets.

3.2.2 POVERTY AND TRADE

The link between poverty and trade is difficult to trace, and since food insecurity is directly related to poverty, this topic should be teased out more fully. Trade liberalisation effects the individual through price and employment effects. Given liberalisation, the prices of some goods will fall and others will increase. Thus, it depends on the individual's consumption basket as to whether trade liberalisation

will be welfare enhancing or not. In terms of employment, left unchecked, trade liberalisation will restructure the economy and thus result in job shedding in some sectors and job creation in others.

For example, it is argued that South Africa's farming sector is inefficient and it would thus do far better to import some of the food that it grows inefficiently. Full reform of the international agricultural trading system would make this a possibility. If complete liberalisation came about, theory dictates that world production would move to where it has a comparative advantage. Thus, if South Africa does not have a comparative advantage in the production of any agricultural goods, the farming sector would become obsolete. This situation, however, is inconceivable given the facts that full liberalisation is unlikely ever to come about because of the need of all country's to protect their rural people dependent on agriculture for survival.

Theoretically, in the very long-run, trade liberalisation would aid growth and thus reduce poverty if an aggregate world-wide measure was used to document this. However, poverty alleviation is a very short-run national issue and thus governments are under pressure to concentrate on the here and now instead of on the promised future rewards. Thus, the above example has served to illustrate that the political decision is not about whether or not to trade - instead it is about the nature and level of protection domestic producers are afforded. These policy measures available to support domestic farmers were outlined in sub-section 2.5.4 and their use and then subsequent phase down in the individual SADC countries is outlined in appendix 1.

3.3 LEVELS OF TRADE

3.3.1 TRADE AND AGRICULTURE IN SADC - OVERVIEW

Table 3.1 on the following page provides a snapshot of SADC's trade patterns in 1999. It gives a comprehensive overview of SADC's main exports, agricultural exports, main imports, export and import partners, and the value of trade. In terms of import commodities, all countries except for Tanzania and Zimbabwe have foodstuffs listed as one of their main imports. It is interesting to note that South Africa is the only country where a basic carbohydrate foodstuff (maize) is a significant export crop.

Table 3.1: SADC's main exports and imports

	Main exports	Agricultural exports	Main ROW export partners	SADC export partners	Main import partner	SADC import partners	Value of exports	Value of imports
Ang	crude oil (90%), diamonds, fish	coffee	US (63%), Benelux (9%)	-	Portugal (20%), US (17%)	SA (10%)	\$5 bil	\$3 bil
Bot	diamonds (72%)	meat	EU (74%)	SACU (21%) Zim (3%)	EU (8%)	SACU (78%) Zim (6%)	\$2.36 bil	\$2.05 bil
DRC	diamonds, copper	coffee	Benelux (52%), US (14%), Finland (4%)	SA (9%)	Benelux (14%), Nigeria (7%), Kenya (5%)	SA (25%)	\$530 mil	\$460 mil
Les	manufactures (75%)	food, live animals	N America (34%)	SACU (65%)	Asia (7%)	SACU (90%)	\$235 mil	\$700 mil
Mal	cotton, wood products	tobacco, tea, sugar, coffee, peanuts	US (9%), Germany (9%), Netherlands (7%)	SA (15%)	Japan (4%)	SA (38%), Zambia (8%), Zimbabwe (18%)	\$510 mil	\$512 mil
Mau	clothing and textiles	sugar, cut flowers, molasses	UK (32%), France (19%), US (14%), Germany (6%), Italy (4%)	-	France (19%), India (9%), Hong Kong (7%), UK (6%)	SA (12%)	\$1.7 bil	\$2.1 bil
Moz	prawns (40%), cotton, timber	cashews, sugar, copra, citrus, coconuts	Spain (17%), Portugal (12%), US (10%)	SA (16%)	Saudi Arabia (5%), Portugal (4%)	SA (55%), Zimbabwe (7%)	\$300 mil	\$1.6 bil
Nam	diamonds, copper, gold, zinc lead, uranium, fish, karakul skins	cattle	UK (43%), Spain (14%), France (8%)	SA (26%)	Germany, US, Japan	SA (84%)	\$1.4 bil	\$1.5 bil
Sey	fish	cinnamon bark, copra	EU, UK, China, Japan	-	UK, China, Singapore, France, Italy	SA	\$91 mil	\$403 mil
SA	gold, diamonds	deciduous and citrus fruits (30%), sugar (5%), maize (10%)	UK, Italy, Japan, US, Germany	-	Germany, US, UK, Japan	-	\$28 bil	\$26 bil
Swa	soft drink concentrates, wood pulp, cotton yarn, refrigerators	sugar, citrus, canned fruit	EU (12%)	SA (74%), Mozambique (5%)	EU (6%)	SA (83%)	\$825 mil	\$1.05 bil
Tau	manufactures, cotton, minerals	coffee, cashew nuts, tobacco	India (9.8%), Germany (8.9%), Japan (7.8%), Malaysia (6.5%), Netherlands (4.7%)	-	Kenya (9.6%), UK (8.7%), Saudi Arabia (6.6%), Japan (4.9%), China (4.6%)	SA (12.9%)	\$828 mil	\$1.44 bil
Zam	copper, cobalt, electricity	tobacco	Japan, Saudi Arabia, India, Thailand, US, Malaysia	SA	Saudi Arabia, UK	SA (48%), Zimbabwe	\$900 mil	\$1.15 bil
Zim	gold (14%), ferroalloys (7%), cotton (6%)	tobacco (23%)	UK (11%), Germany (8%), Japan (6%), US (6%)	SA (12%)	UK, US, Japan and Germany	SA (37%)	\$2 bil	\$2 bil

Source: Constructed from information contained in the CIA's *The World Factbook* (2000) - www.odci.gov/cia/publications/factbook/index.html.

The aim of this table is to provide a brief overview of the importance of primary commodities in SADC's trade profile. It also indicates the low level of intra-regional trade that is taking place in these goods, especially with regards to exports. In terms of exports, only Lesotho and Swaziland export a significant amount to other SADC countries, and in both these cases, other SACU¹¹ members receive the majority of this trade. In terms of imports, the situation is more promising with a number of countries having SADC countries as the main source of their imports.

3.3.2 INTERNATIONAL TRADE

3.3.2.1 General

Africa has become more and more marginalised in world trade. To illustrate this point, consider the following: developing country exports as a share of world exports is roughly 23%, and in 1995, Africa's share of these developing country exports was 2% (in 1985 it was 4%) (WTO, 1996 in Binswanger and Lutz, 1999: 2).

3.3.2.2 Agricultural Trade

Africa's share of world agricultural trade has also dropped significantly. In 1961, 40% of world agricultural exports originated in developing countries, with Africa's contribution equal to 8.6% of this. By the mid-90s, developing countries export share was down to 27% and Africa's contribution had declined to 3% (WTO, 1996 in Binswanger and Lutz, 1999: 2). In addition, world trade in agriculture has lagged significantly behind trade in manufactures. From 1985 to 1994 growth in world manufactures trade equalled 5.8%, and for agricultural goods it was only 1.8%.

Despite these facts, the importance of agricultural trade in international trade for developing countries is highlighted in the following statistic: in 1999, cereals, meat and sugar accounted for about a third of developing country imports and one-fifth of exports.¹²

In terms of the composition of SADC's agricultural trade, grains are especially important for South Africa (maize in particular), Tanzania, Zambia and Zimbabwe, while beef dominates foreign exchange earnings in Botswana, Namibia and Swaziland. The export of high value agricultural products provides additional foreign exchange for Lesotho (asparagus, peaches and strawberries), Mauritius

¹¹ SACU is the Southern African Customs Union and is composed of South Africa and the BLNS - Botswana, Lesotho, Namibia and Swaziland - countries.

¹² Source: www.ids.ac.uk/ids/global/pdfs/foodsecuritybrief.pdf.

(tropical fruits), Namibia (mango, pawpaw, orange, avocado, melon and table grape) and the Seychelles (cinnamon, coconuts and vanilla) (www.sadcreview.com).

3.3.3 REGIONAL TRADE

3.3.3.1 General

Intra-SADC trade in general is low, and for all the SADC countries trade with the rest of the world is far more important than regional trade. If South Africa is excluded from the calculations, intra-SADC trade accounts for only 5% of total trade in the region. A few countries dominate what trade does occur within the region. Trade between South Africa and the BLNS countries accounts for 65% of the trade in the region, with Zimbabwe being the only other major contributor to intra-regional trade (Maasdorp, 1998: 514-515).

The following table shows the proportional composition of intra-SADC trade (in 1996) in more detail. Unfortunately trade data for South Africa and the BLNS countries is aggregated because of the customs union, but since South Africa's trade dominates SACU's trade flows, it is relatively easy to analyse the data.

Table 3.2: Intra-SADC Trade (1996 data in US\$ millions)

	Share of total SADC exports	Share of SADC exports to world exports	Each country's share of total intra-regional exports	Share of each country's regional exports destined for SACU	Share of total SADC imports	Share of SADC imports to world imports	Each country's share of total intra-regional imports	Share of each countries regional imports originating from SACU
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ang	0.15	0	0	0.99	0.053	0.062	0.032	0.937
DRC	0.05	0.07	0.03	0.99	0.027	0.148	0.04	0.956
Mal	0.01	0.27	0.02	0.72	0.013	0.626	0.077	0.768
Mau	0.05	0.02	0.01	0.36	0.059	0.095	0.055	0.972
Moz	0.01	0.03	0	0.66	0.025	0.545	0.132	0.829
SACU	0.59	0.16	0.79		0.68	0.023	0.155	
Sey	0	0.01	0	0.71	0.01	0.136	0.013	0.845
Tan	0.02	0.01	0	0.67	0.01	0.136	0.013	0.845
Zam	0.04	0.03	0.01	0.6	0.02	0.547	0.136	0.818
Zim	0.07	0.27	0.15	0.55	0.069	0.493	0.331	0.95
SADC	1	0.12	1		1	0.103		

Source: Visser (2000: 15-16).

This table further illustrates the low levels of trade within the region. In terms of the share of total trade flows, 59% of exports and 68% of imports originate/are destined for SACU (see column 1 and 4). For most of the SADC countries, the share of SADC exports to world exports is marginal, and for SADC as a whole it is equal to 0.12 (column 2). In terms of the share of SADC imports to world imports, Malawi, Mozambique, Zambia and Zimbabwe all import substantial amounts from SADC (column 6), with most of those imports originating from SACU (column 8).

In terms of the major contributors to what intra-regional trade does take place, SACU and Zimbabwe together constitute 94% of exports to the region (column 3), and Zimbabwe on its own has a one third share in intra-regional imports (column 7). This table also highlights the dependency of other SADC members on the SACU market for their intra-regional exports, with the exception of Mauritius (column 4).

3.3.3.2 Agricultural Trade

Intra-SADC trade in general is low, and this trend is reflected in agricultural trade. The following table provides evidence of the small proportion of agricultural trade in total trade within the region. Although the data is outdated (1992), it is thought that this trend still holds today.

Table 3.3: Composition of intra-regional trade in Southern Africa, 1992 - the % of trade with countries in Southern Africa

Item traded	Ang	Mal	Moz	SA	Zam	Zim
Maize	3	1	2	1	6	4
Other ag products	15	7	26	14	6	5
Beverages and tobacco	20	4	12	18	2	1
Other primary products	2	2	7	20	15	12
Manufactured goods	60	86	53	47	71	78
Total	100	100	100	100	100	100

Source: United Nations 1995 in Mukherjee and Robinson (1997: 88).

Maize forms a very low proportion of total trade, as is expected by the self-sufficiency objectives still in place in 1992. The fact that manufactures dominate trade flows can best be explained by the similarity that exists in agricultural production patterns around the region. It is also perhaps because of the high transaction costs involved in trading high volume, low value goods that trade in maize and other agricultural products is so low

The most heavily traded agricultural products within SADC are tobacco, tea, sugar, maize, cotton and timber (Hess, 2000: 36). It is important to note that trade in basic foodstuffs is often underestimated

because of unrecorded cross-border trade and smuggling. Thus, reported statistics must be analysed with this fact in mind.

3.4 BARRIERS TO AGRICULTURAL TRADE

The above facts provide evidence of the low level of trade in the region and thus the question that begs answering is why the volume of trade in the region is so low. The scope for increasing this level of trade is investigated later on, but at this stage it is necessary to explore in some detail the factors that have limited agricultural trade in the past. Trade liberalisation plus the international and regional trading environment will be discussed in detail after this, and thus this section must be seen as the platform for a more fully rounded treatment of these issues.

3.4.1 BARRIERS TO INTERNATIONAL TRADE

For Sub-Saharan Africa, the main barrier to trading agricultural commodities with the rest of the world is distance. Freight costs are high, plus there are the additional risks and timing issues involved with the transporting of perishable goods.

Import barriers into both developed and developing countries committed to protecting their agricultural sectors have prevented market access. In general, agricultural tariffs have been high, and non-tariff barriers steep. Non-tariff barriers include quantitative import restrictions, variable import levies, minimum import prices, discretionary import licensing plus other state trading enterprise measures (Townsend, 1999: 26).

An important form of trade barrier is sanitary and phytosanitary (SPS) requirements. SPS measures refer to food safety and animal and plant health measures. These standards are in place to ensure that food is safe to eat. However, they can be easily abused to prevent market access. Related to SPS measures are other technical regulations and standards (including testing and certification procedures) that may be used by countries to protect their domestic producers from import competition.

3.4.2 BARRIERS TO REGIONAL TRADE

These can be divided into price and non-price barriers. Agricultural trade tariffs in SADC have been high, with tariffs on grain ranging from 27% to 88% (USDA/FAS, 1998: CPMESA, 1998 in Trueblood et al: 1999).

The following is a list of tariff rates applicable in 1995 at the conclusion of the Uruguay Round. It is not complete but merely serves to illustrate the high tariffs in the agricultural sector.

Table 3.4: Selected agricultural tariffs for some SADC countries

	Tariff item number	Product	Base rate	Bound rate	Other duties and charges
Ang	1001	Wheat and meslin		15%	0.10%
Mau	All items in Annex 1 of AoA			122%	17%
	1005.9	Maize excl seed maize		37%	
Nam, SA and Swa	1005	maize	68%	50%	3.93 R/T plus 70.06 R - 141.80 R/T
Zim	All items in Annex 1 of AoA			150%	
	1006.30.00	Rice: semi milled/wholly milled	30%	25%	

Source: www.fas.nsd.gov/scripts/w/vtopdf/wtopdf_frm.asp.

Notes: The items in Annex 1 of the AOA include HS chapters 1 to 24 (less fish and fish products) plus others. See: www.wto.org/english/docs_e/legal_e/14-ag.pdf; R/T is Rands per ton.

High road and rail transport costs, especially for the landlocked SADC countries, are a major impediment to trade. In fact, transport costs are 'often as much as the value of the bulk grain cargo, implicitly contributing to high real import prices' (Trueblood et al, 1999: 60). The most important NTBs for grain trade include poor transport and communications infrastructure, the shortage of grain storage facilities and the lack of access to credit.

For trade in general, non-price barriers are similar to those impacting on international trade with the most important being border post problems (these include licensing and the slow processing of foreign exchange permits). Most NTBs are thus the result of administrative and bureaucratic inefficiency as opposed to legal restrictions or trade policy constraints.

In summary, the most important NTBs are: border and customs procedures, communication problems, transport problems and lack of market information. Other NTBs are: import/export licensing requirements, trade finance, foreign exchange availability, levies, other border charges, customs charges, institutional arrangements, domestic content requirements and quota restrictions. Product standards and

technical requirements will become a more constraining NTB in the future, reflecting the general world-wide trend in this direction (Hess, 2000: 38).

3.5 TRADE LIBERALISATION

3.5.1 WHY LIBERALISE?

In developing countries, agricultural trade liberalisation is justified by its expected positive impact on rural development because of improved incentives for producers. On the flipside, however, is the fact that it takes time for producers to increase their supply capacity to take advantage of trading opportunities and in the meantime, it is difficult for them to compete in their own markets against (sometimes cheaper) imports (because of export subsidies and other unfair trading practices).

3.5.2 UNFAIR TRADING PRACTICES

Unfair trading practices generally fall into two categories: price-related subsidies and direct payments to farmers. Developed country governments justify the subsidies they pay to their farmers with the argument that agriculture provides social benefits uncompensated for in the product's market price, and thus producers must be rewarded for this. Examples of these benefits are food security, the maintenance of rural communities in addition to 'the warm feeling gleaned by consumers knowing that compatriots are out tilling the fields in the traditional way' (The Economist, 9.6.2001).

Reducing support to agriculture is often cited as the key to improved food security - better functioning markets mean more food at lower prices. But, the situation for developed and developing countries regarding the agricultural sector is totally different - developed countries have been characterised by surplus production and export subsidies while developing countries have inadequate production because of poorly functioning markets (that is, lack of incentives). Thus, it is important that new trading rules and regulations are closely scrutinised and that SADC can use the new open regime to its advantage as opposed to being exploited.

3.5.3 GLOBAL TRADE LIBERALISATION

The General Agreement on Tariffs and Taxes (GATT) came into being in 1947, but it was only in 1994, with the conclusion of the Uruguay Round that an institution - the WTO - was put in place to enforce it. The aim of GATT (and subsequently the WTO) was to provide a framework in which international trade could be liberalised.

GATT did differentiate between agriculture and other trade but agriculture continued to be negotiated extensively in all the rounds leading to the WTO. All parties have always been aware of the unique and politically sensitive status of agriculture in world trade. At the conclusion of the Uruguay Round, the explicit Agreement on Agriculture (AOA) was drawn up and agriculture was included for the first time in the tariff reductions (36%) and subsidy cuts. Making tariffs transparent is the way in which the WTO is bringing about trade liberalisation. Tariffication involves replacing all NTBs (for example, anti-dumping measures, rules-of-origin restrictions, quotas and quality standards) with tariffs (The Economist, 9.6.2001).

Although the topic of this thesis seeks to isolate SADC from the rest of the world in terms of food production, global trading arrangements have had and continue to have an impact on food security. Thus, it is important to discuss the progression towards the AOA and the WTO's vision for the future with regards to international trade in agricultural and food products.

3.5.4 AGRICULTURE IN THE WORLD TRADING SYSTEM

3.5.4.1 The AOA

The situation with regards to international trade in agricultural commodities is a somewhat emotive topic fraught with political overtones, and developing countries view the WTO's AOA with much scepticism.

Agrarian economies have a bleak view of the situation. They point out that the opening up of world trade has had less of an impact on agriculture than on other sectors and that, in addition, they have not captured as large a share of trade growth in agriculture as in industry (Binswanger and Lutz, 1999: 2-3). Thus, agricultural growth and diversification has been stunted in the developing world. Note that the WTO disputes this fact and presents statistics that illustrate the developing countries significant increase in agricultural exports over the recent years (WTO, 2001b: 20). These different measures are obviously shaped by what each group is trying to support and thus statistics presented to back each argument should be treated with some caution.

If we support the notion that there is a problem in world agricultural trade (as reported by Binswanger and Lutz, 1999), it is commonly recognised that this is due largely to the massive barriers against agricultural trade that all countries have erected. These barriers are in the process of being dismantled in accordance with WTO rules and regulations, but still continue to inflict welfare losses on both developed and developing countries.

3.5.4.2 The General Agreement on Tariffs and Trade (GATT)

The General Agreement on Tariffs and Trade (GATT) was established in 1947. Agricultural trade was exempt from many of the liberalisation measures imposed by GATT on other trade. In addition to tariffs, quantitative restrictions were permitted under certain circumstances, and in time other non-tariff barriers (such as quotas and variable levies) were allowed.

Assistance to exporters was also permitted in the agricultural sector, whereas export subsidies were prohibited for industrial products. Article XVI:3 of GATT states that export subsidies can be used in agriculture as long as the country using them does not gain more than an equitable share of the world market (Binswanger and Lutz, 1999: 7). This equitable share rule was obviously hard to enforce which resulted in abuse of the system by developed countries - the results of exporter assistance is difficult to quantify, but in general this clause has served to benefit the rich at the expense of the poor.

Because only rich countries can afford such extensive assistance to their farmers, poor countries have not benefited from this clause. In general, export subsidies increase world supply as subsidised farmers produce inefficiently at a high cost, which in turn depresses world food prices. This harms farmers in developing countries that may have a true comparative advantage because they are then unable to sell their goods at competitive prices because of a glut in the world market. Even more serious is when developed countries dump their surplus production in developing country markets.

Thus, GATT proved ineffective in disciplining agricultural trade and this led to dissatisfaction with the rules and regulations that attempted, but failed, to rule trade in this sector. The scene was set for a more rigorous treatment of agriculture with the next round of negotiations.

3.5.4.3 Uruguay Round

The Uruguay Round of trade negotiations was launched in 1986 and concluded in 1994 with the formation of the WTO. Agriculture was now more rigorously included in the multilateral trade negotiating system, and the Uruguay Round culminated in the AOA. The spirit of liberalisation was one of partial and gradual reform, with the tariffication of quotas allowing agricultural support to be more closely monitored by the WTO.

All WTO members (all the SADC countries, bar Seychelles - which has observer government status and is in the process of applying for membership, belong to the WTO) have committed themselves to reduce export subsidies, producer support and import duties on agricultural products, and have bound themselves to maximum tariffs. These conditions differ for developed and developing countries (in terms

of the rates as well as the time frame given for the phasing in) and the following table shows the numerical targets for cutting subsidies and protection.

Table 3.5: The reductions in agricultural subsidies and protection agreed in the Uruguay Round

	Developed countries 6 yrs: 1995-2000	Developing countries 10 yrs: 1995-2004
Tariffs		
- avg cut for all ag products	-36%	-24%
- min cut per product	-15%	-10%
Domestic support		
- cuts in total AMS support for the sector	-20%	-13%
Exporter assistance		
- value of subsidies (outlays)	-36%	-24%
- subsidised quantities	-21%	-14%

Source: (WTO, 2001b: 10).

Notes: AMS support is the aggregate measure of trade distorting agricultural support. The base level for tariff cuts was the bound rate before 1995; or, for unbound tariffs the actual rate changed in September 1986 when the Uruguay Round began. Only the figures for cutting export subsidies appear in the agreement. The other figures were targets used to calculate countries' legally binding 'schedules' of commitments. Each country's specific commitments vary according to the outcome of negotiations. As a result of those negotiations, several developing countries chose to set fixed bound tariff ceilings that do not decline over the years.

In general WTO terminology, domestic support is categorised by three boxes: green represents permitted subsidies, amber refers to subsidies that must be reduced and red measures are forbidden. In the AOA there is no red box and in addition to green and amber support measures, there is a blue box. The blue box refers to subsidies that are tied to programs limiting production. The fact that there is no red box is indicative of the cautious nature of the AOA.

3.5.4.4 Developing Country Concerns

Much of these have been touched on, and the stand developing countries take in the negotiations is by no means homogenous. Proposals have been received that ask for a clear cut agenda in the differential treatment of developed and developing economies with respect to agriculture in the WTO. Some developing countries favour complete liberalisation (for example, those in the Cairns Group) while others argue that subsidies and protection are needed to ensure food security, support smallholders, compensate for capital shortages and prevent further rural-urban migration. But these countries favouring the support of their agriculture state that developed countries should not be allowed to do the same because of the harm that this inflicts on their economies. Thus, differential treatment of countries is crucial.

An important consideration for developing countries looking to develop their agro-processing industries is the existence of tariff escalation. This places a higher import duty on processed agricultural goods and thus makes it more difficult for them to penetrate markets with these types of goods. For developing countries that have been part of preferential trade areas, trade liberalisation means their exports now have to compete with those from other countries in markets where they originally received preferential treatment.

3.5.4.5 Food Security in the Agricultural Negotiations

The AOA has been in place since 1999 and further agricultural trade negotiations are taking place over informal meetings. These meetings have covered a broad range of issues, but those directly related to food security will be discussed below.

The food security debate has centred on the question of whether it is necessary to protect domestic production in order to ensure food security? Most countries advocate a variety of means to ensure food security - the conclusions are similar to those discussed in the policy section of this thesis. That is, food security can be ensured through a combination of trade, stockholding and domestic production. Thus, some form of domestic support and protection is a vital component of a country's food security strategy.

All WTO members recognise the importance of food security and acknowledge the fact that it is a particular concern of developing countries that needs to be addressed urgently. There are two contrasting opinions as to how this should be done. Those countries supporting complete liberalisation argue that this is the correct route to take because a reduction of market imperfections will have positive effects on food security; and, developing country importers and developed countries against complete liberalisation claim that some form of intervention is needed to ensure food security.

The introduction of the time frame into the debate changes the issue somewhat. In the long term, it is reducing poverty that matters, and thus if liberalisation goes hand in hand with increased incomes, this is the key. In the short term, food aid can be used to form some protection against food insecurity. One important argument against this is that complete liberalisation could lead to greater uncertainty in food supplies as production becomes more concentrated in particular areas. Thus, world or regional food supply would be more vulnerable to adverse weather shocks.

3.5.4.6 Reform Progress

In spite of the terms of the AOA and the subsequent negotiations, quantitative restrictions, quotas, variable levies and other NTBs are all still common in agricultural markets the world over.

Because of the controversial nature of the topic of agricultural tariff reductions, the general and economic press is inundated with articles discussing the progress of the WTO in implementing and enforcing the AOA. In a recent article in the *Economist* (9.6.2001) the following observations were made: 'The end of the Uruguay Round brought promises of enhanced market access for the crops of rich and poor countries alike. Tariffs were broadly frozen, and only liberalising changes were expected by the members of the soon-to-be-born WTO. But the reality has been one of unkept promises. Until recently, even the poorest countries still faced largely unchanged high tariffs and low quotas when trading with the world's economic powerhouses.'

Those that believe in the power of the WTO and AOA state that it is domestic distortions that are the problem. For example, in the OECD¹³ subsidies to the agricultural sector exceed the GDP of Africa. Binswanger and Lutz (1999: 4) argue that these developed country export subsidies are also effectively reducing welfare in their own countries. That is, small groups of producers are gaining at the expense of all consumers facing higher prices for basic agricultural commodities.

3.5.4.7 EU and US Domestic Policies

The impact of EU and US agricultural policy on world food trade has been significant. Because of their dominant position in the world economy, and their power within the WTO, it is a common argument that the US and the EU have managed to control agricultural trade rules. Thus it is useful to investigate the evolution of their agricultural trading practices.

With regards to the US, The Agricultural Adjustment Act (of 1933) was fully operational in 1947 when the GATT was negotiated. This act authorised the stabilisation of domestic producer prices through the use of tariffs, import restrictions and export subsidies. The EU did not exist then and thus the original GATT was powered by US concerns. In the 1947 GATT, agriculture was not included in the general prohibition of export subsidies and was exempt from quantitative import restrictions. It is suggested that this treatment of agriculture fitted in neatly with US farm programmes.

¹³ The OECD is the Organisation for Economic Co-operation and Development and consists of 30 member countries (mostly developed nations), including the US and Japan as well as many EU countries.

The EU's Common Agricultural Policy (CAP) was introduced in 1962 to ensure a reasonable standard of living for farmers in conjunction with a steady food supply at a low price. The CAP supports the livelihood of farmers and thus encourages (over)production by paying them higher (than market determined) producer prices, providing them with subsidies and imposing import restrictions.

As mentioned previously, agriculture came to the fore in terms of negotiations at the start of the Uruguay Round in 1986. In the Punta del Este Declaration launching this round, it was stated that not only trade barriers but also domestic agricultural policy issues would be addressed. All the major agricultural players (the US, the EU and the Cairns group) advocated greater liberalisation efforts. The US (supported by Canada, Australia and New Zealand), however, was far more outspoken in terms of the preferential treatment afforded EU producers under CAP. They offered the EU an ultimatum in terms of making their reduction of tariffs on manufactured goods conditional upon the EU's reduction in price support for agricultural products.

Both the EU and the US governments, since the US's 1996 farm bill and reform of the CAP, have changed their preference for price-related subsidies to direct payments in recent years. This is due mostly to pressure from their trading partners as well as better informed decision makers (the net increase in producer and consumer surplus is greater under direct payments than price-related subsidies).

3.5.4.8 The Lome Convention

The Lome Convention gave all SADC countries, excluding South Africa, preferential access to the EU market. The Lome Agreement expired in February 2000, and since then the European Union (EU) has been negotiating regional economic partnership agreements (REPAs) with sub-regions of the original Africa-Caribbean-Pacific (ACP) members of the agreement. Under the last Lome IV convention, the ACP countries enjoyed non-reciprocal, duty-free and quota-free access to the EU market with separate commodity protocols for sugar and beef in place. The proposed REPAs may allow CAP distortions to enter the SADC region.

The EU and SA have recently signed the EU-SA Trade and Development Agreement, which makes provision for the formation of an FTA. SA will have a longer period to implement the agreement plus more product exemptions and the EU wants certain key products (for example, citrus and wine) to be excluded from tariff reduction. The EU is a larger market for SA exports than vice versa and thus the costs of adjustment will be greater for SA. The Imani 1997 study showed that duty-free access of EU products to South Africa would be to the detriment of grain milling in all SADC countries, as well as Livestock and meat in Namibia, Botswana and Zimbabwe and sugar in Swaziland.

3.5.5 SADC IN THE WTO

3.5.5.1 General

In the context of WTO negotiations, the SADC secretariat does not have a mandate to negotiate on behalf of its member states. Thus each country should have a fully prepared representative at all relevant meetings. However, only eight of the SADC countries have some form of representation at Geneva. They are Angola, Botswana, Lesotho, Mauritius, Mozambique, South Africa, Zambia and Zimbabwe (SATRN, 2001: 12). Because of lack of resources, even countries with representation are often not able to sufficiently present their country's position. This is one of the major impediments to the SADC countries fully benefiting from global liberalisation efforts - lack of resources limits participation.

In the spirit of regional integration, the SADC countries did assist each other in preparation for the Third WTO Ministerial Meeting in Seattle in November 1999 (SATRN, 2001: 7). This was in spite of the fact that the countries did have different positions on a range of issues.

3.5.5.2 Individual country trade reforms

The trade reforms implemented in SADC countries are consistent with WTO conditions. These are briefly outlined below.

Angola

The maximum tariff rate increased from 100% in 1994 to 135% in 1997.

SACU

Simplification of tariff structure: the number of tariff lines is still high.

Export incentive scheme subsidy eliminated in 1997.

Malawi

Simplification of tariff structure: in 1998 there were only 9 bands.

Maximum tariff rate: from 45% in 1996 to 30% in 1998.

Duties: deductions in 1998 from 10% to 5% for selected capital and intermediate goods.

NTBs: all removed in 1997.

Mozambique

Simplification of tariff structure: in 1991 it was reduced from 34 to 5 bands.

Maximum tariff rate: 35%.

Licensing: import and export licensing eliminated between 1990 and 1991.

Liberalisation exemptions: number of exemptions reduced between 1995 and 1996.

Tanzania

Duties: reduced in 1992.

Liberalisation exemptions: still persist.

Policy reversal is common.

Zambia

Simplification of tariff structure: number of bands fell to four between 1991 and 1998.

Licensing: import licensing eliminated in 1993.

Liberalisation exemptions: limited.

Exchange rate policy: dual exchange rate unified.

Zimbabwe

Simplification of tariff structure: 1997.

Export incentive schemes: eliminated 1994.

Exchange rate policy: foreign exchange allocation abolished 1994.

3.5.5.3 Agricultural Trade Negotiations

Agricultural trade is one of the main areas where the SADC countries disagree on reforms. Some countries agree that developed economies must reduce domestic support and eliminate export subsidies. However, the net food importers recognise that this will lead to higher world food prices and thus they do not fully support these reforms. Most SADC countries agree that developing economies should have more flexibility in adopting the reforms as advocated by the WTO.

All the SADC countries (except for Seychelles which is not yet a member of the WTO) are part of the African Group alliance. South Africa joined the Cairns group in 1998 and this is an important strategic alliance in terms of the depth of expertise in agricultural trade negotiating that the other members possess. The Cairns group is a group of 'fair trading' agricultural exporting nations and consists of fourteen developing countries and three developed countries (www.cairnsgroupfarmers.org). The main role of the Cairns group is to put up a united front against the strong bargaining powers of the other major food exporters, the EU and the US. The Cairns group have participated extensively in the latest round of agricultural negotiations (since March 2000), and have submitted proposals relating to export competition, domestic support, market access, and export restrictions and taxes.

The SADC countries are all members of other alliances, some of which have also submitted proposals in the latest round of agricultural negotiations. Of interest is the African group's joint proposal on the negotiations in agriculture. In it they state that the reform agenda must make provision for the identification of non-trade concerns, the eligibility criteria for special and differential (S&D) treatment, plus the special concerns of least developed countries (LDCs) and net food-importing developing countries (NFIDCs). In addition, they call for the special treatment of small island and land-locked developing countries (WTO, 2001a, 2).

Zimbabwe has been very involved in the negotiations in its individual capacity, and is the only SADC country to have submitted a proposal under the category of 'food security' (WTO, 2001b, 4-7).

3.5.5.4 Agricultural Trade Reforms

The reductions in tariffs, domestic support and exporter assistance advocated by the WTO in the Uruguay Round's AOA has been discussed. The major exception to the schedule is that LDCs do not have to reduce tariffs or subsidies. Thus, the following LDC SADC members do not have to comply with the measures: Angola, DRC, Lesotho, Malawi, Mozambique, Tanzania and Zambia.

South Africa, in contrast, has committed itself fully to faster and more stringent liberalisation measures than those presented above. Its total AMS is about 5% of agricultural production, and its Producer Subsidy Equivalent (equal to 12% in 1995) ranks alongside Australia (9%) and New Zealand (4%). This is in contrast to Japan's 77%, the EU's 49% and the US's 15%. South Africa's General Export Incentive Scheme (GEIS) ended in 1997 and with that, its export subsidies to farmers were terminated. In South Africa's new producer support policies only green box supply side measures are used.

South Africa's agricultural tariffs have been greatly reduced - 38% of the tariff headings are subject to 0% and the rest are subject to tariffs less than 15%. These reforms are consistent with South Africa's new position on agriculture and food production - 'a major policy shift away from measures to achieve self-sufficiency in food towards relying on international trade, when it is efficient to do so, laid the ground for South Africa's commitment to freer trade in agriculture' (WTO, 1998: 14).

3.6 FREE TRADE IN SADC

3.6.1 SADC FTA

3.6.1.1 Trade Protocol

The SADC Trade Protocol was drawn up at the SADC summit meeting in August 1996. It was launched on 1 September 2000, and to date ten member states have ratified the protocol with five countries (Botswana, Mauritius, Lesotho, SA and Swaziland) starting to implement it. Zambia has signed the protocol but not ratified it.

Among its objectives it provides for the formation of a FTA within eight years, and the elimination of tariffs, quantitative restrictions and NTBs to trade within this time. The elimination of these impediments to free trade will be phased in over a period of eight years for 85% of total intra-regional trade, and twelve years for all trade.

The Committee of Ministers Responsible for Trade Matters (CMT) has been responsible for drawing up the timing of the phased elimination of tariffs and NTBs, taking into account existing preferential trade arrangements in the region. The timetable, as well as the identification of sensitive products, has been negotiated through the Trade Negotiating Forum (TNF). Negotiations took place in eleven rounds (between January 1999 and June 2000) of the TNF, with more than 45000 tariff lines negotiated. .

Products qualifying for duty-free trade within SADC have to comply with the Rules of Origin (ROO) criteria. A product qualifies for duty-free trade if it is wholly produced in a SADC country; if it is processed in a SADC country using a minimum of 40% of materials originating within SADC or if value added exceeds 35% of the ex-factory cost of the goods; or if processing of imported non-originating materials results in a change in the tariff heading of the product.

3.6.1.2 Sensitive Products

Tariffs are to be reduced over the eight year period, starting in 2000, by a given percentage each year according to the type of product. Three types of products have been specified - those for immediate liberalisation, those for gradual liberalisation and those on a sensitive products list that will be liberalised five years after the process begins. Note that the sensitive products list should not exceed 10% of total imports from SADC members (in 1996).

As with other trade liberalisation experiences world wide, many agricultural products can be defined as 'sensitive'. A product can be sensitive for a number of reasons. The most common criteria for identifying a product as sensitive is if the reduction of its tariffs will greatly reduce government revenue or if its production is labour intensive or if it is one of a few major exports for the country. The following agricultural products were identified as sensitive in a 1997 study by Imani (Maasdorp, 1998: 512): grain milling products in Malawi and Namibia; tobacco in Malawi, Mauritius and South Africa; edible fruit and nuts in Mauritius; coffee, tea and spices in Malawi and Mauritius; meat in Namibia; dairy produce in South Africa, Zambia and Zimbabwe; sugar in Malawi, South Africa, Swaziland in Tanzania; and, cereals in Malawi, Zambia and Zimbabwe. Thus, in the negotiations that precede the formation of a FTA, special treatment of these products will be discussed.

For those countries that have submitted their sensitive product offers to the TNF the following agricultural products form part of the list: Malawi - sugar and confectionary; SACU - dairy products, wheat and other cereals, sugar and sugar confectionary, beef and pineapple juice; and Zimbabwe - sugar and various other agricultural products. Mauritius, Tanzania and Zambia have also submitted offers containing agricultural goods. Note that for some countries these sensitive products lists exceed the 10% of SADC imports limit - for SACU it is 11% and Tanzania it is 35%. Zimbabwe on the other hand has defined sensitive products that only make up 3.8% of SADC imports (Hess, 2000: 43).

As with international trade, the gains are not always equally distributed and it is thus important to assess the distribution of the gains from trade in the region. Free trade could hurt small-scale peasant maize growers and grain millers in the smaller countries of the region. This is because they do not enjoy economies of scale and have no anti-dumping measures. In addition, they lack marketing and management skills to compete with commercial farmers and millers.

3.6.2 NECESSARY CONDITIONS FOR A SUCCESSFUL FTA

The potential for increasing trade depends on structural factors as well as policy environment. The potential for trade is greater the more the economies of the countries differ. Heckscher-Ohlin trade theory states that specialisation in production is a result of factor endowment differences in countries. It is widely acknowledged that the SADC region is an heterogeneous group in terms of income levels, degree of urbanisation and factor endowments. It is useful to examine what conditions are necessary in order for regionalism to work in order to have some idea as to the likely success of the whole endeavour.

In order for a FTA to be successful, the following conditions should exist: the countries must be characterised by diversity in production, the natural resource base and consumption; there must be differences in comparative advantages; there must be a high degree of price distortion within the region;

the tradable commodities must have high elasticities of supply and demand; there must be the potential to create, not divert trade; and, the authorities should have the ability to design compensation programmes to support those in the region who lose out over the short and medium term as a result of regional co-operation (van Rooyen and Sigwele, 1998: 495).

3.6.3 CONSTRAINTS TO THE SUCCESSFUL FORMATION OF A FTA

From table 3.3 (the composition of intra-regional trade in southern Africa) it was evident that the trade in agricultural and food products is very low. Thus, the question to ask is what is the implication of the low initial level of trade in foodstuffs on regionalism as a means to improving food security? To assess this, the static as well as dynamic gains from trade must be ascertained. Because current intra-regional trade in SADC is low, the static gains from regionalism could be quite limited and unequally distributed (Von Braun, Msuya and Wolf, vol 36: 6). However, SADC is the most integrated African region and intra-regional trade is on an upward trend (intra-SADC trade in total trade increased from approximately 3% to 10% over the 1990 decade) and thus the static gains could potentially be greater than the current trade situation reflects. Also, the dynamic effects of closer integration - in the form of economies of scale and closer competition - should lead to growth with all its spillover effects enhancing food security.

SADC approaches a FTA from a low base and agricultural subsidies are already low so removing them should not act as a massive incentive to increased agricultural trade. Other important constraints are macroeconomic problems in the form of fiscal deficits, too much government involvement in the financial sector, BOP problems, foreign debt, aid dependence as well as underdeveloped financial sectors. Note, however, that Structural Adjustment Programs (SAPs) as administered by the International Monetary Fund (IMF) and World Bank have made significant inroads into helping the SADC countries achieve macroeconomic stability. Macro-economic convergence of countries in a regional trading bloc stimulates greater trade flows as countries with similar development levels tend to trade more. In addition, unless NTBs to trade are not eliminated as a matter of urgency, the potential for increased agricultural trade will not be realised:

3.6.4 PROSPECTS FOR SUCCESSFUL REGIONAL INTEGRATION

Does SADC satisfy the conditions for regional integration to be successful? As mentioned previously, Heckscher-Ohlin trade theory states that specialisation in production is a result of factor endowment differences in countries and thus the potential for increased agricultural trade is greater the greater the disparity in the quality and quantity of land, labour and capital available for food production.

Also of importance are the different levels of income and the varying degrees of urbanisation in the region.

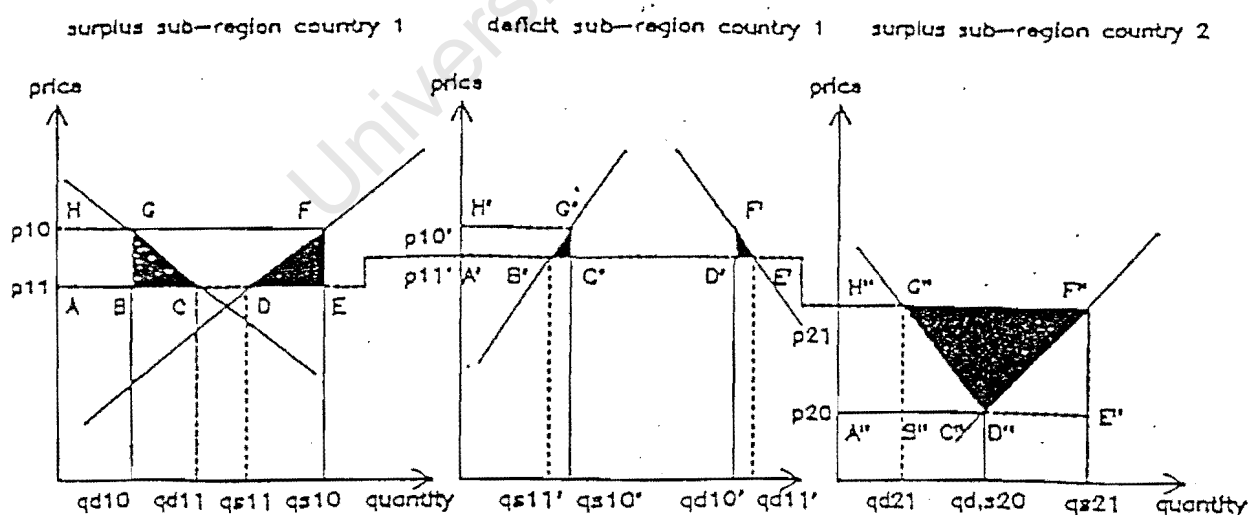
With respect to income, there is a wide range of per capita income in the region. In 1999, GNP per capita (US\$) varied from \$110 for the DRC to \$6540 for the Seychelles (see table 1.1). In terms of the degree of urbanisation, the urban population as a percentage of the total ranged from 73.6% in Botswana to 15.4% in Malawi in 2000 (see table 1.2). Seychelles and South Africa are also relatively urbanised while the DRC, Lesotho and Tanzania are among the more rural economies. This affects food trade as increased urbanisation is related to a change in consumer preferences - from maize to wheat or rice - as well as an increase in the monetisation of food production (that is, a reduction in subsistence food production and a reliance on the market to provide food).

The quality and quantity of land, labour and capital devoted to food production in the economy also differs throughout the region.

3.6.5 WHY AGRICULTURAL TRADE LIBERALISATION?

Regionalism implies trade liberalisation, and thus this thesis hypothesises that the formation of a SADC FTA should have positive effects on the food security situation. This model presents a spatial equilibrium approach to measuring the benefits of free trade on food security. It provides the basis for furthering a discussion on freer intra-regional trade in general and in agricultural goods in particular.

Figure 3.1: Model framework to evaluate trade liberalisation in a spatial-equilibrium model



Source: Nuppenau (1994: 178).

Note: The solid lines represent autarkic equilibrium and the dotted lines represent equilibrium once trade has been liberalised.

Three sub-regions of an economic community are represented above - there are two surplus sub-regions (one in country one and the other in country two) as well as a deficit sub-region that occurs in country one. Before trade is liberalised, both countries have to be totally self-sufficient. Pan-territorial pricing occurs in country one (price is p_{10}) and the government is responsible for transporting food from the surplus to the deficit region. Country two's autarkic price is p_{20} .

Now, if trade is liberalised and prices are market determined, the distance from the deficit to the surplus sub-regions will determine the pattern of trade. If we assume that the shortfall in the deficit sub-region is such that it necessitates trading with both surplus sub-regions, that sub-region will absorb all the surplus food from the closest sub-region and then obtain the balance from the other one. It is assumed that the surplus sub-region in country two is farther away than that in country one (but obviously it need not be). In this case, the price in surplus sub-region country two (p_{21}) will be lower than that in surplus sub-region country one (p_{11}) because of the transport cost. The price in deficit sub-region country one (p_{11}') will be higher than p_{11} and p_{21} .

In terms of the winners and losers from trade liberalisation, country one's producers lose out and its consumers gain as prices fall. In country two, consumers are the winners. Country two's financial surplus as a result of exports is represented by the area B"E"FG. The gains from trade are the shaded areas on the diagram and it is obvious that country two gains more than country one in this case.

This simplified model must be expanded to include all the sub-regions in an economic community in order to determine winners and losers. In addition, regional agricultural trade cannot be discussed in isolation of the international environment in which trade takes place. Because trade in this sector has been subject to debilitating restrictions that have served to distort the free functioning of markets, it is necessary to keep in mind the environment in which trade liberalisation in this sector will take place.

3.6.6 WINNERS AND LOSERS IN A FTA

Winners and losers of freer trade can be defined in terms of regions, countries, communities, households and individuals, as well as sectors, sub-sectors and finally products. The effects of international agricultural trade liberalisation as well as the SADC FTA on these various economic entities has been touched upon in the discussion but will be formalised now.

3.6.6.1 Regions

Developed countries are said to benefit at the expense of developing countries regarding the AOA. This creates added incentive for SADC members to work together to achieve their food security objectives.

3.6.6.2 Countries

Within SADC, there is fear that polarisation will take place and that South Africa will reap the benefits of the FTA. However, if food production moves further North then South African farmers will lose out. Thus, the situation is not clear cut and political factors as opposed to economic factors will probably dominate the production determinants.

3.6.6.3 Households and Individuals

Those households and individuals benefiting from the sectors that prosper as a result of the opportunities of freer trade will be the winners. Those that lose their jobs in sectors that become obsolete will suffer. If food prices fall as a result of the correct and proper implementation of the AOA, then all consumers will be better off, but farmers will be hurt. SADC countries may then find it necessary to continue protecting them.

3.6.6.4 Sectors and Products

Comparative advantage should determine which commodities will be produced and thus which sectors will thrive and which will struggle. In terms of the commodities in SADC most likely to benefit from a FTA, the following products have been identified as displaying the greatest scope for potential trade: meat, fish, vegetables, rice, sugar, coffee, tea, tobacco, rice, textile fibres, crude animal and vegetable products, essential oils and leather (van Rooyen and Sigwele, 1998: 273).

The above agricultural commodities thus offer farmers trading opportunities. It is assumed that farmers in the region want to trade, and thus the next step is for them to determine what commodity to produce. In terms of food security, the production of a staple food such as maize is of interest. Part four of this thesis looks at maize production and trade in the region, as an example of how trade is able to contribute towards improved food security.

PART 4: A CASE STUDY OF CEREAL AND MAIZE TRADE

4.1 INTRODUCTION

Part 1 discussed the food insecure situation prevailing in much of SADC, Part 2 looked at the policy in place to try and reverse the situation, Part 3 examined increased trade as a potential solution and now part 4 looks more closely at the dynamics of staple food trade in the region. It starts by looking at total cereal production and trade in the region, and it then concentrates on maize. Maize production and distribution has been the subject of a recent study, and the potential use of this study on improving food security in the region is examined.

This final analysis aims to give the reader insight into the level of staple food production and trade in the region and the potential for changing these volumes in the interest of more efficient production and distribution.

This analysis must be consulted in conjunction with the following facts: agricultural trade in SADC is low, agricultural markets are characterised by serious distortions world wide, and these distortions impact on world agricultural trade as well as on trade within SADC. Agricultural and trade reforms have come some way towards making agricultural markets function better. It is taken as given that a SADC FTA will do much to reduce distortions and thus SADC can work towards staple food self-sufficiency as a region. This is assumed to be desirable given the nature of the commodity in question - maize is a bulky, high volume and low value perishable good. The question now asked is: is this trade feasible? A set of tools has recently been devised that aims to answer just this question.

4.2 THE ANALYSIS

At this stage it is necessary to define more carefully the farm products and types of farmers under review. Agriculture is classified as follows: farmers can produce food or non-food (for example, flowers) products and food is either a staple or a non-staple. Staples include cereals (wheat, rice, barley, maize, millet and sorghum) and starchy roots such as cassava, potato and sweet potato. The production and trade of cereals and then maize is presented in this thesis. It is important to remember that for Angola and DRC, the staple food is cassava.

There are two types of farmers - traditional or smallholder farmers as well as commercial farmers. Smallholders generally grow only food crops for own consumption (subsistence farming) with the surplus sold or exchanged for other goods at the local market. Commercial farmers grow food crops as well as other crops and they produce for the local or export market depending on the incentives in place. This analysis does not differentiate between smallholder and commercial agriculture. This may be an oversight given that the determinants of food security for smallholders differs substantially from that for labour on commercial farms. However, data constraints prevent a formal treatment of this issue.

4.3 CEREAL VOLUME DATA

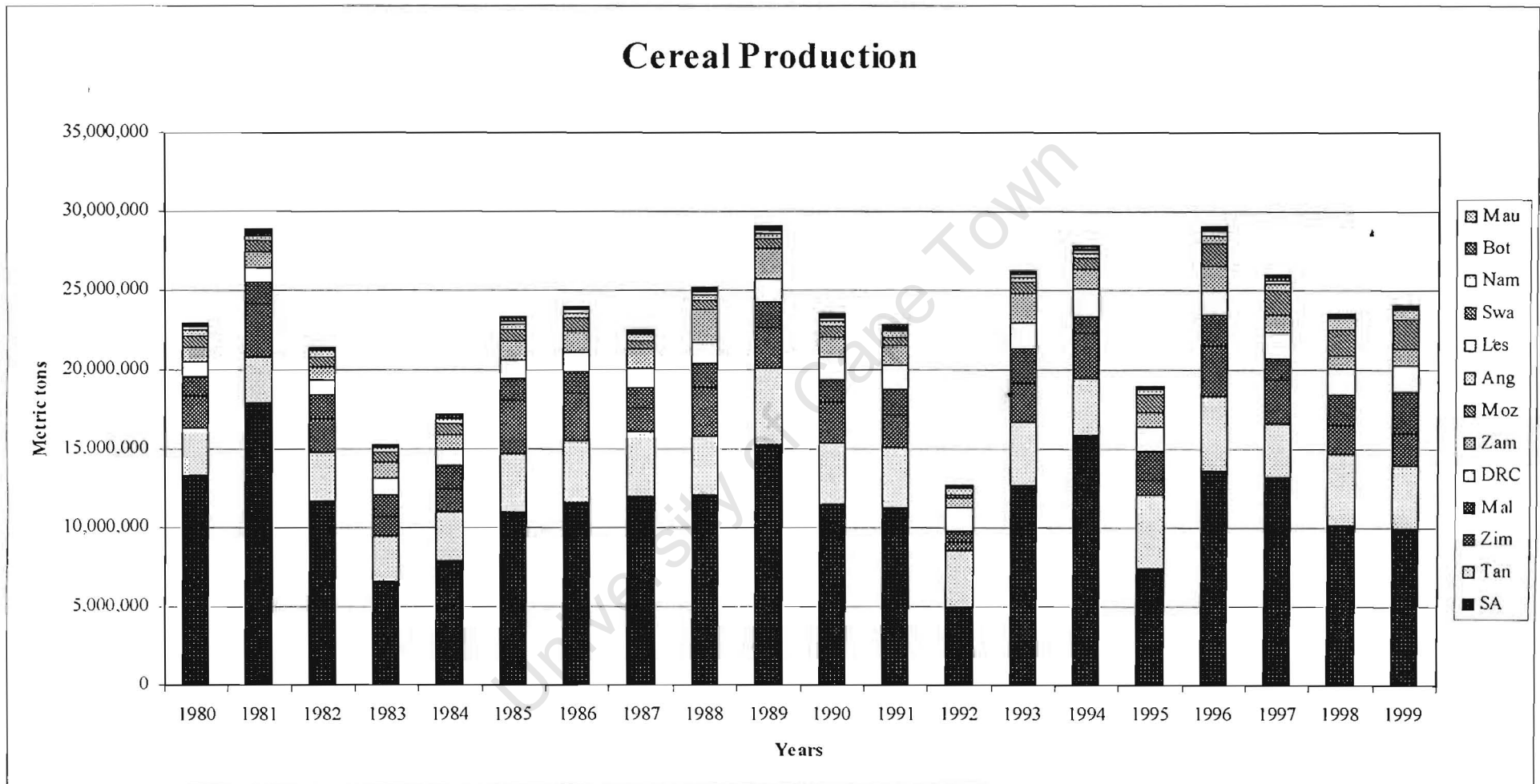
4.3.1 CEREAL PRODUCTION

The graph on the following page (figure 4.1) shows cereal production in SADC from 1980 to the present. The legend shows which countries produced what amount of the total SADC production - South Africa has consistently produced the most and Mauritius the least. Information was not available for Seychelles. The slumps in production coincide with the major droughts during this time period.

4.3.2 CEREAL DEMAND AND SUPPLY

The following bar graphs are representative of the cereal supply and demand situation from 1980 to 1999. Production, food and net imports per capita are shown as the average value per annum for the following five year periods: 1980 to 1984, 1985 to 1989, 1990 to 1994 and 1995 to 1999. The data is averaged over five year periods to reduce annual fluctuations. The information on production, net imports and food was extracted from FAO food balance sheets. Population figures used were those for the last year in the time period under review.

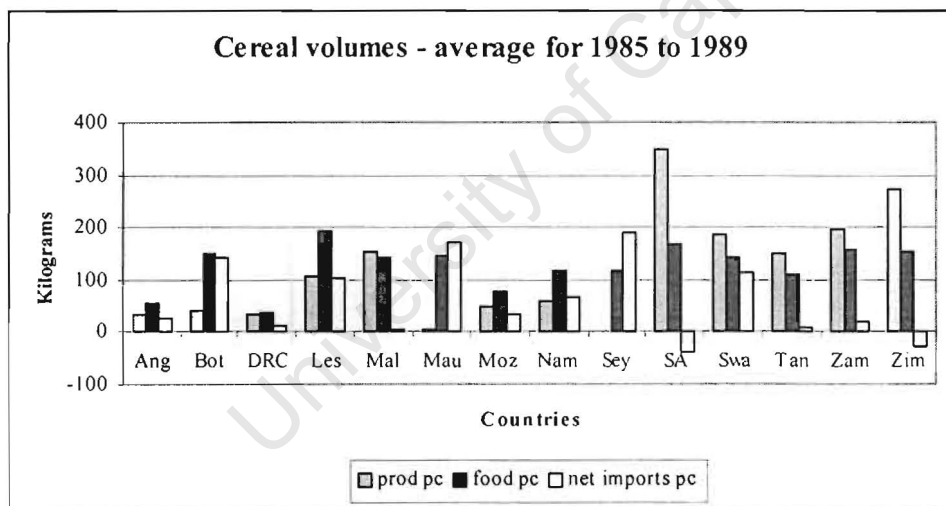
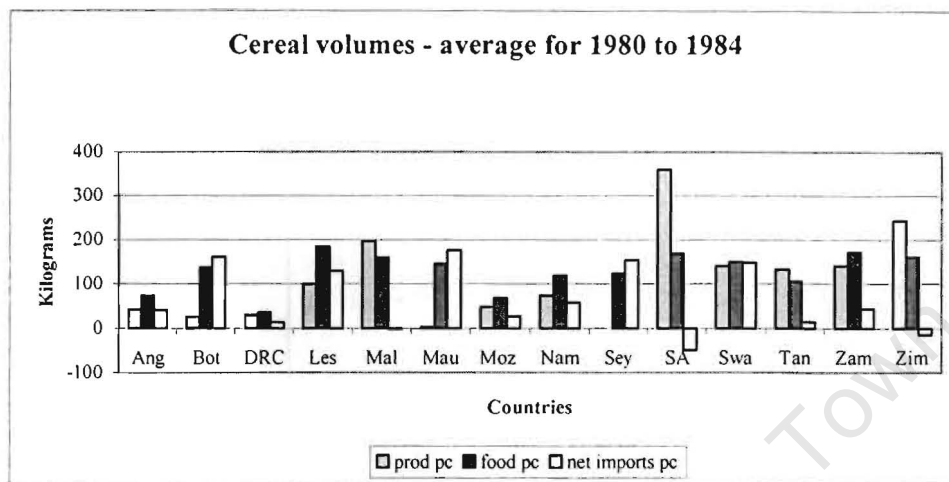
Figure 4.1: Cereal production

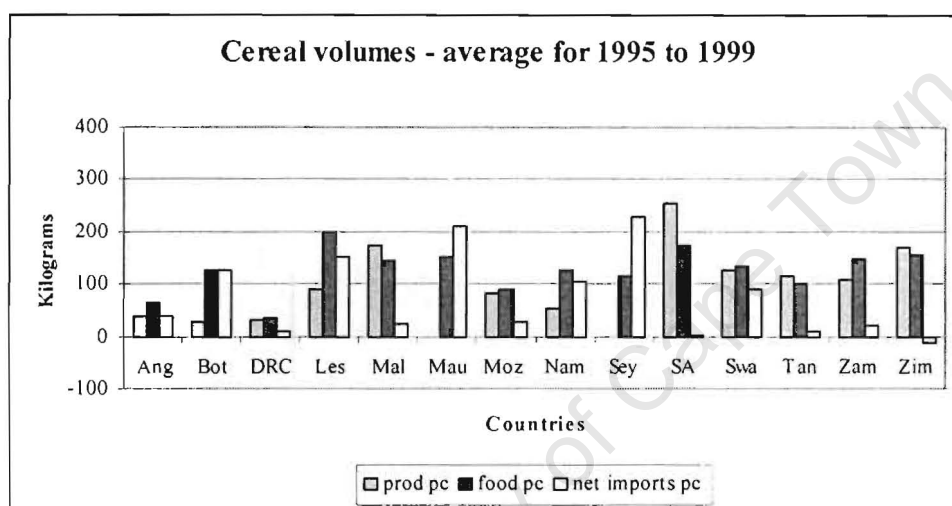
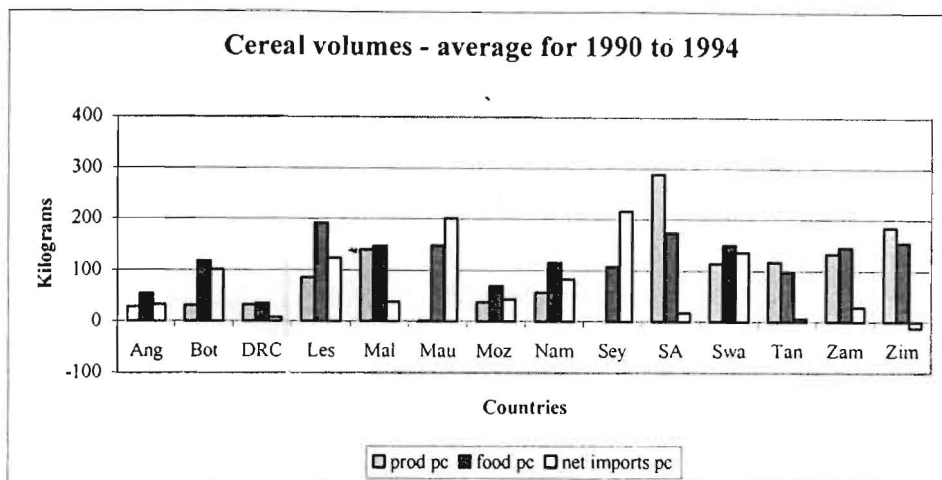


Source: FAO database.

In all four time periods, per capita production has exceeded per capita food in South Africa, Tanzania and Zimbabwe. In Malawi this has been the case for all time periods except for 1990 to 1994. With respect to trade, only Zimbabwe has been a net exporter over the whole time period. South Africa was a net exporter in the 1980s, but in the 1990s this has changed.

Figure 4.2: Production, food and net imports per capita of cereals





Source: Constructed from data in the FAO database.

4.3.3 NET IMPORTS OF CEREALS AND MAIZE

The following table shows net imports in each SADC country for all cereals and then for maize only. The sum of net imports is shown in the total row and the total excluding South Africa row subtracts South Africa's net imports from the total.

This table expresses net imports in metric tons - no Rand or Dollar values are available on the FAO database.

Table 4.1: Net imports (Mt)

	All cereals				Maize				
	1980-1984	1985-1989	1990-1994	1995-1999	1980-1984	1985-1989	1990-1994	1995-1999	
Ang	332602.6	248740.6	364618.8	478828	Ang	109439.4	62890.8	113679.4	137900
Bot	170447	220225.8	194585.6	234202.6	Bot	28250.4	43546.2	47666	53647.2
DRC	407438.2	452253.8	341329	443725.8	DRC	164205.4	76341.4	54940	14560.2
Les	192406.8	171136	225340	307536.6	Les	32152	50398	50381	117780
Mal	-15996.6	58206.2	380266.6	259914	Mal	-35911.8	32606.2	297274.4	173284.6
Mau	176655.6	180985.8	221948.8	240589	Mau	13323.6	18035.6	34512.2	55620
Moz	352903.4	478505.6	680160.4	468775	Moz	114200	274819.2	399920	140200
Nam	62200	90266.2	129364	177104.2	Nam	21400	42353.4	80404	135444.2
Sey	9692	12721.2	15781.8	18011.2	Sey	70	2089.2	4755.6	3325.4
SA	-1567059	-1334946	696903	147343.8	SA	-1799531	-1428498	-453294	-891050
Swa	92530.6	85266.2	110880.4	83605.8	Swa	16200	15340	19178.6	14372.4
Tan	303510.2	174079.6	186056.8	342301.4	Tan	157712.4	42497	42408.4	73197.8
Zam	295300.2	157137	265540.4	208600.4	Zam	152029.4	95060.8	226547.8	130760.2
Zim	-120808	-290071	-128195	-161312	Zim	-148531	-323626	-209699	-201818
Total	691822.8	704506.4	3684581	3249226	Total	-1174991	-996146	708674.8	-42776
Total excl SA	2258882	2039453	2987678	3101882	Total excl SA	624540.2	432352	1161969	848274

Source: Constructed from data in the FAO database.

South Africa was a net exporter of all cereals combined in the 1980s, and then in the 1990s this changed and South Africa became a net importer. Maize dominates South Africa's cereal trade and thus this change is due to the fall in the net exports of maize in the 1990s. Note that Zimbabwe is the only other net exporter of cereals. For all cereals combined, total net imports were low in the 1980s and then increased dramatically. This is due to South Africa's trade performance dominating the total. If South Africa is excluded from the total, net imports remains relatively constant over the four half-decade periods.

The above table has shown that if South Africa is excluded from the region, net imports have remained relatively constant over the twenty year time period under review. To determine whether this level of net imports is high or low, it is useful to express net imports as a proportion of national production. This is displayed in the table on the following page.

Table 4.2: Net imports as a proportion of national production

	All cereals					Maize			
	1980-1984	1985-1989	1990-1994	1995-1999		1980-1984	1985-1989	1990-1994	1995-1999
Ang	97.34621	77.01238	112.7195	99.08359	Ang	39.22559	24.11457	44.58016	36.0736
Bot	622.1829	448.9914	445.5961	539.9658	Bot	259.6544	609.6346	553.2779	600.2954
DRC	45.77292	39.12915	23.59859	29.72836	DRC	25.0774	8.939274	5.08845	1.279376
Les	128.9388	97.34388	144.4904	173.1288	Les	35.73207	44.15431	48.21711	92.56567
Mal	-1.16828	4.121233	27.36183	13.66148	Mal	-2.7151	2.402856	22.30737	9.698271
Mau	10869.78	3906.112	12196.33	84774.14	Mau	871.0513	393.6701	1901.289	19598.31
Moz	56.66158	75.69329	114.799	32.21191	Moz	32.07865	77.10976	103.359	13.76392
Nam	78.04266	114.7234	148.7291	196.5584	Nam	64.84848	268.9549	256.4606	571.1908
SA	-13.5783	-10.7126	6.151691	1.352119	SA	-20.5009	-15.8423	-5.11122	-10.9165
Swa	104.5272	61.35672	117.6615	72.01164	Swa	19.27016	11.46504	20.93272	12.53777
Tan	10.59652	4.596941	5.281019	8.537614	Tan	8.951777	1.751731	1.85283	2.971572
Zam	31.20956	10.23783	22.28456	19.21674	Zam	16.88538	6.597238	21.41046	14.2084
Zim	-5.96648	-10.6245	-6.17643	-7.57156	Zim	-9.06218	-14.8942	-12.6979	-11.7632

Source: Constructed from data in the FAO database.

The above table shows that Botswana and Mauritius are heavily reliant on trade for cereal consumption. Malawi, Tanzania and Zambia (in addition to South Africa and Zimbabwe) are the most self sufficient in total cereal consumption. With respect to maize consumption, Botswana, Mauritius and Namibia are all extremely dependent on trade.

4.3.4 INTRA-SADC CEREAL TRADE

Data is not available for intra-SADC maize trade and thus only total cereal trade within the region can be presented. The following tables show intra-SADC trade in cereal and cereal preparations. These trade profile matrices were constructed using World Trade Analyser (WTA) data from 1980 to 1997 and four periods have been analysed - 1980 to 1984, 1985 to 1989, 1990 to 1994 and 1995 to 1997. Each cell shows the average value of trade per annum between two countries for the time period under review and the amount of trade is expressed in thousands of current US Dollars. The columns show the origin of exports to the row countries. Alternatively, the rows show the destination of imports from the column countries.

All the SACU countries (that is, Botswana, Lesotho, Namibia, South Africa and Swaziland) are combined under a single entry - this is due to data unavailability and is unfortunate as the explanatory power of the matrices is undermined by this aggregation.

Table 4.3: Intra-SADC cereal trade

1980-1984		Origin										
		Ang	DRC	Mal	Mau	Moz	SACU	Sey	Tan	Zam	Zim	Sum
Dest	Ang	0	0	0	0	0	0	0	0	0	6	6
	DRC	0	0	1071.6	0	0	0	0	0	0	285.2	1356.8
	Mal	0	0	0	0	10.8	3762.2	0	0	0	980.4	4753.4
	Mau	0	0	43	0	0	3357.6	0	0	0	33.2	3433.8
	Moz	0	0	1056	0	0	0	0	0	0	111.6	1167.6
	SACU	0	0	311.2	6.6	0	0	0	0	0	236.8	554.6
	Sey	0	0	0	2.6	0	336.4	0	0	0	0	339
	Tan	0	0	707.6	0	0	0	0	0	0	232.6	940.2
	Zam	0	0	3668	0	0	0	0	0	0	7.8	3675.8
	Zim	0	0	2740.2	0	0	25	0	0	0	0	2765.2
	Sum	0	0	9597.6	9.2	10.8	7481.2	0	0	0	1893.6	18992.4

1985-1989		Origin										
		Ang	DRC	Mal	Mau	Moz	SACU	Sey	Tan	Zam	Zim	Sum
Dest	Ang	0	0	32.4	0	0	0	0	0	0	108.6	141
	DRC	0	0	236.2	0	0	0	0	0	0	1196.2	1432.4
	Mal	0	0	0	0	0	1896.6	0	0	1.4	214	2112
	Mau	0	0	0	0	0	914.2	0	0	0	93.8	1008
	Moz	0	0	525	0	0	0	0	0	0	5161.4	5686.4
	SACU	0	0	332.6	0	0	0	0	0	0	6585.6	6918.2
	Sey	0	0	0	1	0	1112.6	0	0	0	83.8	1197.4
	Tan	0	0	173.6	0	0	0	0	0	0	173.4	347
	Zam	0	0	2482	0	0	0	0	0	0	2185.8	4667.8
	Zim	0	0	120.6	0	0	502.8	0	0	0	0	623.4
	Sum	0	0	3902.4	1	0	4426.2	0	0	1.4	15802.6	24133.6

1990-1994		Origin										
		Ang	DRC	Mal	Mau	Moz	SACU	Sey	Tan	Zam	Zim	Sum
Dest	Ang	0	0	2.2	0	50.8	6455.4	0	0	0	3311.8	9820.2
	DRC	0	0	85.6	4.4	0	8026.6	0	0	0	3954	12070.6
	Mal	0	0	0	327	0	6786.2	0	4.2	1706.4	20603.8	29427.6
	Mau	0	0	0	0	0	5950	0	0	0	7.4	5957.4
	Moz	0	0	52.8	349.8	0	12865.6	0	0	0	18296.4	31564.6
	SACU	0	2.4	52.6	29	0	0	0	0	224.8	13182.8	13491.6
	Sey	0	0	0	43	131.2	1274.8	0	0	0	66.2	1515.2
	Tan	0	0	8.2	0	48	1160.8	0	0	0	3122	4339
	Zam	0	0	459.2	43.6	0	8232	0	0	0	5848.4	14583.2
	Zim	0	0	457.6	2.2	3.6	4830.8	0	0	212.8	0	5507
	Sum	0	2.4	1118.2	799	233.6	55582.2	0	4.2	2144	68392.8	128276.4

1995-1997		Origin										
		Ang	DRC	Mal	Mau	Moz	SACU	Sey	Tan	Zam	Zim	Sum
Dest	Ang	0	0	0	0	12.7	7993	0	0	0	1241.7	9247.3
	DRC	0	0	79	0	0	10916.3	0	0	0	3151	14146.3
	Mal	0	0	0	2008	217	10407	0	317.3	683.3	9269	22901.7
	Mau	0	0	0	0	0	10585	0	0	0	7	10592
	Moz	0	0	62.3	72.3	0	15077	0	0	54.3	10353.3	25619.3
	SACU	0	0	58	0	6.3	0	0	95.3	216.7	16704.3	17080.7
	Sey	0	0	0	228.3	0	1052	0	0	0	524	1804.3
	Tan	0	0	34.3	766	0	1458.7	0	0	0	1095.7	3354.7
	Zam	0	0	778.3	33.7	3.3	14090.3	0	0	0	15529.3	30435
	Zim	0	0	2221	48.3	0	13736.3	0	0	296	0	16301.7
	Sum	0	0	3233	3156.7	239.3	85315.7	0	412.7	1250.3	57875.3	151483

Source: Data extracted from WTA.

Note: Dest is destination.

From the tables above it is obvious that the value of intra-SADC trade in cereal and cereal preparations has increased over the last twenty years - from 1980 to 1984 it was valued at an average of \$18992.4 thousand per annum, from 1985 to 1989 it was \$24133.6 thousand, from 1990 to 1994 it was \$128276.4 thousand and from 1995 to 1997 the value averaged \$151483 thousand per annum.

The number of zero cells (excluding the diagonals) was higher in the 1980s than in the later periods - in the first period it was 67, in the second 68, in the third 49 and in the fourth 50. Thus, without further analysis, it can be stated with conviction that trading activity in the cereal sector has increased over the last twenty years.

4.4 CEREAL PRODUCTION AND TRADE

The aim of this section is to determine the potential for increasing cereal trade in SADC. To do this, it is necessary to determine whether the consumption and production characteristics of the SADC countries imply that trade is below its potential level. In short, if countries produce and consume the same goods, then there is not much scope for trade, as all the SADC countries will have surpluses and shortages at the same time. Thus, in order to investigate the potential for increased cereal trade in the region, production and consumption patterns must be investigated, as well as the variation in agricultural output.

The amount of intra-SADC trade in cereal and cereal preparations is investigated and then the following question is answered: given the normal pattern of cereal trade, would a substantial shift from extra-regional to intra-regional trade be possible? Another important question that is not answered

(because of the unavailability of reliable price data) is: can the replacement of imports from outside SADC by imports of regional origin be justified by comparative costs?

4.4.1 FACTOR ENDOWMENTS

As mentioned in sub-section 3.6.2, Heckscher-Ohlin trade theory states that specialisation in production is a result of factor endowment differences in countries and thus the potential for increased agricultural trade is greater the greater the disparity in the quality and quantity of land, labour and capital available for food production. Also of importance are the different levels of income and the varying degrees of urbanisation in the region. The homogenous nature of SADC has been dealt with explicitly in part one of the thesis, and table 1.1 should be consulted again for evidence of the wide range of development levels in the region.

The quality and quantity of land, labour and capital devoted to food production in the economy also differs throughout the region. See the appendix for tables indicating land use, capital (machinery) and other input (fertiliser) use and labour force dynamics.

From the tables in the appendix, it seems obvious as to why South Africa tends to dominate agricultural production in the region - it has the most arable land in the region, its capital-land ratio (as measured by machines/1000 ha of agricultural area) is relatively high, as is fertiliser use. However, the figures for arable land contrast significantly to those reported by Kleynhans and Vink (1998: 389) using a Geographic Information System (GIS) to identify arable land in the region. They defined arable land as 'land with adequate soil depth to store sufficient water in areas with sufficient rainfall and which are flat enough to allow mechanical cultivation without too high a risk of water erosion' (Kleynhans and Vink, 1998: 389).

The table below reproduces the arable land as reported by the FAO alongside Kleynhans and Vink's figures. Arable land in all countries bar South Africa has been grossly underestimated by the FAO. Thus, this implies that the rest of SADC is not performing as well as it should, given their land endowments. This is consistent with those studies identifying the northern areas as being the most suitable for increased food production.

Table 4.4: Different measures of arable land

	Arable land (K & F) (1000 ha)	Arable land (FAO) (1000ha)
Ang	93235	3000
Bot	5030	343
DRC	na	6700
Les	na	325
Mal	6665	1875
Mau	na	100
Moz	53300	3120
Nam	na	816
Sey	na	1
SA	14578	14753
Swa	na	168
Tan	59653	3750
Zam	39003	5260
Zim	28195	3220

Source: Kleyhans and Vink (1998: 389) and FAO database.

The topic of land suitability will be dealt with explicitly in the analysis of maize production and distribution in the region.

4.4.2 PRODUCTION PATTERNS

From diagram 4.1 it is obvious that there has been marked fluctuations in cereal production, with the two major slumps coinciding with the major droughts from 1983 to 1984 and 1992. Variations in production in the individual SADC countries can be measured by the standard deviation of production per capita. These are presented below. Note that for the time period under review, the standard deviation of total SADC production per capita is not less than all the individual countries. Those countries with the smallest standard deviations are Angola, the DRC and Mauritius. South Africa and Zimbabwe have the largest standard deviations. These results are somewhat surprising given the assumed relationship between stability in production and food security.

Table 4.5: Standard deviations of production per capita (1980 to 1999)

	Std. Dev.		Std. Dev.
Ang	8.631822	Nam	19.8366
Bot	23.26816	SA	105.0355
DRC	2.505902	Swa	59.18973
Les	31.56815	Tan	19.9756
Mal	40.72661	Zam	50.56974
Mau	1.945581	Zim	99.23151
Moz	20.62033	All SADC	35.52671

Source: Own calculations using FAO database.

4.4.3 CONSUMPTION PATTERNS

In 1996, Weeks and Subasat (1996:116) tested the null hypothesis that consumption patterns across a set of twenty-one Eastern and Southern African countries¹⁴ were not significantly different. These countries include twelve of the SADC countries (the DRC and Seychelles are excluded) as well as members of COMESA. Food balance sheets from the FAO were used to calculate a percentage distribution of consumption, measured in calories, for forty-three food items. A Chi-squared test was used to determine whether the consumption distribution for pairs of countries was similar. For 184 of the 210 pairs of countries, the null hypothesis was rejected at the 5% level of significance. By induction it can be concluded that the countries in the SADC region do display significantly different consumption patterns and thus there is scope for increased food trade, based on this measure.

4.4.4 OUTPUT VARIATION

Output variation would also indicate scope for increased trade. Weeks and Subasat (1996) also tested output variation for their twenty-one country set with the null hypothesis being that there was no significant correlations in crop production in the region. The results show only limited evidence of crop production changes being positively correlated across the countries. Only 10% of all the pairs of cereals tested showed positive correlations. This result can be extended to the SADC region and it can be asserted that the relevant countries do not simultaneously generate the same agricultural surpluses and shortages. Correlation coefficients were calculated using the SADC production data set. The situation appears somewhat different here - 75% of the pairs have positive correlations. This is an indication of the limits to statistical analysis when using different data sets and/or unreliable data.

¹⁴ The countries are Angola, Botswana, Burundi, Comoros, Djibouti, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Somalia, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.

Table 4.6: Correlation matrix - 1980 to 1999

	Ang	Bot	DRC	Les	Mal	Mau	Moz	Nam	SA	Swa	Tan	Zam	Zim
Ang	1.00	-0.09	0.36	0.12	0.42	-0.39	0.72	-0.10	-0.14	0.16	0.24	-0.23	-0.12
Bot	-0.09	1.00	0.20	0.59	0.10	-0.12	-0.05	0.23	0.50	0.20	0.38	0.74	0.49
DRC	0.36	0.20	1.00	0.18	0.37	-0.35	0.52	0.20	-0.04	0.05	0.63	0.16	-0.05
Les	0.12	0.59	0.18	1.00	0.08	-0.14	0.28	0.34	0.59	0.26	0.14	0.51	0.63
Mal	0.42	0.10	0.37	0.08	1.00	-0.29	0.68	-0.02	0.02	0.18	0.45	0.26	0.13
Mau	-0.39	-0.12	-0.35	-0.14	-0.29	1.00	-0.44	-0.15	-0.05	0.47	-0.05	0.27	0.27
Moz	0.72	-0.05	0.52	0.28	0.68	-0.44	1.00	0.21	0.04	0.23	0.39	-0.09	0.13
Nam	-0.10	0.23	0.20	0.34	-0.02	-0.15	0.21	1.00	0.43	0.17	-0.13	0.28	0.39
SA	-0.14	0.50	-0.04	0.59	0.02	-0.05	0.04	0.43	1.00	0.28	0.01	0.49	0.78
Swa	0.16	0.20	0.05	0.26	0.18	0.47	0.23	0.17	0.28	1.00	0.35	0.34	0.54
Tan	0.24	0.38	0.63	0.14	0.45	-0.05	0.39	-0.13	0.01	0.35	1.00	0.38	0.01
Zam	-0.23	0.74	0.16	0.51	0.26	0.27	-0.09	0.28	0.49	0.34	0.38	1.00	0.59
Zim	-0.12	0.49	-0.05	0.63	0.13	0.27	0.13	0.39	0.78	0.54	0.01	0.59	1.00

Source: Own calculations using FAO database.

4.4.5 SCOPE FOR INCREASED CEREAL TRADE

The above analysis does not provide convincing evidence either way about the possibility or not of increased trade within SADC. Weeks and Subasat's (1996) study rejected the joint hypotheses of consumption, production and output change similarity between the twenty-one African countries in their study and thus concluded that there is scope for increased cereal trade in the region. Their analysis however did not attempt to evaluate the welfare effects of this trade.

In terms of the question initially asked (given the normal pattern of cereal trade, would a substantial shift from extra-regional to intra-regional trade be possible) no definitive answer is provided by this analysis. This is because it is difficult to compare intra-regional trade (expressed in US dollars) with net imports (expressed in metric tons). What is needed is a measure of what proportion of total trade is accounted for by intra-regional trade.

4.5 POTENTIAL MAIZE TRADE ASSESSMENT

The main aim of this section is to present a tool that can be used by regional policy makers in planning agricultural activities in the region and thus improving overall food security. The construction of these tools has recently been completed (November 2001) in a DBSA commissioned study into the 'determination of optimal production location and distribution of maize in SADC based on land suitability assessment and transport modelling' undertaken by Kleynhans and Kunneke.

A transport model has been developed that determines the minimum possible total cost of transporting maize from various origins to their destinations in the countries comprising mainland SADC. Land suitability maps indicate where best to grow the maize that is required (the supply side). The transport model is then used to determine the optimal distribution of the maize output. From this inferences on the pattern of trade can be made.

Note that this work excludes the DRC (due to data constraints) and Mauritius and Seychelles (because of their island state status).

4.5.1 MOTIVATION FOR THE PROJECT

Geography and space are often ignored in traditional economics and thus economists attempting to solve regional integration issues need to be aware of the tools available to them. Lipman (1997: 85) sums up the importance of this approach in the following statement: Transport infrastructure can be viewed as the 'engine of regional integration and 'many of the non-tariff barriers to trade are related to transport, and all regional and international markets in goods, services and labour are dependent on transport and transport linkages.'

Thus, these tools can be used to promote the viability of regional infrastructure developments (such as the Maputo Corridor) as well as the importance of reducing the barriers to intra-regional trade. A SADC Free Trade Area coupled with increased investment in infrastructure is an important mechanism by which poverty and food insecurity can be alleviated in the long run.

4.5.2 THE NATURE OF THE PROBLEM

This optimisation problem illustrates the importance of efficient production and trade as a means to improving food security. If food is produced in the areas most suitable to its production, and if the least cost transport routes are used to deliver the food to where it is needed, then welfare should be enhanced as a result of the increased availability and lower price of food.

In terms of trade theory, regional trade versus only trade in one country makes the more efficient use of resources possible. The GIS map identifies where the land most suitable to maize production is located. Since SADC has the world's second largest reserve of new land (Alexandratos, 1996), it is assumed a priori that there should be the land available to produce sufficient food for the region as a whole.

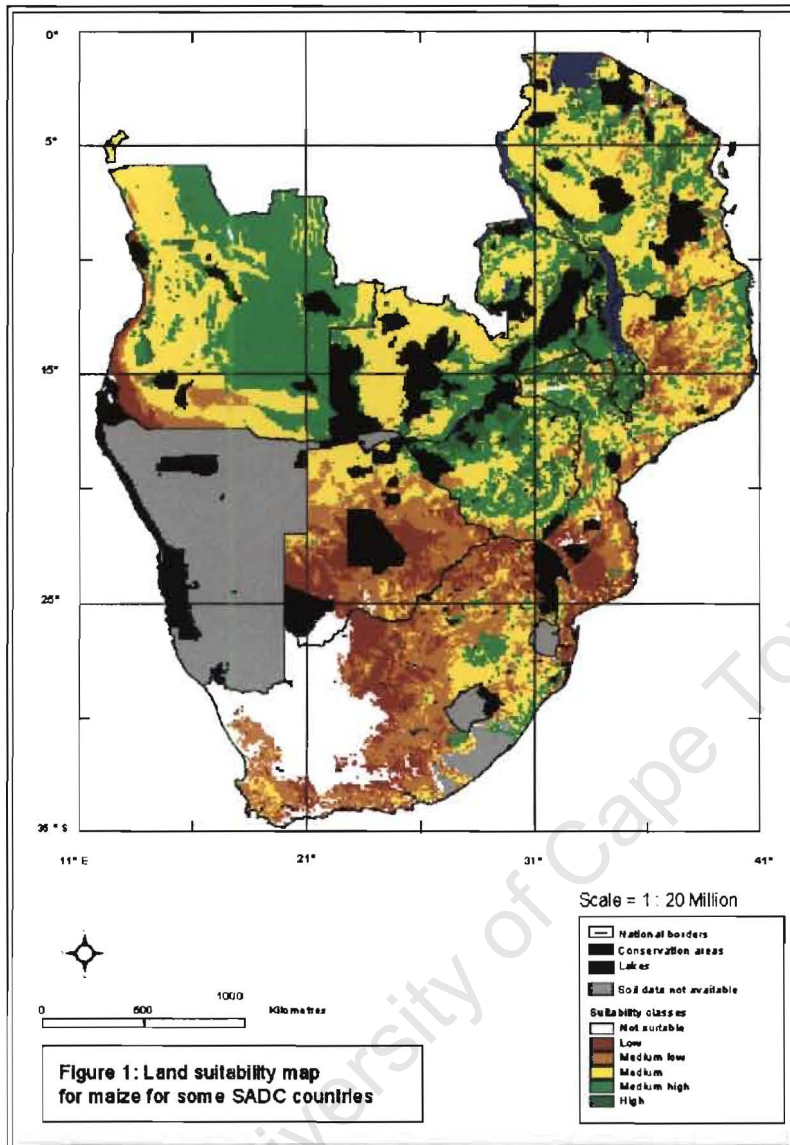
4.5.3 LAND SUITABILITY AND TRANSPORT MODELLING

4.5.3.1 Land Suitability

In order to support planning of the economic utilisation of the land resources, an assessment of the regional land resource base, by means of a GIS and land suitability modelling, was done in order to produce land suitability maps for maize. The capacity to determine the physical-biological potential of the SADC land resources to produce maize and to express this capacity spatially in terms of the relative resource endowment of each province or district in the SADC countries, provides an opportunity for further economic spatial analysis of optimal maize distribution patterns in the region by means of transport modelling. Thus, the combination of a GIS and a transport model make a powerful planning tool with the GIS providing information on land quality and the transport model calculating transport costs between the trading partners.

The following map shows land suitability for maize production according to six classes: not suitable (white), low (dark brown), medium low (light brown), medium (yellow), medium high (bright green) and high (dark green). It is immediately evident that the most suitable land lies in the north, and that South Africa, by contrast, has very little good agricultural land.

Figure 4.3: Land suitability map for maize for some SADC countries



Source: Kleynhans and Kunneke (2001: 2-2).

The FAO study used soil and land form characteristics and climate regimes (data on temperature, rainfall, relative humidity, wind speed, global radiation and evapotranspiration) to determine land suitability. Land suitability was classified according to how many days in the year the level of moisture in the soil is adequate for crop growth. This information was entered into a GIS to 'create a land resources inventory composed of thousands of agroecological cells which are pieces of land of varying size with homogenous soil, land form and climate attributes' (Alexandratos, 1996: 153). The FAO study showed that Sub-Saharan Africa has the second largest agricultural reserve in the world - although this resource base has some severe fertility (soil and terrain) shortcomings plus a good part of it is under forest or protected.

The scale used in the FAO study (that is, the size of the pixel) is larger than that used in the GIS map above and thus this study is more refined. It is assumed that a subsistence level of production is used (that is, no fertilisers, pesticides or improved seeds are used). The land classified as being suitable for rain-fed crop production is classified as follows: very suitable, suitable, marginally suitable and unsuitable. In summary, the GIS generates the maize potential area and then calculates the potential suitable area per province/district and from this the supply of maize (in tonnes) can be determined.

4.5.3.2 Transport Modelling

In order to complete the picture of optimal production and trade patterns, the transport model is needed to calculate the least cost source of food for deficit regions. The use of a transport model in conjunction with the GIS recognises the fact that the comparative advantage of a region for a particular type of production not only depends on the land suitability, but also that area's access to markets (Kleynhans and Kunneke, 2001: 1).

The transport model is composed of three variables: distance, quality of road and cross-border charges. In terms of distance, it is measured between the origin and destination (called centroids). Each province only has one centroid and it is either the capital city or another relevant city. With respect to the quality of road, the model distinguishes between tarred and gravel roads and there are two categories of each. A fixed supply of whatever good is to be transported is needed and the transport model is solved as the minimum cost of transporting a fixed supply (as opposed to the shortest route).

A potential problem exists with the validity of the results due to the fact that most maize in the region is reportedly delivered by rail as opposed by road transport. Spoornet estimates that only 1% of the maize transported from South Africa to and via Zimbabwe to the north during 1998 was via road (Naude, 2001: 9).

4.5.3.3 Optimisation

For the optimisation problem, the GIS and transport model are used together to solve this problem. Thus, information on the transport cost from origins to destinations and the potential available quantities (of, for example, a commodity like maize) per origin, are needed. These are provided by the transport model and GIS respectively.

The results of this cost minimising linear programming model will be made available in the report to be published by the DBSA (Kleynhans and Kunneke, 2000). Policy makers will thus be able to see where the best areas for maize production are. Investment should then be directed to these areas.

4.5.4 APPLICATION TO FOOD SECURITY ALLEVIATION

Sub-Saharan Africa's food insecure situation can be attributed to poverty at the household level. The direction of causality between food insecurity and poverty is debatable, but in this instance it is argued that low income levels result in the inability of people to secure adequate food to meet their nutritional needs and thus poverty leads to food insecurity.

At the macro level, however, it is maintained that food insecurity is a result of the inefficient utilisation of agricultural resources in the region. SADC's untapped potential in terms of un- or underutilised agricultural land in the northern part of the region is well documented (most recently in the 1996 FAO study edited by Alexandratos) and the results support this. The development of the potential of these SADC land resources depends on a functional relationship between the peoples' wants, their skills and their interpretation of their environment (that is, the ability to achieve these wants in an environmentally friendly and sustainable manner).

It is hypothesised that an increase in maize trade will be associated with greater food security. This is because there will be less pressure for countries to be self-sufficient in production of this staple food, land will be put to its most productive use and thus maize production will shift to those areas best suited for it in terms of agro-climatic suitability. Deficit regions will then source their maize from surplus regions according to the minimisation of transport costs.

4.5.5 FURTHER USES FOR SUCH A MODEL

This model should be able to quantify the impact of either lifting trade restrictions, improving transport infrastructure (that is, improving roads so as to reduce costs) or improving technologies so as to increase maize yields.

CONCLUSION

Sub-Saharan Africa has the fastest growing population in the world, and thus the issue of how to feed its people in the future is one of immediate concern for both national and regional policy makers. In light of closer economic integration in the region, it makes sense for SADC to formulate a regional food security objective, as opposed to individual countries pursuing separate policies. In the past, individual countries have tended to aim for staple food self-sufficiency in their quest for political and economic sovereignty. It has been argued that there must be more emphasis on food security, and not food self-sufficiency.

Regional self-sufficiency in staple foods is a sensible objective given the nature of staple foods production and trade. It has been shown that SADC can be self-sufficient in maize if production is moved according to comparative advantage. The aim of the case study presented in Part 4 was to examine cereal and then maize production, consumption and trade and then to introduce the reader to a recently devised set of tools that can be used in the formulation of a food security plan. It is proposed that such a model could be used in conjunction with SADC's plan as presented in Part 2.

Main Contributions of the Thesis

The aim of Part 1 was to demonstrate the food insecure situation prevailing in much of SADC. A table was presented which outlined poverty, food insecurity and agricultural sector indicators. This provides a comprehensive overview of the situation in each country and allows for easy comparisons and analysis.

The aim of Part 2 was to explain the way in which SADC as an organisation has chosen to deal with the food insecurity problem prevailing in most of its member states. The heterogenous nature of this problem is addressed by one plan and administered by the Food Agriculture and Natural Resources Development Unit (FANR DU). A critique of the strategy points out that since food security has not improved in the region as a whole, there is scope for a plan with a new and different focus. This provided motivation for an exploration of a recently devised set of tools used to determine optimal trade patterns given production according to comparative advantage.

The aim of Part 3 was to examine how trade can contribute towards improved food security. A table shows SADC's main exports and imports and the aim of this table was to show how agricultural trade within SADC fits into the trading profiles of the individual SADC members. The reasons for the low level of agricultural trade were explored. Trade liberalisation should contribute towards improved

food security and a diagram showing the benefits of agricultural trade liberalisation provided a motivation for the further exploration of the likely effects of a SADC FTA on food security.

Lastly Part 4 presented a case study. The scope for increased cereal trade in general was initially examined. No conclusions could be reached here. Next a maize production-trade set of modelling tools was presented and it is hoped that policy makers will make use of such models when formulating food security plans.

Summary

This thesis has looked at regional integration - in the forms of both sectoral co-operation (operational through food security policy) and trade integration - as a potential solution to the problem. No broad-sweeping statements can be made regarding the likely impact on food security, but it is believed that all these efforts should serve to improve the situation. Policy makers must look at the tools available to come up with an implementable plan. There is good work being done in this area and thus there is much potential for improving the situation if some of these recommendations are implemented.

APPENDIX: FACTOR ENDOWMENTS

Table A1: Land endowments (1999)

	Total area (1000ha)	Ag area (1000ha)	Arable land (1000ha)	Irrigated land (1000ha)	Arable land as a % of SADC total arable land	Arable land as a % of total country area
Ang	124670	57500	3000	75	6.9	2.4
Bot	58173	25946	343	1	0.8	0.6
DRC	234486	22880	6700	11	15.4	2.9
Les	3035	2325	325	1	0.7	10.7
Mal	11848	3850	1875	28	4.3	15.8
Mau	204	113	100	20	0.2	49.0
Moz	80159	47350	3120	107	7.2	3.9
Nam	82429	38820	816	7	1.9	1.0
Sey	45	7	1	0	0.0	2.2
SA	122104	99640	14753	1354	34.0	12.1
Swa	1736	1330	168	69	0.4	9.7
Tan	94509	39650	3750	155	8.6	4.0
Zam	75261	35279	5260	46	12.1	7.0
Zim	39076	20550	3220	117	7.4	8.2
Total SADC	927735	395240	43431	1991		

Source: FAO database.

Table A2: Machinery and fertiliser use (1999)

	Harvesters- Threshers	Tractors	Machines/ 1000 ha of ag area	Fertiliser (Mt)	Fertiliser/ 1000 ha of ag area
Ang	0	10300	0.17913	3400	0.05913
Bot	95	6000	0.234911	4600	0.177291
DRC	0	2430	0.106206	742	0.03243
Les	14	2000	0.866237	5039	2.167312
Mal	0	1420	0.368831	45300	11.76623
Mau	0	370	3.274336	33000	292.0354
Moz	0	5750	0.121436	8000	0.168955
Nam	0	3150	0.081144	300	0.007728
Sey	0	40	5.714286	0	0
SA	11700	75500	0.875151	803500	8.064031
Swa	0	2920	2.195489	5500	4.135338
Tan	0	7600	0.191677	20980	0.52913
Zam	300	6000	0.178576	53200	1.507979
Zim	800	24000	1.206813	185000	9.002433

Source: FAO database.

Notes: Machines are the total of Harvesters-Threshers and Tractors.

Table A3: Population statistics (1999)

	Total pop	Rural pop	Rural pop as a % of total pop	Total labour force	Ag labour force	Ag labour force as a % of total labour force
Ang	12479	8,295	66.47	5,729	4,132	72.12
Bot	1597	469	29.37	703	314	44.67
DRC	50335	35,254	70.04	20,696	13,182	63.69
Les	2108	1,536	72.87	882	337	38.21
Mal	10640	9,050	85.06	5,068	4,222	83.31
Mau	1150	677	58.87	501	61	12.18
Moz	19286	11,792	61.14	9,985	8,069	80.81
Nam	1695	1,020	60.18	699	294	42.06
Sey	77	32	41.56			
SA	39900	19,892	49.85	16,325	1,620	9.92
Swaz	980	640	65.31	350	120	34.29
Tan	32793	23,914	72.92	16,769	13,561	80.87
Zam	8976	5,006	55.77	3,750	2,623	69.95
Zim	11529	7,543	65.43	5,515	3,487	63.23
Total SADC	193545	125,120	64.65	86,972	52,022	59.81

Source: FAO database.

REFERENCES

Abalu, G. and Hassan, R. (1998) 'Agricultural Productivity and Natural Resource use in Southern Africa' in Food Policy, Vol. 23, No. 6, pg. 477-490.

Alexandratos, N. (1996) World Agriculture: Towards 2010 - An FAO Study.

Binswanger, H. and Lutz, E. (1999) Agricultural Trade Barriers, Trade Negotiations, and the Interests of Developing Countries. Presented at the High-Level Round Table for UNCTAD X in Bangkok, February 2000.

CIA's The World Factbook (2000) www.odci.gov/cia/publications/factbook/index.html.

Cleaver, K.M. (1993) A Strategy to Develop Agriculture in Sub-Saharan Africa and a Focus for the World Bank. World Bank Technical Paper No. 203, Africa Technical Department Series, The World Bank, Washington.

Deardorff, A. (2002) Deardorff's Glossary of International Economics. www-personal.umich.edu/~alandear/glossary/.

Delpeuch, B. (1994) Seed and Surplus. Catholic Institute for International Relations, UK.

The Economist (9.6.2001) Patches of Light.

FAO (Food and Agricultural Organisation) Database: apps.fao.org/page/collections?subset=agriculture.

FAO (1999) The State of Food Insecurity in the World. FAO, Rome.

FAO (2000) Report of the Twenty-First FAO Regional Conference for Africa. FAO, Rome.

Food Security Technical and Administrative Unit (FSTAU) (1997) A Food Security Strategy Framework. SADC FSTAU, Harare.

Hay, R.W. and Rukini, M. (1988) 'SADCC Food Security Strategies: Evolution and Role' in World Development, Vol. 16, No. 9, pg. 1013-1024.

Hess, R. (2000) 'SADC: Towards a Free Trade Area' in SADC-EU Trade Relations. Edited by Hartzenburg, T. SAPES Books, Harare.

IDS (Institute of Development Studies) (2001) www.ids.ac.uk/ids/global/pdfs/foddsecuritybrief.pdf.

IFPRI (International Food Policy Research Institute) (1995) A 2020 Vision for Food, Agriculture, and the Environment. IFPRI, Washington.

Jayne, T.S. and Jones, S. (1997) 'Food Marketing and Pricing Policy in Eastern and Southern Africa: A Survey' in World Development, Vol. 25, No. 9, pg. 1505-1527.

Kleynhans, T.E. and Kunneke, A. (2001) SADC Agricultural Potential Assessment. Unpublished Report. To be published by the DBSA.

Kleynhans, T. and Vink, N. (1998) 'The Agricultural Potential of SADC' in Agrekon, Vol. 37, No. 4, pg 375-397.

Konandreas, p. (2000) 'Trade and Food Security: Options for Developing Countries' in Multilateral Trade Negotiations on Agriculture: A Resource Manual. FAO, Rome.

Maasdorp, G. (1998) 'Regional Trade and Food Security in SADC' in Food Policy, Vol. 23, No. 6, pg. 505-518.

Madeley, J. (2000) Hungry for Trade: How the Poor Pay for Free Trade. Zed Books, London.

McCalla, A.F. (1999) 'Prospects for Food Security in the 21st Century: With Special Emphasis on Africa' in Agricultural Economics, Vol. 20, pg. 95-103.

Mkandawire, R. and Matlosa, K. (1993) 'Post-Colonial State and Food Security' in Southern Africa: An Overview in Food Policy and Agriculture in Southern Africa (edited by Mkandawire and Matlosa).

Mukherjee, N. and Robinson, S. (1997) 'Economic Structure, Trade, and Regional Integration' in Achieving Food Security in Southern Africa: New Challenges, New Opportunities, edited by Lawrence Haddad. IFPRI, Washington D.C.

Naude, H. (2001) A Description of the Matrix of Distances and Prices for the Purpose of Modelling Maize Movements in the SADC Countries. Unpublished Report.

New African Yearbook (2001) New African Yearbook. IC Publishing, London.

Nuppenau, E-A. (1993) 'Price Adjustments and Distributional Consequences of Trade in Maize in Malawi, Zambia, and Zimbabwe' in Agricultural Policy Reforms and Regional Market Intervention in Malawi, Zambia and Zimbabwe (edited by Valdes, A. and Muir-Leresche, K.). International Food Policy Research Unit, Washington.

Pearce, R. and Morrison, J. (2001) Incorporating Food security Concerns in a Revised Agreement on Agriculture. FAO Geneva Round Table on Food Security in the Context of the WTO Negotiations on Agriculture, Discussion Paper No. 2.

Pinstrup-Anderson, P., Pandya-Lorch, R. and Babu, S. (1997) 'A 2020 Vision for Food, Agriculture, and the Environment in Southern Africa' in Achieving Food Security in Southern Africa: New Challenges, New Opportunities, edited by Lawrence Haddad. IFPRI, Washington D.C.

SADC (2000) SADC Regional Human Development Report 2000. SAPES Books, Harare.

Southern Africa Trade Research Network (SATRN) (2001) www.tips.org.za/misc/satrn.pdf.

Townsend, R.F. (1999) Agricultural Incentives in Sub-Saharan Africa: Policy Challenges. World Bank Technical Paper No. 444, World Bank, Washington.

Trueblood, M.A., Shapouri, S. and Henneberry, S. (1999) 'A Comparison of Regional Policy Options to Stabilise Food Supplies in the Southern Africa Development Community (SADC)' in Agrekon, Vol. 38.

van Rooyen, C.J. and Sigwele, H. (1998) 'Towards Regional Food Security in Southern Africa: A (New) Policy Framework for the Agricultural Sector' in Food Policy, Vol. 23, No. 6, pg. 491-504.

Visser, M. (2000) Regional Commodity Chain Analysis. Unpublished paper, DPRU, UCT, Cape Town.

Von Braun, J., Msuya, J. and Wolf, S. (1999) 'On The "How To" of Agricultural Growth Promotion and Improved Food Security: Implications For Southern Africa in a Regional and International Context' in Agrekon, Vol. 38 (Special Edition), pg. 1-19.

Weeks, J. and Subasat, T. (1998) 'Regional Integration and Cereal Trade' in Post-Apartheid Southern Africa: Economic Challenges and Policies for the Future (ed. Petersson, L.). Routledge, London.

World Bank (2000) www.worldbank.org.

World Trade Analyser (WTA) (2001) Data accessed off the Tips website: www.tips.org.za.

World Trade Organisation (1998) Trade Policy Review South Africa: Report by the Government. WTO, Geneva.

World Trade Organisation (2001a) WTO African Group: Joint Proposal on the Negotiations on Agriculture. 23 March 2001. www.wto.org/english/tratop_e/agric_e/ngw142_e.doc. WTO, Geneva.

World Trade Organisation (2001b) WTO Agriculture Negotiations: The Issues and Where We Are Now. 4 October 2001. www.wto.org/english/tratop_e/agric_e/agnegs_bkgrnd_e.pdf. WTO, Geneva.

Other web resources:

www.sadcreview.org

www.sadc.int

www.fas.nsd.gov/scripts/w/ktopdf/wtopdf_frm.asp.

University of Cape Town