MozSAKSS

Annual Trends And Outlook Report **2010**

MozSAKSS

Mozambique Strategic Analysis and Knowledge Support System

FACILITATED BY **IFPRI, IWMI & ICRISAT** | **A COLLABORATIVE PROGRAM WITH MOZAMBIQUE MINISTRY OF AGRICULTURE (MINAG)**

Monitoring Agriculture Sector Performance, Growth and Poverty Trends in Mozambique

By

Pius Chilonda, Victorino Xavier, Lucia Luciano, Helder Gemo, Adriano Chamusso, Precious Zikhali, Angela Faria, Jones Govereh, Sofia Manussa, Baptista Acubar, Emmanuel Musaba, Luís Osvaldo, Noé Alage, Eulalia Macome, and Anina Manganhela

December 2011

Mozambique Ministry of Agriculture (MINAG)
Directorate of Economics
Mozambique SAKSS (MozSAKSS)

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MINAG/DE

ICRISAT

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IWMI

About MozSAKSS

Mozambique SAKSS (MozSAKSS) is a collaborative program between the Directorate of Economics, Ministry of Agriculture (MINAG/DE) and three of the member centers of the Consultative Group on International Agricultural Research (CGIAR): International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Food Policy Research Institute (IFPRI) and International Water Management Institute (IWMI), supported by the Swedish International Development Agency (SIDA). The fundamental objectives of MozSAKSS are to reduce poverty, hunger and malnutrition in Mozambique, improve the performance of the agriculture sector, and encourage equitable economic growth. The Mozambique SAKSS program is country-driven and country-owned with the overall objective of contributing to strengthening the capacity of national institutions, in particular MINAG/DE, in strategic analysis and knowledge support so that it is able to effectively identify, coordinate and support the planning and implementation of agriculture and rural development strategies in Mozambique. Through a partnership with MINAG and other in-country partners, the program provides a strategic analysis to help fill knowledge gaps and undertake synthesis of existing knowledge and information to directly inform current and future policy and investment options for agriculture in Mozambique.

About the Annual Trends and Outlook Reports' series

The Annual Trends and Outlook Report (ATOR) series is a decision-support tool that monitors and evaluates the performance of the agriculture sector and the progress in implementing the Comprehensive Africa Agriculture Development Programme (CAADP) as well as the resultant impact. The amount and type of investments made, and whether and how these investments (and related policies and practices) are having their desired impact on raising growth and on reducing poverty and hunger, are tracked and evaluated annually and the findings compiled into a trends and outlook report. This involves assembling high-quality data and analyzing it annually to make a case to government about the relationship between the levels of investment, the growth rates and the levels of poverty and hunger. Specifically, annual trends and outlook reports help to respond to key policy questions being asked at the national and local levels, as well as, to articulate the national contribution to regional, continental and international development targets.

Undertaking this type of monitoring and evaluation (M&E) analysis boosts both the capacity for undertaking it in the future and the reliance on it for making decisions for the future. Agriculture-sector performance is tracked using data collected for five main broad indicators: The Enabling Environment, Agricultural Investment Trends and Opportunities; Agriculture-sector Growth and Performance; Agricultural Trade Performance; and Poverty, Hunger, and Food and Nutritional Security. The annual agricultural trends and outlook report provides evidence-based policy implications and recommendations that serve as a major tool for informing the overall agriculture-sector planning and investment. The report is presented at key policy dialogues and other public-sector investment planning events and processes in order to inform decision making.

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This report has undergone a standard peer-review process and is being published by IWMI/ReSAKSS-SA on behalf of MINAG/DE. This report is a working document and may be published in some other forms and its content further revised by the multiple partners that constitute the Mozambique SAKSS.

The views expressed in this report and any errors in it are the sole responsibility of the authors.

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Acronyms

AgGDP	Agricultural gross domestic product
AIDS	Acquired immunodeficiency syndrome
AU	African Union
CAADP	Comprehensive Africa Agriculture Development Programme
CAP	*Censo Agro-Pecuário*, Agriculture Census
CEF	*Centro de Experimentação Florestal,* Forestry Experimental Centre
CFA	*Centro de Formação Agrária*, Agricultural Training Centre
CGIAR	Consultative Group on International Agricultural Research
CLUSA	Cooperative League of the USA
DE	*Direcção Nacional de Pecuária,* Directorate of Economics DINAP National Directorate of Livestock
DINECA	National Directorate for Agricultural Economics and Marketing
DNDR	*Direcção Nacional de Desenvolvimento Rural*, National Directorate of Rural Development
DNEA	*Direcção Nacional de Extensão Agrária,* National Directorate of Agrarian Extension
DNER	*Direcção Nacional de Extensão Rural*, National Directorate of Rural Extension
DNFFB	*Direcção Nacional de Florestas e Fauna Bravia*, National Directorate of Forestry and Wildlife
DNSA	*Direcção Nacional de Serviços Agrários,* National Directorate of Agricultural Services
DNTF	*Direcção Nacional de Terras e Florestas*, National Directorate of Land and Forestry
DP	Development Partners
DRH	*Direcção de Recursos Humanos,* Human Resources Management Directorate
EAP	Economically active people
EC	European Commission
EI	Economic Intelligence
ERV	*Estratégia de Revolução Verde,* Green Revolution Strategy
EU	European Union
EWS	Early warning system, *Sistema de Aviso Prévio*
FAEF	Faculty of Agriculture and Forestry Engineering
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign direct investment
FFS	Farmer field school
FSN	Food security and nutrition
FVET	Faculty of Veterinary Medicine
GCI	Global Competitiveness Index
GCN	Global Competitiveness Network
GDP	Gross domestic product
GoM	Government of Mozambique
HIV	Human immunodeficiency virus
IAB	*Instituto Médio Agrário de Boane,* Agricultural Diploma Institute of Boane

IAC	*Instituto Médio Agrário de Chimoio,* Agricultural Diploma Institute of Chimoio
IAM	*Instituto do Algodão de Moçambique*, Cotton Institute of Mozambique
IBIS	ITDanish NGO
ICM	*Instituto de Cereais de Moçambique*, Mozambique Cereals Institute
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IFDC	International Fertilizer Development Centre
IFPRI	International Food Policy Research Institute
IIAM	*Instituto Investigação Agrária de Moçambique*, Mozambique Institute for Agrarian Research
IITA	International Institute of Tropical Agriculture
INCAJU	National Cashew Institute
INE	*Instituto Nacional de Estatísticas,* National Institute of Statistics
INIA	*Instituto Nacional de Investigação Agrária,* National Institute for Agronomic Research
INIVE	*Instituto Nacional de Investigação Veterinária*, National Institute for Veterinary Research
IOF	*Inquéritos sobre Orçamentos Familiares,* Household budget surveys(
IOR-ARC	Indian Ocean Rim Association for Regional Cooperation
IPA	*Instituto de Produção Animal,* Animal Production Institute
IWMI	International Water Management Institute
JVC	Joint Venture Company
Lomaco	Lonrho Mozambique
MADER	Ministry for Agriculture and Rural Development
MAP	Ministério da Agricultura e Paescas
M&E	monitoring and evaluation
MDGs	Millennium Development Goals
MF	*Ministério da Finanças,* Ministry of Finance
MIC	*Ministério da Indústria e Comércio*, Ministry of Industry and Trade
MICS	Multiple Indicators Clusters Survey
MINAG	Ministry of Agriculture
MINAG/DE	Ministry of Agriculture: Directorate of Economics
MISAU	*Ministério da Saúde,* Ministry of Health
MOPH	Ministry of Public Works and Housing
MoU	memorandum of understanding
MozSAKSS	Mozambique Strategic Analysis and Knowledge Support System
MP	*Ministério das Pescas,* Ministry of Fisheries
MPD	*Ministério do Plano e Finanças,* Ministry of Planning and Development
MZM	Metical
NEPAD	New Partnership for Africa's Development
NGO	nongovernmental organization
PAEI	*Politica Agrária e Estratégia de Implementação,* Agriculture Policy and Implementation Strategy
PAPA	*Plano de Acção para Produção de Alimentos,* Action Plan for Food Production
PARPA	Action Plan for Absolute Poverty Reduction
PDE	Extension Master Plan

PDSP	*Plano de Desenvolvimento do Sector das Pescas,* Plan for the Development of the Fisheries Sector
PEDSA	Strategic Plan for the Development of the Agriculture Sector
PES	*Plano Económico Social,* Economic and Social Plans
PROAGRI I/II	*Programa Nacional de Desenvolvimento Agrário,* National Agricultural Development Programme
PQG	*Plano Quinquenal do Governo,* Government Five Year Plans
PRONEA	*Programa Nacional de Extensão Agrária,* National Agrarian Extension Programme
ReSAKSS	Regional Strategic Analysis and Knowledge Support System
RISDP	Regional Indicative Strategic Development Plan
SADC	Southern African Development Community
SDAE	District Services for Economic Activities
SETSAN	Technical Secretariat for Food Security and Nutrition
SIDA	Swedish International Development Agency
SIMA	Agricultural Market Information System
SMS	subject matter specialist
SPER	Provincial Rural Extension Service
SPS	sanitary and phytosanitary
SUE	Unified Extension System
T&V	Training and Visit System
TI	Transparency International
TIA	*Trabalho de Inquérito Agrícola,* Agriculture Field Surveys
UEM	University Eduardo Mondlane
UNAC	Peasants Farmers' Union
UniLúrio	University of Lúrio
USAID	United States Agency for International Development
US$	United States Dollar
WEF	World Economic Forum
WFP	World Food Programme
WTO	World Trade Organization

Executive Summary

Background

This report assesses the performance of the agriculture sector in Mozambique. It focuses on analysis of agricultural investment, growth, trade, poverty and hunger trends, and the progress made by Mozambique towards attaining the targets of the African Union's (AU) Comprehensive Africa Agriculture Development Programme (CAADP) and The Southern African Development Community's (SADC) Regional Indicative Strategic Development Plan (RISDP). The monitoring of the sector's performance contributes towards, and promotes, the culture of evidence-based development planning. Regional commitments such as CAADP and national strategies such as the Strategic Plan for the Development of the Agricultural Sector (PEDSA) have developed monitoring and evaluation (M&E) frameworks. This trends report signals the Ministry of Agriculture's (MINAG) interest and effort to implement these frameworks with the support of the Mozambique Strategic Analysis and Knowledge Support System (MozSAKSS) funded by the Swedish International Development Agency (SIDA).

This study was undertaken with the aim of building the capacity of the staff of MINAG's Directorate of Economics (MINAG/DE) to undertake similar performance analyses of the agriculture sector from a wider perspective than they have done before. The study used the CAADP M&E framework as its major conceptual basis. The assessment focused on indicators capturing five performance areas of the CAADP M&E framework. These were: (1) enabling environment, (2) agricultural growth performance, (3) public expenditure and investment, (4) agricultural trade, and (5) poverty and hunger outcomes.

Given that MINAG will evaluate the sector's performance annually, this report serves as a template for similar future exercises. By presenting evidence of the sector's performance, this exercise seeks to enhance the quality of agricultural policy and investment dialogue in Mozambique.

Main findings and conclusions

Mozambique's economy is still largely agriculture-based – and the role of agriculture in stimulating overall economic growth and poverty reduction remains critical as 69% of the country's population of 23 million remain rural-based and dependent largely on agriculture for employment and livelihoods. In 2007, the number of economically active persons (EAPs) in Mozambique was estimated to be 7,437,056. This number indicates 69.2% of people aged 15 years or older – with the rural areas having the highest proportion of 76.5% against 54.4% in the urban areas.

Macroeconomic environment

1. In the period 2000–2009, there were huge fluctuations ranging from a minimum of 1% to a maximum of about 30% in the values of year-to-year total and food inflation. The average total inflation was 11% and the average food inflation was 13%. The observed peaks in inflation reflect, among other factors, the negative effects of droughts and floods on food availability and the consequent high food prices. The troughs largely

correspond to administrative controls in the form of price subsidies. Total inflation in Mozambique is being driven mostly by food inflation which is closely linked to climatic conditions (i.e., floods and droughts) and external shocks so that there is a need to focus on strategies that will increase and stabilize agricultural outputs, such as investing in technologies (e.g., irrigation), that will break the dependence on rain-fed agriculture. Reduced inflation will create a stable macroeconomic environment that is suitable for investment in agriculture and in other sectors of the economy.

2. Average double digit inflation rates of 11% for total inflation and 13% for food inflation prevailed between January 2000 and December 2010. Such double digit inflation rates present a potential threat to long-term investments. Moreover, the huge fluctuations in inflation are suggestive of macroeconomic instability. While the causes of inflation vary from year to year, the analysis suggests that the main drivers of inflation in Mozambique are low agricultural productivity owing to erratic rainfall patterns as well as dependence on imports. This is associated with vulnerability to external shocks which subsequently results in inflation of imports. Thus, the Government of Mozambique needs to devise ways of shielding its economy from global shocks. This could include, for example, investing in measures to increase agricultural productivity such as funding agricultural research, extension and infrastructural development. These measures could reduce transaction costs that prevent the development of input and output markets. This in turn would reduce the vulnerability of Mozambique to external market shocks.

3. The average floating exchange rate between 2000 and 2010 was MZM24 per US$1.00. The metical depreciated at the rate of 1.1% per year during this period. While this makes Mozambican exports attractive, since they become cheaper in foreign currencies, imports become relatively more expensive. This could hurt the economy, especially given that the country relies on imports of, for example, machinery needed in production processes. Furthermore, a weaker metical also forces prices of imported goods to increase thereby fueling inflation. It is also possible, however, that with appropriate policies increased import prices could stimulate domestic production as the country strives to become more self-sufficient.

4. Between 2000 and 2009, the average deposit and lending interest rates were 11.5 and 20.7%, respectively. While these were lower than the rates that prevailed in some countries in the region (specifically Malawi and Zambia), they were higher than those that prevailed in South Africa, a key trading partner for Mozambique. Further, real interest rates indicate that the cost of money is cheaper in South Africa than in Mozambique. Overall, the spread of interest rate – the difference between lending and deposit rates – has been narrowing, which partly suggests an improvement in the efficiency of intermediation. However, the cost of capital in Mozambique is still high, an issue undermining private investment, especially among small and medium enterprises.

5. Although Mozambique made gains in doing business rankings, moving from a rank of 130 out of 183 countries in 2009/10 to 126 in 2010/11 (the lower the ranking the more conducive the environment is to doing business), the country ranked worse than the SADC average of 109 in 2009/10 and 108 in 2010/11. Therefore, more efforts are needed to further improve the business environment thus improving the competitiveness

of the country relative to other countries in the region. This will help attract private investments in general and agricultural investments in particular.

6. Overall, during the last decade there was no significant transformation in the structure of the economy in Mozambique. The average share in GDP for the service sector was 43%, followed by agriculture with 25% and manufacturing with 15%. This suggests an urgent need to diversify the structure of the economy by developing value chains to make the contribution of agriculture to other sectors more effective, as emphasized in Mozambique's agricultural strategy (PEDSA) and CAADP.

Share of National Budget going to Agriculture

7. Over the last decade, Mozambique managed to attain the CAADP target of allocating 10% of the total budget to agriculture in 3 years, namely 2003, 2004 and 2007. The share allocated to agriculture in the total budget in those years being 10.6, 11.5 and 11.2%, respectively. Over the decade, the average share of the budget allocated to agriculture was 7.3%, almost 3% below the CAADP target. This indicates that meeting the CAADP's 10% allocation of the national budget to the agriculture sector on a sustainable basis still remains a challenge for Mozambique.

8. In addition, these allocations did not translate into actual disbursements and eventual spending. On average, around 78% of funds allocated to agriculture were actually spent between 2001 and 2009. These revealed discrepancies between allocation and actual expenditure could be due, among other factors, to delays in the disbursement of funds from development partners (DPs); delays in the release of funds by the Ministry of Finance, possibly due to delays in accounting for funds previously disbursed to the sector; government's inability to capture and report spending on some projects; and budget reallocation within the sector. In general, the discrepancies suggest that the GoM had difficulties in increasing and maintaining the level of mobilized resources allocated to agriculture. In order to achieve the goals of improving agricultural growth and food security, and meeting the first Millennium Development Goal (MDG1) the implementation of CAADP needs to be accelerated in Mozambique.

9. The distribution of the budget by MINAG between the central and provincial levels for the period 2001–09 shows that, on average, the central MINAG budget accounted for 68% of total expenditure by the Ministry between 2001 and 2009. However, budget execution rates are higher at provincial level, probably because the bulk of agricultural activities take place in the provinces. This underscores the need to decentralize further as this could facilitate improved budget execution. However, provinces have to harmonize locally driven plans and priorities with national priorities in spending resources.

Growth in the Agriculture Sector

10. Agricultural output or gross domestic product (GDP) in Mozambique consists of crop production (78%), forestry (9%), livestock (7%) and fisheries (6%). The Mozambican agriculture sector reached the CAADP's 6% annual agricultural growth target in 2002 and also every year from 2005 to 2009. The lowest growth recorded in this period was 4.76% in 2003 and the highest was 11.2% recorded in 2002. At subsector level, the crops subsector reached the 6% annual growth target from 2005 to 2009. The livestock

subsector reached the target only in 2005, and the fisheries subsector reached this target in 2003 and from 2006 to 2008. Forestry, however, never attained the 6% annual growth in the period under analysis.

11. The crops subsector has been growing, particularly in 2004 and from 2006 to 2009. Interestingly, fisheries grew the fastest in 2003, growing at a rate of close to 9% between 2002 and 2003. However, in 2009 the subsector experienced negative growth of around 10%. Livestock, on the other hand, had the highest growth rate in 2005, growing at a rate of 7.4% which was marginally higher than the growth in the crops subsector.

12. Overall, the crops subsector experienced better growth rates than other subsectors reflecting the fact that more investment and public expenditure have been channeled to the crops subsector than to other subsectors. The crops subsector is, however, constrained by low productivity emanating from the low uptake of modern technologies (5–10% of farmers use improved seeds; 5% used fertilizers; average fertilizer use in 2008 was 5.3 kg/ha; and 10% used animal traction). This low uptake is due to limited access to financial incentives, and poor access to output markets and value chains.

13. In addition, there is limited use of irrigation in Mozambique. Rough estimates suggest that Mozambique has the potential to irrigate 3 million ha (Mha) of arable land (MINAG 2010). Between 2002 and 2010 the actual area being irrigated increased from 40,000 ha to approximately 60,000 ha (MINAG 2010). This represents only 2% of the potential. Under the RISDP, SADC member states agreed to double the irrigated area by 2015. Clearly, land use intensity and productivity across much of rural Mozambique can be improved with the provision of irrigation facilities.

14. In the livestock subsector, consistent growth in the population of cattle occurred throughout the period under review but the herd size of small ruminants, chickens and pigs declined. The growth in cattle is attributed to the livestock restocking programs which only benefited cattle herders. To improve the contribution of the livestock subsector to GDP in Mozambique more investment is needed in animal health (vaccinations), improved management practices, improved breeds and livestock feeds and the development of livestock value chains.

15. In the fisheries subsector, crustaceans now lag behind sea fish in terms of economic importance. Harvesting of prawns has declined due to closure of fishing at a time when sea fish harvests have increased. The fisheries resource is potentially in need of improved management methods to sustain production. Aquaculture and mariculture need to be explored as alternative fisheries investment options in view of dwindling sea fish resources.

16. The agricultural data collection systems consisting of the Agriculture Field Surveys (*Trabalho de Inquérito Agrícola*) (TIA) and the Early Warning System (EWS) currently present conflicting data. An example is the case of cassava. Over the period 2005–2008, TIA data showed a declining trend while EWS data showed an upward trend. Hence, these data sources need to be harmonized for accurate evidence-based investment decision making in the agriculture sector.

Agricultural trade performance

17. The contribution of agriculture to the generation of export earnings decreased consistently between 1995 and 2009. In 1997, agricultural exports contributed 50% to foreign exchange earnings. This contribution decreased to below 10% in 2006 and 2007. Similarly, the share of agricultural imports to total value of imports also decreased from 20% in 1996 to less than 5% in 2008. Negative growth in the value of agricultural trade in Mozambique appears to have taken place in the context of faster growth in trade in the nonagriculture sectors than in agricultural trade. This potentially reflects on the level of public and private investment that agriculture is receiving relative to investment received by nonagriculture sectors. These trends reveal the declining relative importance of agricultural trade in Mozambique's economy. Exports from other sectors such as mining and manufacturing seem to be growing much faster than agricultural exports.

Poverty and hunger outcomes

18. Regarding progress made by Mozambique towards attaining the MDG1 targets of halving hunger and poverty by 2015, there was a notable decline in poverty rates from 69% in 1997 to 54% in 2003 but from 2003 to 2009 poverty rates remained almost unchanged. This suggests that more pragmatic efforts aimed to reduce poverty are needed throughout the country, particularly in rural areas where the incidence of poverty is especially high. If the current overall economic growth rates (above 7%) and agriculture growth rates (above 6%) are sustained, the country still has a chance of reducing the poverty rate to 40% by 2015 as targeted under MDG1. However, it should be emphasized that growth in agriculture and the overall economy should be accompanied by measures that ensure pro-poor, equitable distribution of economic and social benefits.

19. Progress towards halving hunger by 2015, using the prevalence of child malnutrition as an indicator of hunger showed a slight declining trend from 2003 to 2008. However, although difficult, Mozambique stands a chance of meeting the target of reducing the 2008 chronic malnutrition rate (weight for age of those under 5) of 44% at the national level to 30% by 2015, particularly if sound policies and actions are implemented in a consistent manner to address malnutrition. The attainment of these MDG1 targets, however, can be derailed by greater vulnerability of smallholder farmers to adverse climatic conditions such as floods and droughts. In this regard, the government should take measures to provide social protection to the affected households.

Chapter 1. Introduction

The Mozambique Strategic Analysis and Knowledge Support System (MozSAKSS) program was established in 2009 to strengthen the capacity of the Ministry of Agriculture's Directorate of Economics (MINAG/DE) to enable it to undertake strategic analysis and analytical work that will inform current and future policy and investment options for agriculture in Mozambique. The MozSAKSS program is funded by the Swedish International Development Agency (Sida) and involves collaboration between MINAG/DE and three Consultative Group on International Agricultural Research (CGIAR) centers namely, the International Food Policy Research Institute (IFPRI), the International Water Management Institute (IWMI) and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). This report focusing on assessing agriculture-sector performance and growth, and poverty trends in Mozambique was undertaken as one of the activities of the MozSAKSS program.

The report provides policymakers with information on evidence-based performance against agreed national agricultural growth, poverty, food security and socioeconomic targets and serves as a major tool for supporting policy dialogue and debate. Undertaking this type of joint trends analysis is expected to boost both the capacity for generating this type of report and reliance on the information generated in making decisions about the future.

This, the first comprehensive evaluation study of this type, was implemented in response to the need to assess the performance of the agriculture sector from a wider perspective than has been done before, when only production-related issues (input and output) were addressed in MINAG/DE reports. It is worth mentioning that MINAG/DE has been preparing two performance assessment reports, namely the performance assessment of the annual Economic and Social Plans (PES, *Plano Económico Social*) and the performance assessment of the agriculture campaign (*Desempenho da Campanha Agrícola*). However, both reports focused on assessing production-related issues on an annual basis rather than on a comprehensive assessment of the performance of the agriculture sector including fisheries. This report aims at providing wider information on key interrelated issues in agriculture, such as policies, institutions, public investment, production and productivity, and on marketing issues.

In addition, the Strategic Plan for the Development of the Agricultural Sector (PEDSA) launched in May 2011 and is to be implemented under the CAADP framework, calls for a comprehensive performance assessment, and the present study is the first experience in addressing this need.

1.1 Purpose and objectives

This report responds to key policy questions and issues in Mozambican agriculture including the sector's past and current performance and the role agriculture is playing in the overall economy. The purpose of monitoring the performance of the agriculture sector is to make a

case on whether and how the country is progressing towards achieving its agricultural growth and performance targets, as well as on related impacts on poverty reduction. The overall objective is not just to undertake a trends analysis as an end in itself, but to further promote the culture of using empirical evidence within national planning systems as a basis for investment decisions.

1.2 Study approach, data sources and analysis

To produce the annual trends and outlook report to monitor the performance of the agriculture sector in Mozambique over the 2000–08 period, a combination of qualitative and quantitative approaches was used. The analysis is based on the CAADP M&E framework (Benin et al. 2010) adapted to the Mozambican context. The M&E framework provides a conceptual basis for assessing the impact of CAADP. To do this, a set of indicators and data required have been identified, and a data collection methodology and a plan for analysis set out. The proposed CAADP M&E indicators are grouped into seven intervention areas: (1) enabling environment; (2) implementation process; (3) commitments and investments; (4) agricultural growth performance; (5) agricultural trade performance; (6) poverty, hunger, and food and nutrition security; and (7) investment growth-poverty linkages. In the case of the present study, out of the above seven categories of indicators, category (2) – the CAADP implementation process indicators – was not considered because the CAADP process is still at an early stage of implementation (Gêmo 2011).

Overall, the approach involved the following activities: (1) conceptualization of the study at MINAG, (2) identification of the study team, (3) technical awareness meetings with key stakeholders to build a critical mass to help conduct the study, (4) approval of the main categories of indicators to be used by key stakeholders, (5) data collection, and open interviews with key informants and experts, (6) data analysis, particularly trends analysis on agricultural production (crops, livestock, forestry and fisheries products) and public investment, (7) writing team reports, (8) validation workshop and post-validation comments on the report by key stakeholders, (9) launching of the final report, and (10) final peer-review.

As mentioned above, this is the first experience in conducting a comprehensive agriculture-sector performance assessment at MINAG/DE. In this context, it was crucial to develop awareness on the content, importance and relevance of this assessment approach among relevant MINAG staff and key stakeholders. This created a critical mass of people at MINAG and among key stakeholders who could help in driving the preparation of this first report. The process started with a MINAG/DE internal awareness technical meeting in November 2009 aimed at exposing MINAG/DE staff to the CAADP M&E performance assessment framework. This first awareness meeting was followed by other similar events involving other key stakeholders, such as representatives of the Ministries of Planning and Development (MPD), Finance (MF), Industry and Trade (MIC), Fisheries (MP), educational institutions offering degrees in agriculture (Eduardo Mondlane University [UEM]/Faculty of Agronomy and Forestry Engineering), and the Peasants Farmers' Union (UNAC), among others.

Within the spirit of contributing to the institutional capacity of MINAG/DE, this study was conducted using a collaborative approach with the Ministry. Members of the study team comprised IWMI staff members and consultants, and MINAG/DE staff members specifically appointed as counterparts. IWMI staff members and consultants (international and national) were responsible for ensuring collection of needed data and quality analysis based on the comprehensive CAADP M&E framework. The framework was adapted to the Mozambican context, and discussed and validated by key stakeholders as part of the implementation of the study.

MINAG/DE and other key stakeholders selected a set of indicators for monitoring based on the CAADP M&E framework and perceived data availability in key agriculture subsectors. The selected indicators are useful in that they focus on overriding issues that are impeding the achievement of agricultural growth and poverty reduction objectives in Mozambique.

MINAG/DE staff members were responsible for helping with data collection and they participated in data analysis, discussion of results and in report writing. Their participation was on specific topics, mainly in production- and public-expenditure-related issues. However, the limited availability of most MINAG/DE staff due to often overlapping tasks, and weak experience in conducting wide-ranging assessments using an analytical approach was a major challenge in this capacity-building effort.

Data sources include:

- National Statistics Institute (INE, *Instituto Nacional de Estatísticas*) Agriculture Census 1999–2000 (CAP)
- MINAG early warning system (EWS, *Sistema de Aviso Prévio*)
- MINAG/agricultural survey (TIA, *Trabalho de Inquérito Agrícola*) in collaboration with INE
- MINAG administrative subsystems namely research, extension, land and forestry, irrigation and those related to different crops (cashew, sugar, cotton and tobacco)
- Ministry of Fisheries (MP, *Ministério das Pescas*)/Fisheries Economics Department
- National Statistics Institute (INE)
- Ministry of Industry and Commerce (MIC, *Ministério da Indústria e Comércio*)
- Ministry of Finance (MF, *Ministério da Finanças*)/Public Accounts Directorate
- Technical Secretariat for Food Security and Nutrition (SETSAN, *Secretariado Técnico para Segurança Alimentar*)
- Agriculture education institutions: Eduardo Mondlane University (UEM), Agricultural Diploma Institutes of Boane (IAB) and of Chimoio (IAC)

Data collection was challenging in that a wide range of sources were used, there were delays in getting data from various sources, and MINAG/DE staff involved in data collection had limited time due to overlapping demands on their time. In addition, there was a lack of data on some variables and, in some cases, available data were not up-to-date. This raises some concerns regarding accuracy and quality of data. It is hoped that data collection and data quality will improve over time as MINAG/DE staff take on the responsibility for producing the annual monitoring and evaluation report of the agriculture sector.

The analysis in this report focuses on the aggregate values of the CAADP M&E indicators. In order to assess the performance over time, as well as progress towards achieving CAADP and RISDP targets, annual average levels of indicators, percentages, and ratios formed a major part of the trend analysis.

1.3 Outline of the report

The report is divided into nine chapters. Following the introduction in chapter 1, chapter 2 provides an overview of the agricultural potential of Mozambique and a description of past and present institutions supporting the agriculture sector. Chapter 3 presents the enabling environment for the development of the agriculture sector. It examines the macroeconomic environment within which agriculture and other sectors operate. It also gives an overview of some key agricultural policies, strategies and programs in Mozambique guiding the agriculture sector. Chapter 4 focuses on public investment in agriculture. It evaluates the level of public spending against the CAADP target of allocating 10% of the national budget to agriculture. Chapter 5 monitors the performance of agricultural production covering changes in agricultural output for crops, livestock and fisheries, and examines intensification of production in terms of the level of use of selected technologies (seeds, fertilizers, pesticides and irrigation) among smallholder farmers. Chapter 6 discusses the evolution of agricultural marketing and pricing policies in Mozambique, and chapter 7 examines trends in the performance of agricultural trade covering changes in the composition and magnitude of agricultural exports and imports over the study period. Chapter 8 examines the progress made towards meeting the first Millennium Development Goal (MDG1) targets of halving the 1990 hunger and poverty rates by 2015. It also examines whether economic growth translates into welfare improvement for the general citizenry by considering changes in key social and demographic variables including health, education and wealth. Lastly, chapter 9 presents a summary of key findings, and identifies some issues that need to be addressed in order to move the agriculture sector closer to achieving the desired targets.

Chapter 2. Mozambique's Agriculture Sector

This chapter provides a summary of the agroecology and agricultural potential of Mozambique. It also highlights the main agriculture-sector institutions in Mozambique. In so doing, the chapter provides a comprehensive overview of the key stakeholders in the sector.

2.1 The agroecology and agricultural potential of Mozambique

Mozambique is composed of ten agroecological zones, each comprising several production systems (National Institute for Agronomic Research [INIA - 1980]). These zones (see annex 1) are indicative of agricultural potential based mainly on the predominant soil types and the growing periods for both rain-fed and irrigated agriculture. The zones represent important regions for food production and economic development.

In terms of agricultural potential, Mozambique is endowed with natural conditions that can, in the long term, support the development of a dynamic and diversified agriculture sector. In general, these conditions include:

- A surface area of 799,380 km^2.
- A seashore of 2,400 km (offering a huge potential for fisheries) and three important ports that link the country with the rest of the world (imports and exports).
- About 36 million ha (Mha) of arable land, of which less than 14% is currently cultivated, mainly by smallholder farmers.
- The potential for irrigation is about 3.0 Mha (FAO 1997; Kundell 2007), of which only about 120,000 ha have irrigation infrastructure and only 60,000 ha of them are operational (public irrigation schemes) (MINAG 2010).
- About 77, 600 ha are suitable for aquacultural development distributed along the coast at Maputo, Gaza, Inhambane, Sofala, Zambezia, Nampula and Cabo-Delgado provinces (Notícias 2011).
- Suitability for a wide range of annual and perennial crops, and livestock species. The main food crops grown include cassava and sweet potato, maize, rice, sorghum, millet and pulses. Cash crops such as cotton and tobacco, and perennials, such as bananas, cashew, coconut, citrus and mango, are also grown. Livestock are very important and comprise cattle, goats and poultry, including extensive rural poultry production.

However, as discussed in the study, limited development of basic infrastructure, particularly rural infrastructure, coupled with insufficient support services, including information services and key institutions, poses great challenges to achieving the potential of agriculture.

2.2 Agriculture-sector institutions

Mozambique's agriculture sector is widely pluralistic and comprises six different groups of stakeholders: (1) the public sector, (government ministries and other public organizations), (2) the private sector, (3) nongovernmental organisations (NGOs), (4) farmers, (5) fishers, and (6) development partners (DPs). Figure 2.1 shows the current composition of different groups of agriculture-sector stakeholders.

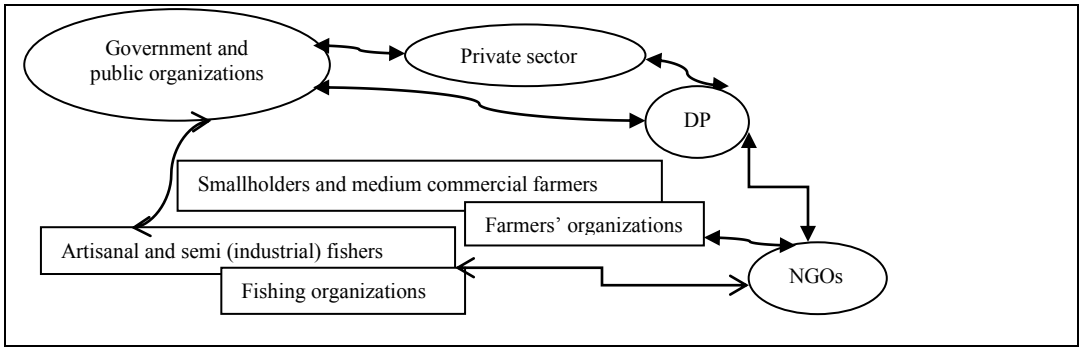


Figure 0.1. The main groups of agriculture stakeholders.

Source: The authors, based on MINAG, MP, MIC information 2010.

Pluralism in the agriculture sector was particularly boosted in the mid-1980s, when the country shifted from a centralized to a liberalized economy. The first large agricultural joint venture company (JVC) was Lonrho Mozambique (Lomaco) involving foreign direct investment (FDI) and some capital contribution from the GoM mainly through offering land and some facilities. Lomaco was established in 1986 in northern Mozambique in the Cabo-Delgado province. The joint venture initially involved thousands of hectares of land for direct production of cotton and later involved subcontracted farmers with some production of food crops.

However, it was in the early 1990s that pluralism was reinforced in the sector. First, as a result of the privatization of several state farms throughout the country, particularly in the northern and central regions, several cotton JVCs were created. These were, and still are, operating through the concessions regime (*Regime de Concessões*). The concessions consist of government authorizations for companies to operate in some specific districts for determined periods of time (15 to 20 years) providing inputs in the form of credit and technical assistance for cotton production, and ensuring the commercialization of output with exclusive rights to purchase the output from farmers without competition from other buyers.

Second, in 1993–1994, following the advent of the Peace Agreement in October 1992, NGOs shifted from humanitarian assistance to greater involvement in agriculture and rural development activities.[1] The shift to developmental activities, although mixed with some relief actions until 1996, facilitated the appearance of several NGOs contributing to the sector. At that time they were mainly international NGOs such as World Vision, Care

[1]The year 1992 marked the end of a devastating war that affected the country for about 16 years.

International, Action Aid, Africare, the Cooperative League of the USA (CLUSA), IBIS (a Danish NGO), and so on; in some cases, they operated in several districts and in more than one province (Gêmo et al. 2005).

Examples of agricultural stakeholders from the public sector, private sector and NGO categories are listed in Table 1.1. The main functions and responsibilities of the six stakeholder groups in the agriculture sector include: (1) planning – coordinating sectoral planning, (2) finance – approving public budget allocation, (3) commerce – trade and industrial development, (4) energy, (5) public works and housing – oversees infrastructural development (roads, bridges, dams), among others.

Since independence in 1975, government responsibility for agriculture (namely crops, livestock and forestry) and fisheries has been either under one Ministry or under separate ministries. Since 2005 agriculture has been under MINAG and fisheries under the MP.

As in the case of other ministries in the country, both MINAG and MP are represented at provincial level: MINAG, through the provincial directorates of agriculture (DPAs), and MP, through the provincial delegations (*Delegações Provinciais*) whose human resources and volume of activities depend on fisheries potential in each of the country's ten provinces. At district level, both agriculture and fisheries (where relevant) have been integrated within the District Services of Economic Activities (SDAEs) since 2006.[2]

Table 1.1 Public-sector, private-sector and NGO stakeholders in agriculture.

Government and public institutions	Private sector	NGOs and foundations
Key ministries: • Agriculture (MINAG) • Fisheries (MP) • Planning and Development (MPD) • Finance (MF) • Industry and Trade (MIC) • Public Works and Housing (MOPH) Other public institutions: • Agricultural education	Key stakeholders: • Financial institutions • Agriculture and fisheries input and equipment suppliers • Output buyers and processors • Commodity-oriented producers (e.g., sugar and tea industries) and promotional enterprises (cotton and tobacco) • Fishing industrial and semi-industrial enterprises • Forestry enterprises and forest products exporters • Transporters • Irrigation scheme constructors • Agricultural education • Research and information development enterprises	Key stakeholders: • Local and international NGOs working on agricultural extension (technical, market facilitation-oriented, advocacy, community-development- oriented) • Local rural development- oriented foundations, with a focus on agriculture or related activities • International organizations (International Agricultural Research Centers, universities and others)

Sources: The authors, based on information from MINAG, MP, MIC and MOPH.

[2]Until 2005, MINAG had district directorates of agriculture in almost all 128 rural districts in the country. The creation of SDAEs in 2006 was part of ongoing government institutional reforms.

With regard to MINAG, human capital development is still a challenge, particularly taking into account the technical and scientific nature of many of the Ministry's areas of intervention within the agriculture sector. By 2003/04, it was estimated that MINAG had a total of 6,000 staff members, including some contracted staff, i.e., without status as civil servants at the time. According to data from the Human Resources Management Directorate at MINAG (MINAG/DRH, *Direcção de Recursos Humanos*), the number of MINAG staff members has decreased to a current estimate of 4,452 persons as a result of the early retirement program among other factors (MINAG/DRH 2011. However, this number may be underestimated as some central-level institutions and some DPAs had not provided complete data on human resources to MINAG/DRH, at that time.

The MINAG research system

Mozambique's Institute for Agrarian Research (IIAM, *Instituto Investigação Agrária de Moçambique*) was formed in 2005 following the integration/amalgamation of three former research institutes, one experimental center and one agricultural training center into one institute.[3] IIAM comprises a general directorate, four technical directorates and four zonal research centers located in the north, south, northeast and northwest of Mozambique (see Figure 2.2). IIAM is responsible for planning, coordination, implementation and evaluation of public research activities through MINAG. It also cooperates with local public and private partners and with international research institutions, including the CGIAR, on research issues. IIAM is funded mainly through MINAG and partly by some bilateral DPs for specific research programs or activities. Its scope of work is diverse, covering food crops such as maize, cassava, rice and beans, vegetables and the major tropical fruits, as well as water management for irrigation, soil management, livestock, veterinary and forestry-related research activities.

The 2005 institutional reform which created IIAM envisaged an efficient public research system with improved functionality responsible to MINAG. However, to date no evaluation has been conducted to assess the impact of the institutional reforms on IIAM, and as such it is difficult to know to what extent the objectives of the institutional reforms have been accomplished.

[3] (1) the National Institute for Agronomic Research (INIA, *Instituto Nacional de Investigação Agronómica*), (2) the National Institute for Veterinary Research (INIVE, *Instituto Nacional de Investigação Veterinária*), (3) the Animal Production Institute (IPA, *Instituto de Produção Animal*), (4) the Forestry Experimental Centre (CEF, *Centro de Experimentação Florestal*), and (5) the Agricultural Training Centre (CFA, *Centro de Formação Agrária*).

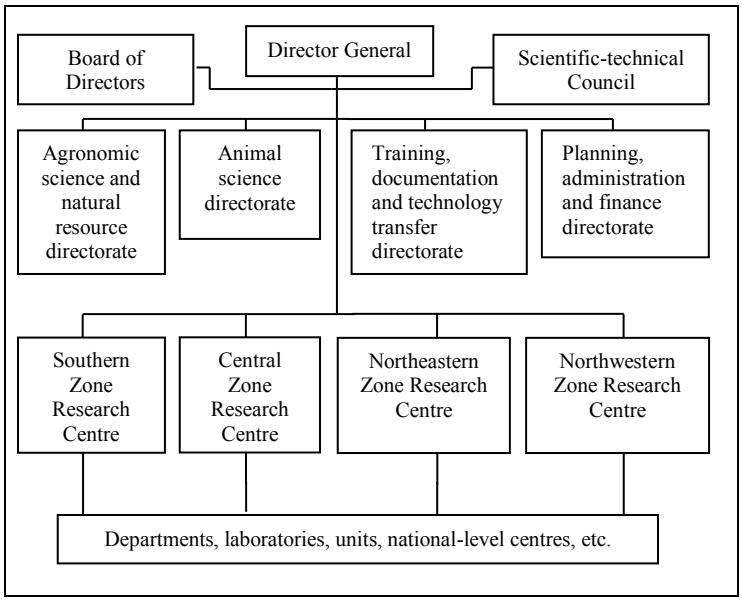


Figure 1.2. Organizational structure of IIAM.

Source: Adapted from MINAG/IIAM 2009.

One important issue for institutional development relates to the need to have qualified or skilled human capital. In 2004, one year before the creation of IIAM, the human capital situation was as shown in Table 2.2.

Table 1.2. Human capital in MINAG research system in 2004.

	Academic levels		
Institutions	PhD	MSc	BSc
National Institute for Agronomic Research (INIA)	8	15	22
National Institute for Veterinary Research (INIVE)	1	10	9
Animal Production Institute (IPA)	1*	8**	10

Source: Gêmo et al. 2005.
Notes: * and ** indicate one or two members of staff, respectively, at the time close to completing studies.

Human capital from CEF and CFA, two of the institutions integrated to create IIAM in 2005, were included in the assessment. A 2007 assessment of IIAM qualified research staff identified a total of 194 staff comprising 122 with BScs, 58 with MScs and 14 with PhDs (World Bank 2011). In 2010, the number of qualified personnel was estimated at 187 with 936 support staff to assist in laboratories, experimental stations and posts, and other relevant activities. Of the 187 researchers, 114 (61%t) held a BSc degree, and 58 (31.3%t) an MSc degree while only 15 (7.6%) had PhDs (MINAG 2010). The estimates indicate that research stations are dominated by those with BScs, or junior scientists, and imply that there is a shortage of advanced skilled human capital required to manage and conduct high-quality research in Mozambique.

Public extension services

Public extension services were introduced in 1987 and were organized and provided through the National Directorate of Rural Development (DNDR, *Direcção Nacional de Desenvolvimento Rural*). The DNDR was reformed in 1997 and renamed the National Directorate of Rural Extension (DNER, *Direcção Nacional de Extensão Rural*), with its role focusing more on agriculture than on general intersectoral activities associated with integrated rural development. In 2006, the DNER was reformed to become the current National Directorate of Agrarian Extension (DNEA, *Direcção Nacional de Extensão Agrária*), focusing more on agriculture and related issues rather than on 'rural extension' in the broad sense (Gêmo, 2008).

Since the early stages of its establishment, public extension has adopted the training and visit (T&V) system which is based on a top-down command approach. Members of the T&V extension staff follow a rigid work plan that involves visits to contact farmers with rigorous technical supervision and M&E. The T&V model was modified in the late 1990s to be more flexible in terms of the agenda for field staff with periodic team meetings prioritizing farmers' groups or associations rather than individual farmers.

In 1998–99, public extension shifted from a narrow focus on crops (mainly food crops) to encompass crops, livestock and forestry through frontline extension workers supported by subject-matter specialists. In addition, in the late 1990s, other methodologies and approaches were also initiated within the public services, especially the farmer field schools (FFS). These changes were realized within the scope of the First Public Extension Master Plan (1999–2004/06). In 2007, the Second Public Extension Strategy and the National Extension Programme (PRONEA, *Programa Nacional de Extensão Agrária*) were launched. PRONEA was implemented until 2010 when it was suspended so that it could be redesigned.

Figure 1.3 illustrates the current organizational structure for the public extension services, which has been almost the same since its establishment despite name changes and some shift in focus in terms of the scope of work, approaches and 'new' methodologies.

As shown in Figure 2.3, public extension services are hosted under a simple organizational structure consisting of two departments (Planning and Technical support) within the DNEA. The technical support areas at central level are the basis for provincial rural extension services (SPERs). At the district level, the extension network comprises several field extension workers (at least eight), who have been administratively integrated within the SDAEs since 2006.

Since 1999, public extension has decentralized decision making, management of field operations and human capital from SPERs to DPAs. However, effective interaction among the central DNEA, the DPAs/SPERs at provincial level and the extension network at local level is still needed. Interaction between central and local levels is particularly critical for a number of reasons, which include: (1) harmonizing national planning with local priorities, (2) M&E at the national level, (3) ensuring relevance of in-service training at the national level, and (4) cooperation and coordination with other extension actors and supporters at regional and the national levels.

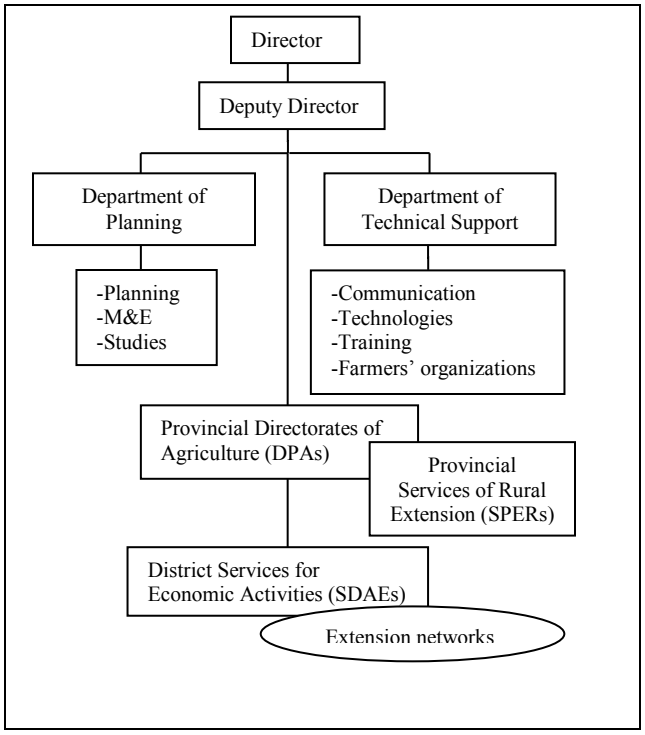


Figure 1.3. Organizational structure of the public extension service

Source: MINAG/DNEA 2010.

Provision of efficient and effective extension services depends largely on employing well-trained qualified staff. As is the case with MINAG research, it faces the challenge of insufficient qualified human capital. Table 2.3 shows the human capital available to the public extension services for the years 1996, 1999, 2004 and 2008.

Table 1.3. Human capital in the public extension service, 1999–2008.

Years	BSc	Diploma	Certificate	Elementary	Total
1996	22	192	473	89	776
1999	37	324	237	47	645
2004	48	422	227	38	735
2008	35	690	0	2	728*

Sources: Gêmo et al. 2005; Gêmo 2006; MINAG/DNEA 2010.

Key: *Including one MSc professional at central level.

As illustrated above, progress in increasing human capital for extension has been slow. The expectation was that, by 2009, public extension would have 1,024 extension workers, but this was not achieved. The total number of field extension staff including supervisors stood at 693 in 2009 (MINAG/DNEA 2010; Gêmo 2011). The low staffing situation in the public extension service has been attributed to delays in staff recruitment, high staff turnover due to transfers from extension to other positions and resignations, among other factors.

Agricultural training subsector

There are public and private agricultural training institutions which provide training in agriculture and related fields and supply qualified human capital to the agriculture sector. The public institutions include:

- The Faculty of Veterinary Science (FVET) at the Eduardo Mondlane University (UEM) established in 1964 is the only veterinary faculty in the country. As shown in Figure 2.4, the annual enrolment of new students stood at 60 in 2010, while about 20 students graduated in the same year.

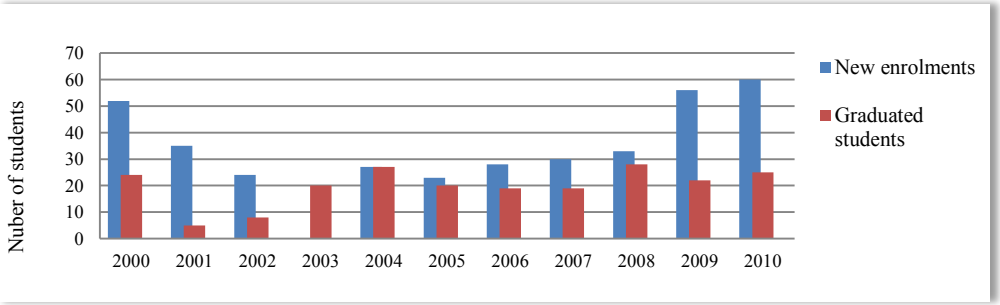


Figure 1.4. FVET new enrolments and graduates from 2000 to 2010.

Source: UEM/FVET (February 2011).

New enrolments at FVET have been limited due to a shortage of facilities (for example, laboratories) and logistics. The relatively large number of new enrolments in 2009 and 2010 compared with previous years since 2000 were intended to respond to an increasing demand for veterinary courses by new candidates but the shortage of facilities and logistics remain a limitation.

- The Faculty of Agriculture and Forestry (FAEF) at UEM, established in 1963, initially offered a BSc degree but as of 2001 it has been offering postgraduate degrees in agricultural development, agricultural economics and natural resources management. In 2011, there were 98 students registered in these postgraduate courses at FAEF.
- The Faculty of Agronomy at the University of Lúrio (UniLúrio) which is currently based in Nampula City (Nampula province) is to be transferred to the Lichinga district (Niassa province). UniLurio offers MSc degrees in agronomy.
- The Degree Polytechnic Institute of Gaza, established in 2006, is based in the Chókwè district, Gaza province.
- The Degree Polytechnic Institute of Manica, established in 2006, is based in Chimoio, the capital of Manica province. The polytechnics of both Gaza and Manica offer vocation type BSc degrees.

Private universities which also offer BSc degrees include:

- The Catholic University of Mozambique, based in Beira, Sofala province, was established in 1999. It has one Faculty of Agronomy in the Cuamba district, Niassa province. This university started to offer MSc courses in 2008.
- The Mussa Al Bique University established in 2001 based in Nampula has a Faculty of Agronomy.

Although there has been an increase in the number universities from 1 to 38, further analysis which is beyond the scope of this paper, should establish whether this has translated into an increase in the supply of graduates and where these graduates are working in the Mozambican agriculture sector.

There are two main public institutions offering diploma-level qualifications:

- The Agriculture Diploma Institute of Chimoio (IAC, *Instituto Médio Agrário de Chimoio*) created immediately following national independence in 1975 in Manica province, and
- The Agricultural Diploma Institute of Boane (IAB, *Instituto Médio Agrário de Boane*) established in 1986 in Maputo province.

The diploma institutions offer 3-year courses. The IAC offers three course options, namely agriculture and livestock, forestry and wildlife. The contribution of the agricultural diploma institutes in providing qualified professionals at intermediate level is illustrated in Table 1.4 and 2.5 focusing on the number of students who registered and graduated from IAC in Chimoio between 2006 and 2010. Although the numbers can only be used for comparing new enrolments from 2006 to 2008 to graduations from 2008–10, the overall numbers illustrate the role of diploma institutions in educating future potential employees in the agriculture sector.

Table 1.4. Number of diploma-level students registered at the Agricultural Diploma Institute of Chimoio.

Course	2006	2007	2008	2009	2010
Agriculture and Livestock	88	80	64	68	95
Forestry	69	82	57	77	87
Wildlife	10	13	12	16	14

Source: IAC 2011.

Table 1.5. Number of diploma-level students graduating from the Agricultural Diploma Institute of Chimoio.

Course	2006	2007	2008	2009	2010
Agriculture and Livestock	61	49	61	58	49
Forestry	22	26	43	45	20

Wildlife	10	13	12	16	13

Source: IAC 2011.

Notably, both diploma institutes have been important sources of professionals with intermediate qualifications needed in areas such as extension, research, large-scale commercial farming, forestry plantations and nature reserves.

In summary, agricultural education institutions have been growing both in terms of number of institutions and student enrolments under the period in analysis. However, as mentioned already, more work needs to be done using tracer studies to understand the supply of graduates from colleges and universities, areas of training, types of jobs they are employed to do, and whether or not the training institutions are meeting the demand for qualified staff from employers in the agriculture sector.

2.2.2 Private sector

The private sector comprises a wide range of stakeholders including financial institutions, input suppliers, output buyers and processors, transporters, commodity-oriented enterprises and agricultural training institutions and consulting firms. These are described individually as follows:

Financial institutions: Financial institutions include large commercial banks and microfinance institutions. In the last 5 years, large commercial banks have expanded financial services to major districts in urban and peri-urban areas and in selected rural areas. Despite this progress, financial institutions continue to play a very limited role in supporting agriculture. Agriculture is still not a core business for almost all commercial banks and microfinance institutions. This can be attributed to high transaction costs and low returns from capital invested in agriculture compared to other sectors. Recent evidence indicates that only 5% of the 3.3 million farmers had access to credit in 2005 (TIA 2006).

Agricultural input suppliers: Suppliers of agriculture inputs are few in number and operate on a limited scale. Input suppliers comprise firms which supply seeds and farming equipment, and importers of fertilizers and pesticides. They are mostly based in Maputo and have representatives in provincial capitals with logistical connections capable of delivering inputs in those areas with low transport costs and high demand, and hence where it is profitable to do business. Commodity-oriented companies, for example, tobacco and sugar production companies, also import agricultural inputs. Input suppliers include *Agrifocus*, *Tecap*, *Higrotech* and *Agroquimicos*, and they have entered into an agreement for joint importation of fertilizers.

Input retailers throughout the country also remain limited, and are mainly located in provincial capitals and occasionally in those district capitals with the relevant demand for inputs. Seed retailers and dealers supplying irrigation and animal traction equipment are the most common among the few dealers operating throughout the country. It is encouraging to note that some seed companies have attempted to improve seed marketing in the country by developing retail networks. However, the practice of government in distributing free or

subsidized seeds for relief purposes can have unintended effects such as creating dependence on handouts and eventually crowding out private investment in seed marketing.

Output buyers and processors: These comprise stakeholders intervening at different scales. Output buyers include small informal and traveling buyers in rural areas, and rural retailers and traders with formal rural shops; medium-scale intermediate buyers with the financial capacity to move outputs to urban areas; and large-scale buyers of output for export as raw material (for example, unprocessed cashew nuts), and for domestic processing.

Processors can also be small-scale (and sometimes informal) as in the case of many small-scale maize millers, particularly in those rural areas with the highest maize production and consumption. In addition, there are some medium- and large-scale processors particularly of food crops such as maize[4] and rice.[5]

In fisheries, there are three main processing and preserving facilities for seafood products located in the ports of Maputo City (Maputo province in the southern region), Beira (Sofala province in the central region) and Quelimane (Zambezia province in the central region). The three main facilities are connected to international and regional export markets.

Export-crop-oriented enterprises: These are major contributors to agricultural exports of sugar, tea, cotton and tobacco. These enterprises also contribute to technology transfer and expand access to credit in kind (seeds, fertilizers and pesticides) as is happening with cotton and tobacco through the subcontracting schemes with thousands of smallholders mainly in the northern and central regions of the country. DUNAVANT has also used the same approach to promote commercialization of some food crops. Between 2002 and 2009, the number of subcontracted farmers growing tobacco and cotton increased from around 180,000 to 400,000. In 2009, there were 250,000 cotton growers and 150,000 tobacco growers. As of 2009, the total area under smallholder subcontracted cotton and tobacco growers was about 220,000 ha. This represents a cultivated area of 0.55 ha per farmer. In this period 8 to 10% of farmers in the country were involved in contract farming of cotton and tobacco.

Fishing enterprises: Fishing enterprises are viewed as key in ensuring a supply of quality fisheries products and in creating jobs. Table 2.6 gives a breakdown of the 538 fisheries licensed productive units in the fishing industry. The fishing enterprises fall into three categories, namely (1) industrial fishing, (2) semi-industrial fishing, and (3) artisanal fishing. Artisanal fishing generates the largest number of direct jobs at about 50,000 while an estimated 1,550 workers (80% from Mozambique) are employed in semi-industrial and industrial fishing.

Industrial fishing uses vessels over 20 m in length, while fishing gear is mainly lines, and gill and trawl nets. This category fishes for larger and deep water fish. The boats are equipped with freezers and cold facilities. They can stay at sea for 20–30 days. Most of the

[4] At least three large ones; in the south, in Maputo City, the *Companhia Industrial da Matola*, and two in the central region, namely *DECA* in Chimoio, Manica province, and *MOBEIRA,* in Beira, in Sofala province.

[5] At least one medium and two large ones in the southern region, one in the Matutuine district, Maputo province, *Inácio de Sousa*, also in Maputo province, and *ORLI* in the Chókwè district, Gaza province.

catch is processed and packaged at sea, and sold into the export market. In 2002, the annual catch amounted to 10,000 tons of which 7,700 tons were shrimp.

Table 1.6. Licensed productive units in the fishing industry in 2010.

Type of operating unit	EU	Other countries	Domestic markets	Total
Industrial ships (processing/freezing/ packaging)	5	0	0	5
	68	2	0	70
Industrial ships (freezing)	0	39	32	71
Semi-industrial ships	0	242	0	242
'Kapenta' fishing ships	11	62	2	75
Inland processing/and preserving facilities	0	24	0	24
Facilities for drying fish products	0	3	1	4
Ice factories	2	2	0	4
Freezing warehouses	1	5	0	6
Connection ships	0	18	16	34
Transport units for fishing products	2	1	0	3
Commercial aquaculture farms				
Total	89	398	51	538

Source: MP 2011.

Semi-industrial fishing boats are 10–20 m in length, and the gear used includes lines, and gill and trawl nets. Semi-industrial fishers also fish for larger and deep water fish with boats equipped with freezers or facilities to store the catch on ice. They operate land-based fish processing plants and sell into the domestic and export markets. The annual catch amounted to 14,100 tons in 2003 of which 1,100 tons were shrimp.

Artisanal fishing uses boats of up to 10 m in length with gear including hand lines, beach seines, gill nets and fish traps. Beach seines are the most common and are used to catch mainly small, affordable fish. Some larger fish are caught with hook-and-line. Few boats have engines, most have oars and many have sails. Most of those in this category operate on foot as either fishers or as collectors. Fish is sold fresh, or preserved by drying in the sun and smoking with the catch mostly consumed locally. Annual catches by artisanal fishers are estimated at 80,000–100,000 tons.

Figure 2.5 illustrates the number of licensed fishing productive units in seven of the ten provinces of the country. Commercial fisheries are oriented mainly to regional and international export markets. As shown, Sofala province has the largest number of fisheries productive units oriented to the European Union (EU) market followed by Maputo and Zambezia provinces. Tete has the largest number of inland fishing and processing units. They are related mainly to 'kapenta' species which are exported to other markets including neighboring countries. Besides Tete, the provinces of Sofala, Zambezia and Maputo also have productive units oriented to regional markets, especially South Africa.

In addition, agricultural extension, especially public extension, has promoted thousands of household tanks for fish culture throughout the country, wherever this is ecologically possible. In 2008, smallholders were estimated to have managed at least 6,600 small tanks (MINAG/DNEA 2009) although information on the outcomes/benefits from smallholder fish culture is scarce.

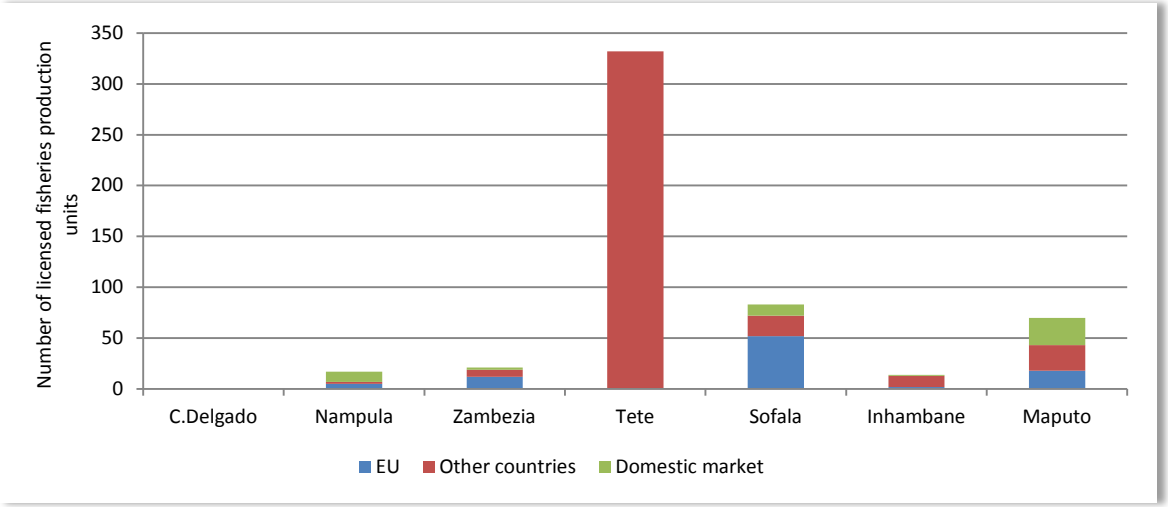


Figure 1.5. Licensed fisheries productive units per province and per market.

Source: MP 2011.

Forestry enterprises: These include forestry operators harvesting timber through annual simple licenses (*Licença Simples Anual*) and those operating through forestry concessions. Forestry operators with simple licences are authorized to harvest a maximum of 500 m^3 of agreed species per year. These operators often have no heavy equipment or processing equipment. Thus, their activities consist mainly of harvesting and transporting the product and selling it internally or exporting it in collaboration with other operators after some processing. Annual simple licences are issued at the provincial level.

Table 1.7 shows the number of forestry operators with simple annual licences to harvest timber in the ten provinces from 2005 to 2010. The table shows a decline in licence holders from 2008 to 2010 at the national level. However, although the number of simple licences issued has fallen in some provinces due to forestry depletion it has increased in others. Another concern is that illegal harvesting by operators without licences is on the rise. As part of its efforts to promote sustainable management of forestry and timber resources, since 2008, government has attempted to reduce authorizations by 30% to 40% in each province within the next three years (MINAG/DNTF 2011).

Table 1.7. Number of simple licences to harvest timber, issued annually.

Provinces	2005	2006	2007	2008	2009	2010

Maputo	5	1	6	9	0	0
Gaza	31	40	60	66	61	60
Inhambane	24	49	88	77	58	91
Sofala	40	69	102	121	53	58
Manica	29	38	50	46	44	45
Tete	49	123	44	54	68	55
Zambezia	104	91	99	98	85	131
Nampula	106	134	94	61	53	51
C.Delgado	47	40	58	65	45	59
Niassa	26	45	36	19	12	34
Total	461	630	637	616	479	584

Source: MINAG/DNTF 2011.

Forestry concessions consist of large forest areas managed by private operators (including timber harvesting). These are acquired through long-term formal contracts between government and eligible operators. Concessions can comprise areas of up to 60,000 ha. Depending on available species, their population density and the management plan the annual timber harvest can reach 10,000 m^3 or more. Depending on the size of forestry concessions, authorization is obtained at central or at provincial level. Figure 2.6 illustrates annual progress on authorized new concessions by Government to private-sector operators.

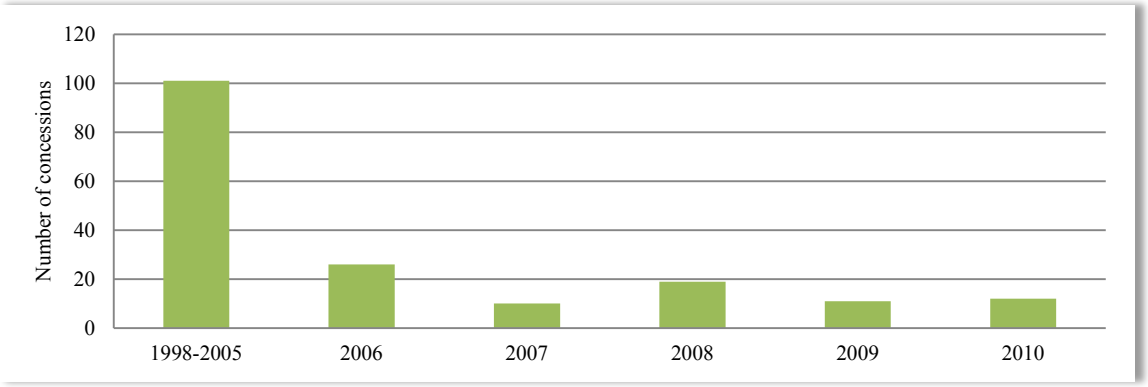


Figure 1.6. Number of authorized forestry concessions.

Source: MINAG/DNTF 2011.

It should be noted that sustainable management plans and investment capacity for required equipment (including for processing) are key factors determining access to forestry concessions. Figure 2.6 shows the decline in the number of authorized forestry concessions over the period 2006 to 2010. The export of unprocessed hardwood is forbidden and this could have contributed to the declining trend in the number of forestry concessions. Some cases of attempted illegal exports of timber have been reported in the media.

Transporters: The transport system for agricultural inputs and outputs still depends significantly on road transport. Road transporters include small-, medium- and large-scale operators. First, there are individuals based at district level in rural areas who own one to

three, small to medium-size, single or double cab pickups. Second, there are medium to large-scale companies operating at provincial and interprovincial levels transporting agricultural outputs including forestry and livestock from the producing areas to processers, consumers or export locations. Transporters are also involved in regional cross-border transportation of imports and exports. In addition, informal cross-border traders consisting mostly of women and the unemployed, orphans, refugees, the youth, school leavers and widows, also participate in transporting imports and exports.

Road transport costs in Mozambique are said to be high, with the average transport cost for interprovincial formal enterprises varying from the southern to the northern regions of the country. Average transport costs provided by the World Food Programme Office in Maputo (WFP/Mozambique 2011) for distances above 50 km show the following variations:

- southern region: US$0.07 to 0.16 per km per ton
- central region: US$0.08 to 0.27 per km per ton
- northern region: US$0.10 to 0.29 per km per ton

Transport costs are critical as distances from the producing areas to consumer markets are long, reaching more than 1,000–1,500 km in the case of interprovincial transport linking, for example, provinces in the northern and central regions to markets in the southern region, mainly Maputo.

Unit transport costs depend mainly on fluctuations in the price of diesel and also on factors such as distance and final destination (easy access or not in terms of quality of roads), type of agricultural output (for example, unprocessed timber is viewed as potentially damaging to trucks), frequency of transport needs by each client, etc. Specialized transport including packaging for fresh vegetable and for live animals, poultry and meat products is underdeveloped in both urban and rural areas. More affordable/less-costly transport for the distribution of inputs and agricultural outputs throughout the country is an important issue for the agriculture sector, which should be considered in the development of value chains as a key goal for achieving sustainable agriculture as outlined under PEDSA.

Research and information development enterprises: These are private enterprises, including consultancy enterprises that are involved in agriculture or related research. They focus on developing information on socioeconomic policy issues. Most of these enterprises are based in Maputo and they are often hired by government, local and international NGOs, and/or by DPs to conduct specific studies.

2.2.3 NGOs in the agriculture sector

NGO activities in agriculture started principally in the early 1990s. They have focused mainly on agricultural extension, particularly following the peace agreement in the country in 1992. In fact, since 1993 agricultural extension in Mozambique has entered a new phase marked by the quick emergence and rapid expansion of NGO extension activities, the geographical expansion of public extension and the boosting of private extension.

NGOs have contributed to increased geographical coverage of extension and the number of farmers reached, to the creation of job opportunities for agricultural technicians and graduate-level professionals, and to the diversification of extension activities (including

food security, farmer's organizations, mitigation of HIV/AIDS effects among affected farmers , and the development of value chains). In 2004, national and international NGOs numbering 69 were estimated to be involved in delivering extension or related activities with a total of 1,250 field extension workers (Gêmo et al. 2005). Currently, NGOs are covering selected areas of at least 84 districts throughout the country (MINAG/DNEA). Despite the useful role NGOs play in contributing to the pluralistic extension system, the level of collaboration with public extension, as well as the accountability of NGOs to MINAG and to relevant local authorities, is generally weak (MINAG/DNEA 2010).

2.2.4 The farmers

The total farmer population in the country is currently estimated at 3.8 million. The majority of farmers are smallholders, accounting for 99% of the total farms in the country (CAP 2000; TIA 2002–08). There has been a slight increase in the total number of farmers in rural areas from 3,063,000 in 2001 to 3,700,000 in 2008. In the same period, the total cultivated area increased from 3,867,000 ha in 2001 to 5,972,000 ha in 2008. The average farm size varies for smallholder farmers between 0.5 and 1.5 ha. Almost all agricultural production is practiced under rain-fed conditions. Most farmers are involved in growing the main food crops such as cassava, maize, sorghum, rice, sweet potato, cowpea and groundnuts.

Smallholders and the small number of medium commercial farmers also rear livestock. Smallholder farmers often rear from one to three animal species, mainly rural poultry, goats or pigs. Factors such as the location of farms (agroecological suitability), access to land for grazing (individually or communally 'owned') in the case of cattle or goats, household capacity to afford to buy and rear[6] the different species, and religion (for pigs) influence the level of involvement in livestock production of smallholder farmers and medium commercial farmers in the country.

The majority of rural households are headed by men but women also head a significant proportion of rural households. Illiteracy and low levels of education still characterize most members of rural households. Education makes people realize the importance and benefits of adopting new technologies. Therefore, the prevailing high illiteracy among rural households in Mozambique is a constraint to production and marketing-related messages and access to agricultural services.

Table 1.8 shows the percentages of total households headed by women, the percentages of household heads with no formal education and those with at least 4 years of schooling.

Table 1.8. Female-headed households, household heads with no education and those with at least 4 years of schooling (%).

Characteristics of households (HHs)	2000	2002	2003	2005	2006	2007	2008
Total HHs headed by women (%)	23	24	26	25	23	24	25
HH heads with no formal education (%)	44	40	42	50	44	40	40

[6] Rearing expenses include labor (mostly in the case of smallholder households), some supplementary feeding, vaccinations (although often subsidized) and animal housing.

HH heads with at least 4 years of schooling (%)	28	29	30	30	33	40

Sources: CAP 2000; TIAs 2002–2008.

Chapter 3. Enabling Environment for Agriculture-Sector Development

This chapter discusses the enabling environment for agriculture-sector development in Mozambique. It has four main sections. In section one it discusses the macroeconomic and policy environment prevailing in Mozambique over the last decade. This is deemed to have a direct bearing not only on the country's ability to implement agricultural policies but also on the outcomes of such policies. Section two discusses the agricultural policies, strategies and programs that have guided the agriculture sector over the last two decades. Section three discusses the formulation and implementation issues pertaining to agricultural policies, strategies and programs. The alignment of national agriculture-sector policies and strategies with regional and continental shared goals and performance indicators is discussed in section four.

3.1 Macroeconomic environment

Mozambique is a low-income country in southern Africa with a population of about 23 million. Its economy is largely agriculture-based with 69% of its population found in rural areas and dependent largely on agriculture for employment and livelihoods. Consequently, the role of agriculture in stimulating overall economic growth and poverty reduction remains critical. In 2007, the number of economically active persons (EAPs) in Mozambique was estimated to be 7,437,056 (69.2% of people aged 15 years or older) with the rural areas having the highest proportion at 76.5% against 54.4% in the urban areas. The average economic growth rate is 6–7% and inflation is about 11% indicating that the country has followed some sound macroeconomic policies. To gain a deeper insight into the macroeconomic environment, this section discusses trends in key macroeconomic indicators, namely, inflation, exchange and interest rates as well as selected indices of economic governance such as doing business ranking and the global competitiveness index (GCI).

3.1.1 Total and food inflation

One of the key economic indicators that economics managers and policymakers monitor is inflation, which can be defined as the rate at which general prices rise, and implies a fall in the purchasing power of money. Constant prices imply zero inflation. While the causes of inflation vary across countries, in general, inflation could be due to either an increase in the money supply or an increase in price levels following, for example, an increase in the cost of production. A highly inflationary environment indicates a relatively unstable economic environment because it creates uncertainty with regard to production and consumption decisions. While there is no theoretical consensus on what constitutes 'too much' inflation, inflation levels below 5% are generally perceived as posing no threat to economic growth and attainment of other socioeconomic welfare indicators such as poverty reduction.

Trends in year-to-year food and beverage (nonalcoholic drinks) inflation and total inflation between January 2000 and December 2010 are illustrated in Figure 3.1. The huge fluctuations in inflation revealed in Figure 3.1 suggest lack of capacity to control inflation in Mozambique. This volatility or large temporal variation for both total and food inflation is expected to contribute to macroeconomic instability. In terms of levels, inflation rates are rarely below 5%: in fact, the average inflation rate during this period was 11% for total inflation and 13% for food and beverage inflation. Such double digit average inflation rates discourage long-term investment contracts and thus threaten the country's productive capacity, the ability to improve economic growth and the attainment of other social development indicators such as poverty and hunger reduction.

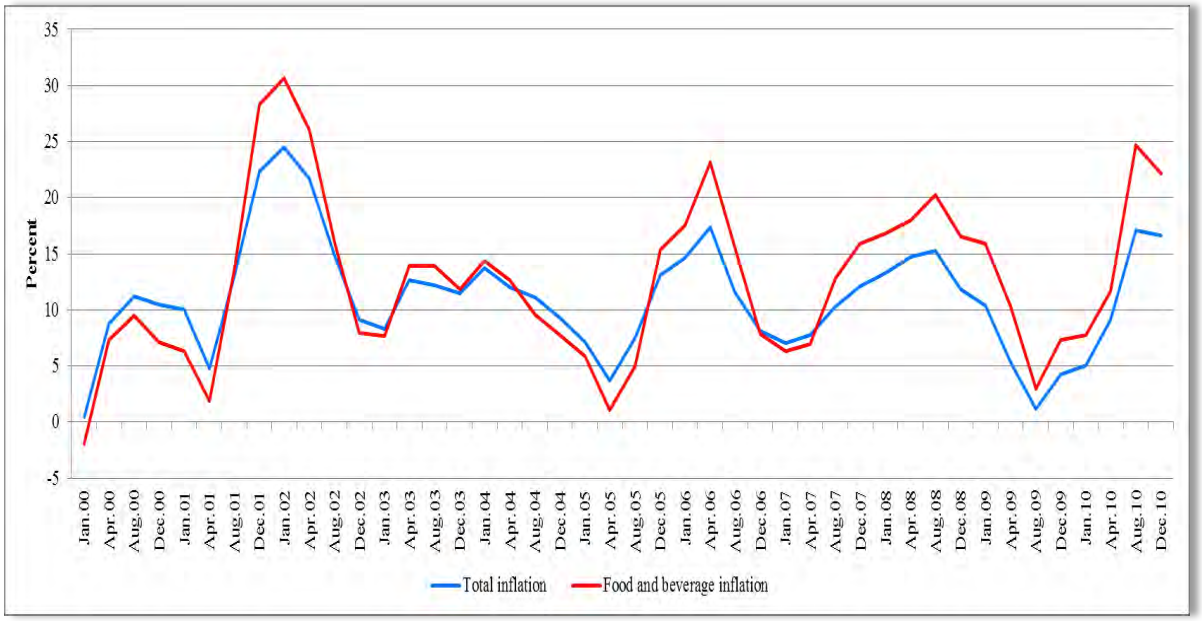


Figure 0.1. Year-to-year inflation, 2000–10.

Source: INE 2011.

The patterns revealed in Figure 3.1 also support the argument that inflation in Mozambique responds to agricultural output (as influenced by weather or climatic conditions) as well as external factors which affect the extent to which Mozambique imports inflation from its trading partners. For instance, the peak in February 2002, when total inflation was 26% while food and beverage inflation was 31%, could be attributed to low harvests in the 2000–01 farming season caused by floods in the northern region and droughts in the southern region. Low harvests create food scarcity which drives up food prices. Similarly, the relatively high double-digit inflation levels in 2006 reflect the lasting effects of the 2005 drought and floods which affected food availability and, consequently, prices in the following months. In April 2006, total inflation was 17% while food and beverage inflation was 23%.

The rise in inflation rates from May 2008 to October 2008 could be explained by the global financial and food crisis that affected several economies.[7] The effects of these crises

[7] In a normal season the general price level falls after the harvest until August before beginning another seasonal rise.

culminated in a peak in inflation in September 2008 when total inflation reached 16% and food and beverage inflation reached 21%. In fact, the inflationary environment led to food riots which prompted the government to pay more attention to price subsidies of petrol and basic food staples. This explains the decline in price levels which followed and persisted for a year. In 2009, a downward trend is shown with respect to headline and food price levels in Mozambique. This decline in general price levels also reflects the decline observed in world commodity prices during the same period.

The troughs in the inflation rates indicate, to some extent, responses to administrative controls which are often applied through price subsidies. The same explanation holds for the declining trends in inflation in 2004 and 2009. The pattern, however, changed in 2010. The persistent decline recorded in 2009 was reversed in 2010 when year-to-year general and food inflation levels soared, peaking at 17% for total inflation and close to 25% for food inflation in August.

Overall, the fact that total and food inflation have similar trends indicates that food expenditure accounts for the biggest proportion of household expenditures. This could suggest that food prices have a direct transmission path to total inflation compared to other elements that are included in computing inflation rates (for example, fuel expenditures), as is typical in most low-income countries.

The foregoing discussion suggests that, in the case of Mozambique, inflation could largely be attributed to a combination of economic policies which might entail administrative control on inflationary factors through monetary policies and seasonal determinants which primarily reflect agricultural productivity and include extreme weather patterns such as floods and droughts, among other things. In addition, the country's dependence on imports, particularly fuel and food, suggests that part of inflation is 'imported'. This indicates that inflation levels in Mozambique are expected to respond to external factors.

In summary, Mozambique needs to formulate and implement policies that will contribute to an environment without excessive inflation so that it is able to guide its economy towards a path of stable growth. This could include, for example, an appropriate monetary policy as well as agricultural technologies such as irrigation that seek to raise and sustain agricultural productivity by breaking the dependence on rain-fed agriculture. Sustained economic growth would also reduce Mozambique's reliance on food imports and subsequently reduce the country's vulnerability to external determinants of inflation.

3.1.2 Interest and exchange rate performance

The trends in annual average deposit and lending interest rates are reported in Figure 3.2. Deposit interest rates refer to the amount of money paid out in interest by banks or other depository financial institutions on cash deposits. Lending interest rates, on the other hand, are the rates charged by banks on loans to prime customers. For comparative purposes, Figure 3.2 also shows deposit and interest rates for Malawi, South Africa and Zambia, which are among Mozambique's key trading partners within southern Africa.

The patterns revealed in Figure 3.2 suggest that, on average, Mozambique's deposit interest rates decreased from 18% in 2002 to 7.8% in 2005. Lending interest rates, on the other hand, decreased from 26.7% in 2002 to 15.7% in 2009. Between 2000 and 2009, the

average deposit and lending interest rates were 11.5 and 20.7%, respectively. These rates are lower than those that prevailed in Malawi and Zambia: in the case of Malawi, the average deposit rate was 17% and the average lending rate was 38.9%. The corresponding rates for Zambia were 14.5 and 31.3%. However, the realized rates for Mozambique were higher than those for South Africa where deposit rates averaged 8.8% while lending interest rates averaged 13.2%.

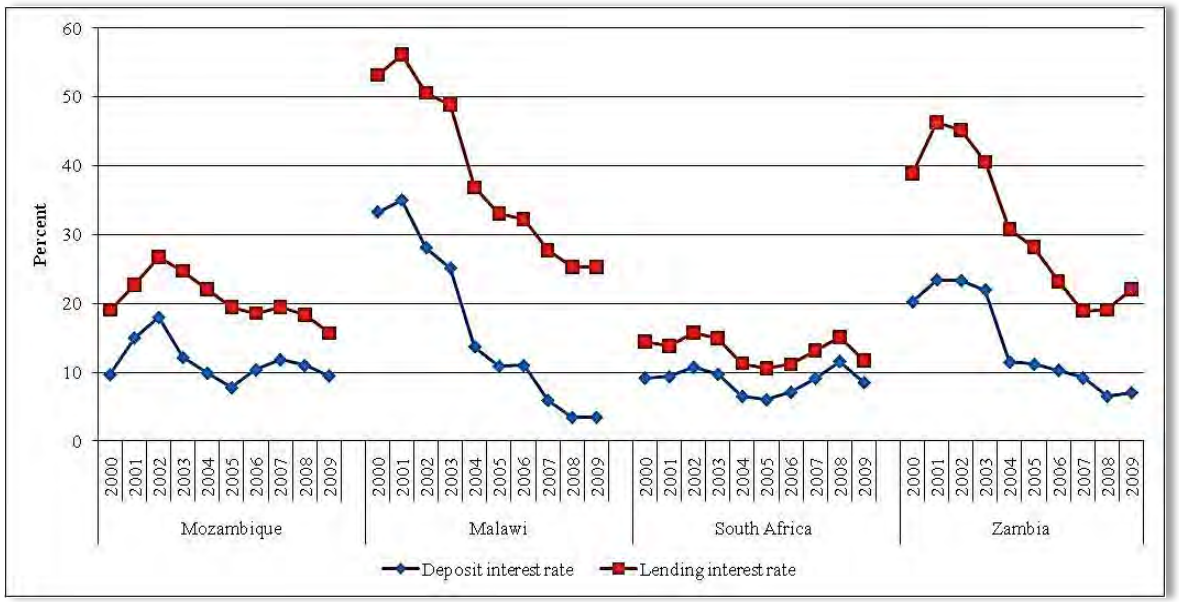


Figure 1.2. Annual average interest rates, 2000–09.

Source: World Bank 2010.

The interest rate spread, which is the difference between lending and deposit rates, was highest in Malawi (with an average spread of close to 22%), followed by Zambia (17%), Mozambique (9%) and South Africa (4$). These interest rate spreads could be indicating, to a certain extent, that the efficiency of intermediation (i.e., the ability of the financial sector to provide high-quality products at the lowest cost) is higher in South African than in Mozambique. Alternatively, the rates could suggest that Mozambican financial houses face more high-risk borrowers and so have to charge higher lending rates than in South Africa.

Trends in real interest rates, which are lending rates that have been adjusted for inflation, are presented in Figure 3.3. They reveal that the cost of money is relatively high in Mozambique in comparison to South Africa but lower relative to Malawi and Zambia.

Figure 3.4 illustrates trends in annual average exchange rates from 2000 to 2010. The exchange rate used in this study is the Mozambique metical (MZM) to the American dollar (US$). Similarly, exchange rates in the Malawian kwacha, South African rand and Zambian kwacha are included for comparative purposes.

In 2007, the exchange rate of the metical averaged 20.7 to US$1.00. By 2009, the rate rose to 27.5 per US$1.00 and to 34 per US$1.00 in 2010. During the past decade, the average exchange rate was MZN 24 per US$1.00. Further computations indicate that the metical depreciated at a rate of close to 1.1% per year compared to the US dollar between

2000 and 2010. The variation in the exchange rate corresponds to variations in inflation rates. The corresponding average exchange rates for Malawi's kwacha and South Africa's rand were 114.9 and 7.8 per US$1.00, respectively. The relative strength of the South African currency suggests that Mozambique has a relatively comparative disadvantage but has a comparative advantage in relation to Malawi.

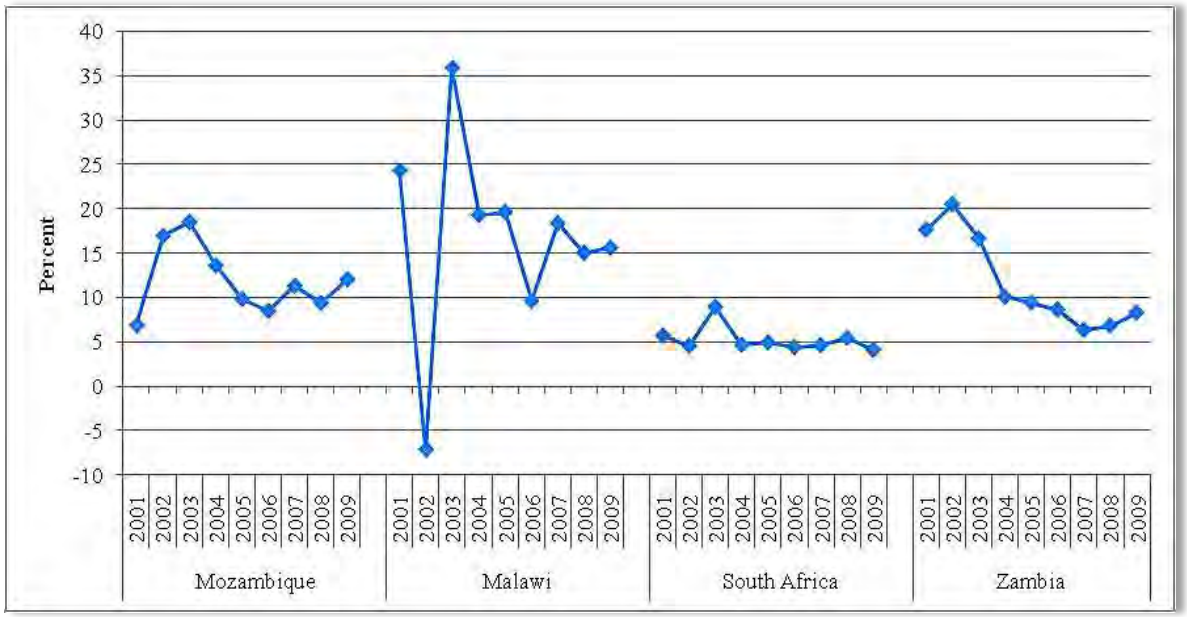


Figure 1.3. Annual average real lending interest rates, 2001–09.

Source: World Bank 2010.

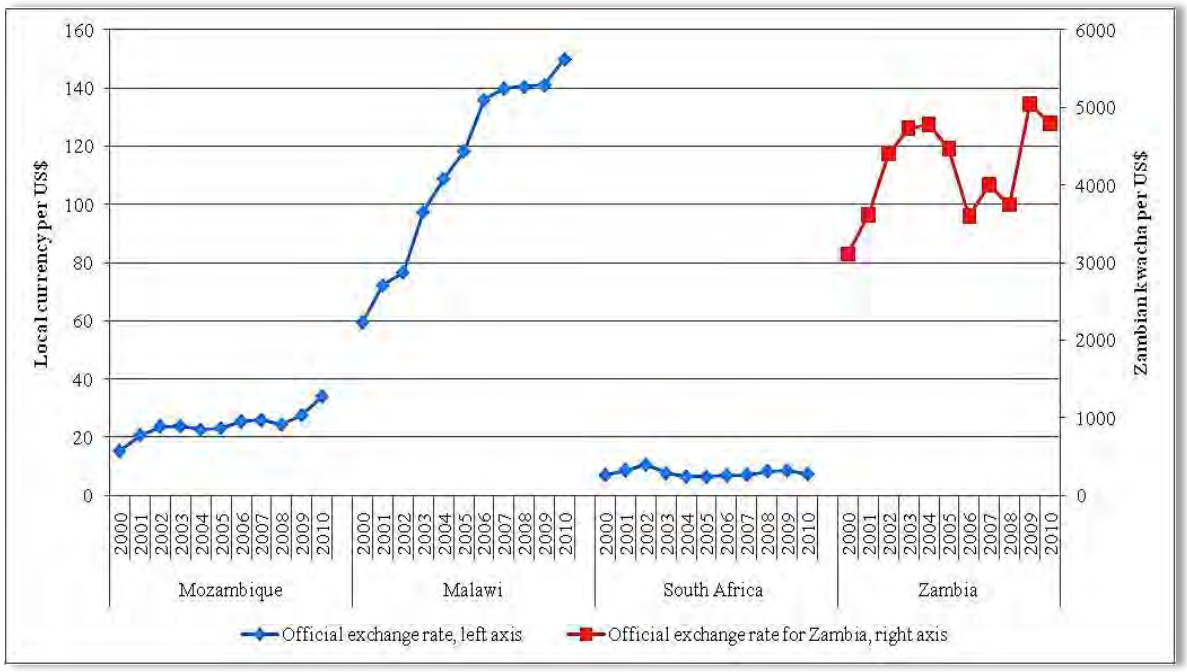


Figure 1.4. Annual exchange rates, 2000–10.

Source: World Bank 2010.

3.1.3 Economic performance index

Mozambique has been involved in a continual process of reforming policy in an attempt to create a supportive environment for national, continental and international agricultural initiatives. In particular, there have been policy reforms that seek to improve governance conditions and subsequently improve the environment for doing business in the country. The domestication of global and regional economic agreements in national programs is indicative of government capacity to create a policy environment that supports effective and successful implementation of agricultural development programs.

Doing business environment: Arguably, an environment in which it is relatively easy to conduct business is one that is associated with lower transaction costs for doing business. Consequently, such an environment is expected to significantly facilitate not only the mobilization of private and foreign direct investment in agriculture but also the enhanced impact of such investments on desired outcomes, particularly growth. The study employs doing business ranking to illustrate how Mozambique's business environment for doing business has been evolving.

Doing business indicator ranks an economy's ease of doing business from 1 to 183 based on a set of regulations or indicators that are deemed to affect all nine key stages of the life of a business. The indicators are: starting a business; dealing with construction permits; registering property; getting credit; protecting investors; paying taxes; trading across borders; enforcing contracts; and closing a business.

Each of these components is given equal weight in constructing the overall ranking. The ranking on each topic is the simple average of the percentile rankings on its component indicators. A low overall ranking means the regulatory environment is more conducive to starting and operating a business.[8]

The major limitation of this indicator is that it does not take into account other important significant determinants of a business environment such as proximity to markets and other institutional characteristics. Nevertheless, doing -business rankings have the primary aim of highlighting regulations that enhance or constrain business activity, and enable comparisons across 183 countries.

Figure 3.5 presents the overall doing business rankings for Mozambique for 2009/10 and 2010/11, along with the change in ranking between these periods. The figure also includes an overview of the ranking of other SADC countries for comparative purposes. Overall, Mozambique made gains between 2009/10 and 2010/11 in improving the environment for doing business. In 2009/10, the country was ranked at 130 and it improved to 126 in 2010/11. These gains are in line with SADC, 2009, which outlines the nature and depth of reforms undertaken by the country recently. For example, the country eliminated

[8] More details on the methodology and rankings for doing business can be found at http://www.doingbusiness.org/

requirements for minimum capital and bank deposits. Relative to other SADC countries, Mozambique is ranked far worse than the regional average, which was 109 in 2009/10 and 108 in 2010/11.

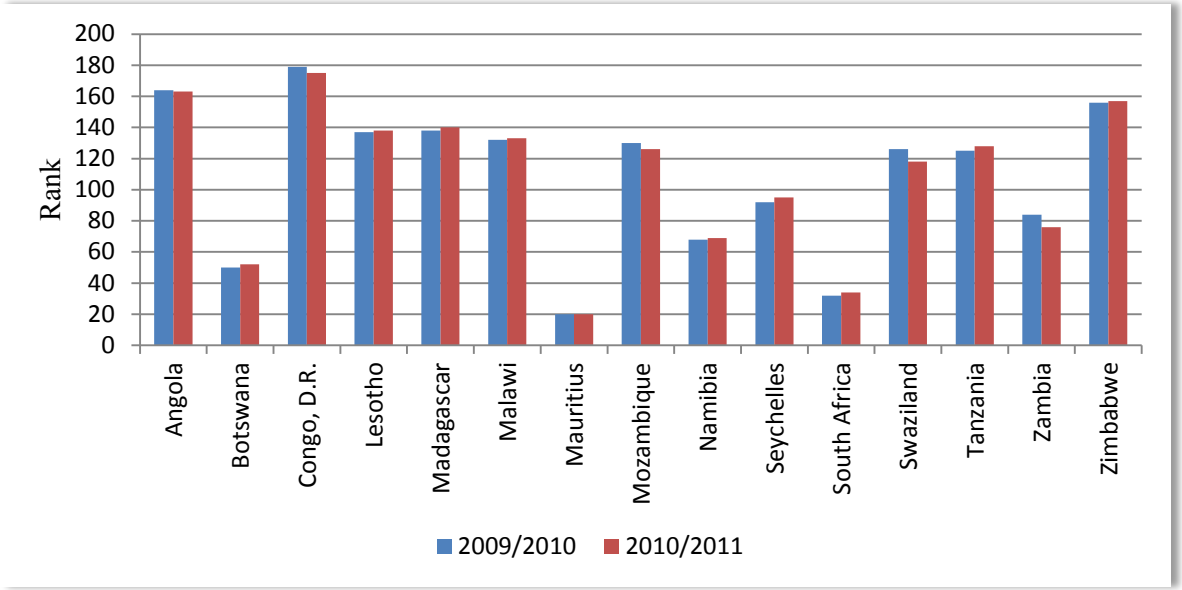


Figure 1.5. Doing business rankings, 2009/10 and 2010/11.

Source: World Bank (2010).
Note: A low ranking means the regulatory environment is more conducive to starting and operating a business.

Figure 3.6 shows the change in ranking associated with each of the nine components that went into the construction of the overall ranking for Mozambique indicated in Figure 3.5. The figure is useful in showing which components drive the gains or losses in Mozambique's overall ranking.

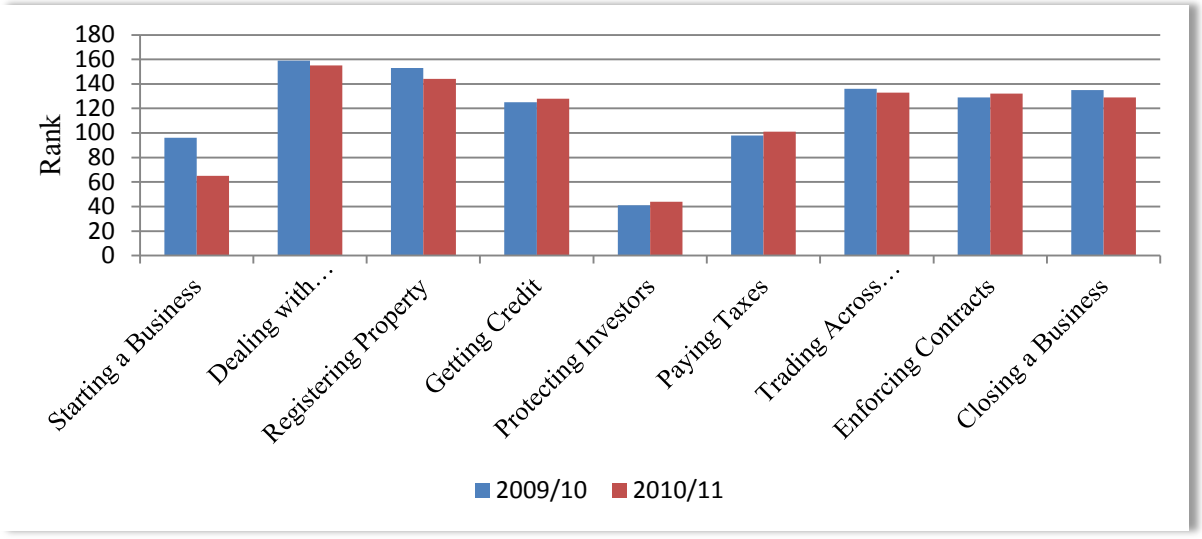


Figure 1.6. Change in doing business rankings by component, 2009/10 and 2010/11.

Source: World Bank 2010.

Note: A low ranking means the regulatory environment is more conducive to starting and operating a business.

Figure 3.6 reveals that substantial gains were registered in making it easier to start a business. Gains were also recorded in indicators related to dealing with construction permits, registering property, trading across borders, and closing a business. This improved overall business environment is expected to facilitate overall economic growth through the creation of an enabling environment for much needed investments in the country. Notably, the strongest component relates to the ability to protect investors. Considering the elements that go into the construction of the 'protecting investors' component, this means that investors in Mozambique enjoy limited disclosure requirements as well as directors' liability index and shareholders' ability to sue officers and directors for misconduct.

However, improving the ease of doing business should be done cautiously as it can end up negating the goal of, for example, enhancing the country's food security. This is of concern given the increasing incidence of large-scale land acquisitions in Mozambique whereby land traditionally used by local communities is leased or sold to mainly foreign investors. In the case of Mozambique, in 2007 there were applications for rights over approximately 5 million ha (Kachika 2009). Whilst in many cases the land is used for food cultivation, there has been a growing interest in using it for biofuel production, particularly to supply the growing EU market. Therefore, improving the environment for doing business should encourage and promote projects or businesses that do not derail the country's goals of poverty and hunger reduction, and overall economic development.

Global competitiveness indices: The Global Competitiveness Index (GCI) is produced by the Global Competitiveness Network (GCN) of the World Economic Forum (WEF) and provides a fairly comprehensive index for measuring national competitiveness. The GCI captures the microeconomic and macroeconomic foundations of national competitiveness. It takes a static and dynamic approach to define competiveness, with competitiveness conceived as a set of institutions, policies and factors that determine the level of productivity of a country. The GCI is constructed from a weighted average of many different components, each measuring a different aspect of competitiveness. These components are grouped into 12 pillars of economic competitiveness which include institutions, infrastructure, macroeconomic stability, health and primary education, higher education and training, goods market efficiency, labor market efficiency, financial market sophistication, technological readiness, market size, business sophistication and innovation.[9] These pillars are not only correlated but reinforce one another. A higher rank indicates reduced competitiveness of the prevailing environment.

Mozambique's ranking on the GCI is revealed in Figure 3.7 to have been generally on the rise between 2003 and 2010. The trend suggests that Mozambique's competitiveness has worsened in the last decade. Additional effort is required to improve competiveness in the economy and subsequently improve productivity.

[9]For a detailed discussion of the GCI, please refer to http://gcr.weforum.org/

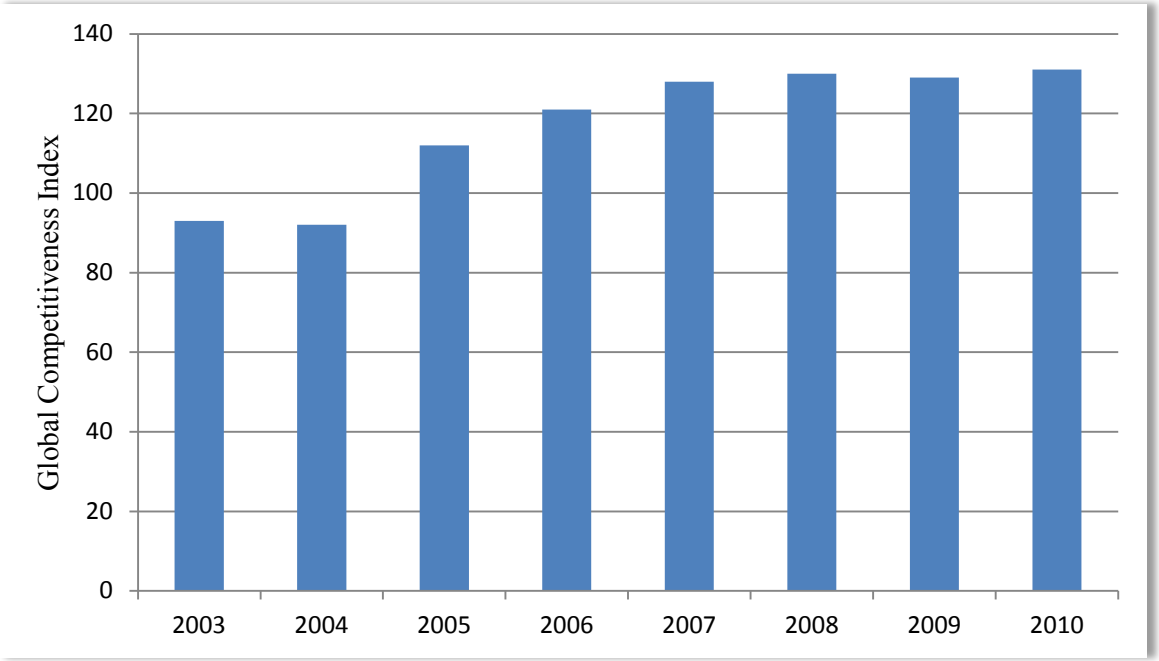


Figure 1.7. Global Competitiveness indices, 2003–10.

Sources: World Economic Forum 2010 and Transparency International 2010.

Note: A higher ranking of the GCI indicates reduced competitiveness of the prevailing environment.

3.1.4 Performance of Mozambique's economic sectors

The gross domestic product (GDP) is often used to assess the overall performance of an economy. It represents the value of all goods and services produced in a given time period. GDP is one of the primary indicators used to gauge the overall size and health of a country's economy. Economic production and growth have a large impact on unemployment, wage increases, functioning of stock markets and investment. An economy in recession does not provide incentives for businesses to expand production via, for example, increased investments since the economy cannot support or absorb increased output. This indicates that slow economic growth is associated with high unemployment levels. This section uses GDP as an indicator of the size and overall performance of the economy of Mozambique. It begins by presenting the contribution of various economic sectors to total GDP.[10] The sectors are grouped into agriculture, manufacturing, services and others.[11]

Nominal GDP reflects changes not only in output but also in prices. When inflation goes up from one year to the next, nominal GDP will rise. Such a rise does not necessarily indicate higher output but higher prices. In this section we analyze real GDP, which takes inflation into account.

[10]GDP and agricultural GDP values are in constant 2003 prices.

[11]Services include both commercial (for example, trade, financial services, etc.) and social services (for example, education, health, etc.). The remaining sectors, grouped under 'other sectors', include mining, water, electricity, construction and taxes on products.

Total real GDP trends for Mozambique reveal an economy experiencing a boom from 2001 to 2009 (see Table 3.1). This is expected of a nation going through a post-war recovery period. The peace that currently prevails plus growing investments explain this economic boom. Calculation of the annual average growth rates shows that the economy grew at an average of 3.2% per year between 2001 and 2009. A positive growth of around 2.1% was also recorded for GDP per capita between 2001 and 2009. Given the recovery of major economies from global recession, it is reasonable to expect this trend to continue, at least in the short term.

In terms of sector contribution to total GDP, the services sector contributes the highest share to GDP, averaging about 43% between 2001 and 2009. The second most important sector is primary agriculture with an average share of 25% between 2001 and 2009. The manufacturing sector contributes 14% to total GDP.

Table 1.1. Contribution of different economic sectors to total GDP, 2001–09.

Year	Total real GDP (billion MZN)	Sectoral contribution to total GDP (%)			
		Services	Agriculture	Manufacturing	Others
2001	95,404	45.01	25.16	13.70	16.13
2002	104,212	43.19	25.61	13.64	17.56
2003	110,972	41.47	25.35	14.99	18.19
2004	119,721	41.56	24.62	15.73	18.09
2005	129,763	42.76	24.18	14.82	18.24
2006	141,030	42.78	24.52	14.04	18.66
2007	151,299	43.04	24.73	13.49	18.74
2008	161,634	43.08	25.26	13.24	18.42
2009	172,054	43.41	25.22	12.83	18.54
Annual averages					
2003–09	140,925	42.59	24.84	14.16	18.41
2001–09	131,788	42.92	24.96	14.05	18.06

Source: INE 2010.

Table 1.1 suggests that the Mozambican economy did not undergo any structural transformation between 2001 and 2009. The relative importance of different sectors with respect to their contribution to total GDP remained almost the same across these years. This suggests that different national and sector strategies implemented in Mozambique have not managed to lead to any significant structural change in the economy.

3.2 Agriculture-sector policies, strategies and programs

The agriculture sector in Mozambique is guided by a number of standing laws, policies, strategies and programs (see Mosca 2010). This section gives an overview of key sectoral

and intersectoral policies, strategies and programs that have guided the agriculture sector in Mozambique over the past two decades (1990 to 2010) as shown in Figure 3.8.

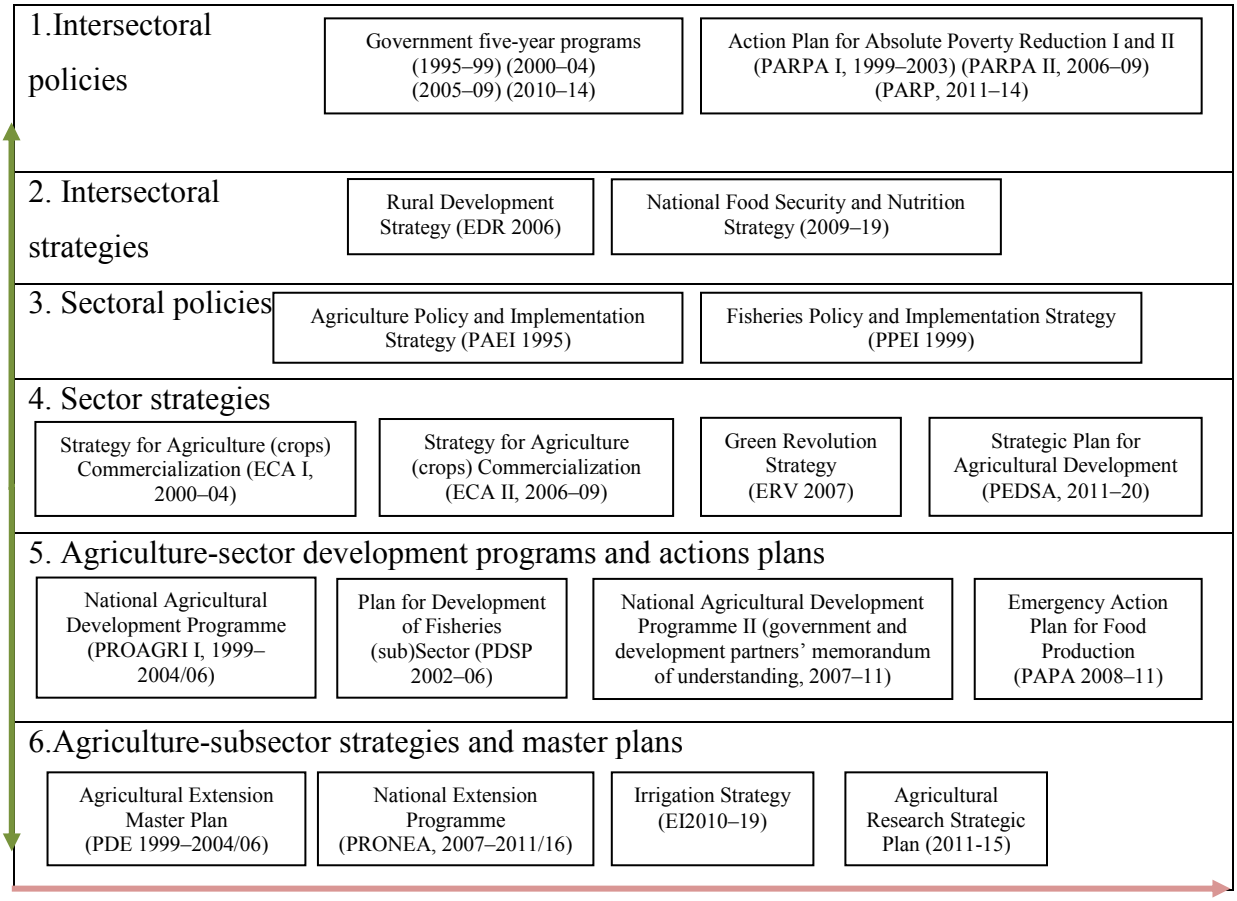


Figure 1.8. Intersectoral and sectoral policies, strategies and programs guiding the agriculture sector in Mozambique, 1990s to 2011.

Sources: The authors, based on various relevant policy, strategic and program documents from MINAG, MP MPD and MIC.

3.2.1 Action Plan for Absolute Poverty Reduction (PARPA I)

PARPA I (*Plano de Acção para Redução da Pobreza Absoluta* 1999–2003) aimed to continue government efforts at socioeconomic reconstruction in a more intersectoral strategic manner after the devastating war which ended in October 1992. PARPA I focused mainly on reducing the high levels of absolute poverty from 65 to 54% by 2003. It should be mentioned that PARPA I was implemented during the time of PROAGRI I (1999–2004/06), a program which was viewed as having a limited field of focus in terms of assisting farmers and supporting agricultural production in general. However, it was during this period that MINAG started decentralizing planning and budget allocation to the provinces and some pilot districts. It also decentralized resources, some national programs and key services such as extension and livestock vaccination to the DPAs in the provinces. In addition, MINAG started outsourcing the management of public services such as extension and vaccination to the private sector and to NGOs.

During PARPA I, agricultural performance was severely affected by floods in the southern and central regions in 2000–01. MINAG and NGOs played an important role in providing relief services to affected farmers, especially smallholders.

3.2.2 Action Plan for Absolute Poverty Reduction (PARPA II)

The rural development component of PARPA II (2006–09) outlined the government's approach for addressing agricultural development. While it is not specifically an agriculture-sector strategy,[12] the approach defined in PARPA II formed the core of the agreement to proceed with PROAGRI II, and is explicitly referenced in the PROAGRI II memorandum of understanding (MoU) between the government and DPs. MINAG had been developing the annual Economic and Social Plans (PES) mainly from PARPA II. PES has been the source of some of MINAG's key performance indicators for the agriculture sector.

3.2.3 Agricultural Policy and Implementation Strategy (PAEI)

Approved in 1995, PAEI (*Politica Agraria e Estrategia de Implementação*) is the longest-standing strategy document for agriculture in Mozambique. It provides a political perspective on what the agriculture sector is, emphasizes the socioeconomic importance of agriculture and sets out the overall goals and priorities. According to PAEI, agriculture and fisheries contribute to the country's developmental objectives by promoting food security and sustainable economic growth, and by reducing the unemployment rate and levels of absolute poverty.

PAEI highlights four key pillars in moving towards agricultural development, namely, (1) sustainable use of natural resources, (2) increased agricultural production and productivity with emphasis on research and extension, (3) institutional development and reform, and (4) human capital development. It is a policy reference document that has been quoted in most agricultural strategies but in practice it is not clear whether or not it has been guiding the agriculture sector's strategic decision-making process.

3.2.4 Green Revolution Strategy (ERV)

The ERV (*Estratégia de Revolução Verde*) was developed within MINAG and approved in 2007 to provide a long-term overarching strategy for a green revolution in agriculture which sets out the current government's vision for the future transformation of agriculture. The main objective of the ERV is to contribute to combating poverty and hunger in Mozambique by promoting competitiveness of the agriculture sector and consistent growth in agricultural production and productivity. Implementation of the ERV is expected to reinforce access to, and use of, improved agricultural inputs such as improved seeds, fertilizers, pesticides, mechanization and animal traction, and irrigation thereby leading to increased agricultural production and productivity. The ERV strategy still commands political support.

3.2.5 Action Plan for Food Production (PAPA)

PAPA (*Plano de Acção de Produção de Alimentos*) was approved in 2008 for implementation from 2008 to 2011, in part to operationalize the GRS. Its preparation was fast-tracked due to the looming global food crisis at the time, accompanied by serious

[12] As with PARPA I (1999-2003), PARPA II was broad-based, including infrastructural development and the key social sectors, health and education, among other areas.

interest and prioritization from the government. It represented an interventionist approach by MINAG at different levels, in some cases without necessarily taking into account the potential role of other actors within the agriculture sector. There is a current recognition that its implementation needs further thought to address observed weaknesses, especially in terms of including key stakeholders (private sector, farmers' organizations, DPs) in planning, implementation and evaluation.

3.2.6 National Agricultural Development Programme PROAGRI II Memorandum of Understanding (2007)

Although not a strategy as such, the PROAGRI II (*Programa Nacional de Desenvolvimento Agrário*) MoU outlines some important aspects (for example, prioritizing MINAG core functions and local development projects) that are being developed through PARPA II. In addition, it sets out the overall agreement between the GoM and DPs on harmonized support to the agriculture sector through the PROAGRI vehicle. Several significant DPs which support agriculture are nonsignatories and are therefore not bound by its terms.

3.2.7 PROAGRI II document

The PROAGRI II document was prepared in 2003–04 but was never officially approved and used for planning and decision making. This could be attributed partly to the institutional change from the then Ministry for Agriculture and Rural Development (MADER) to the current MINAG with implications for the previously designed scope of PROAGRI II (wide concept of agriculture sector). Some critics of PROAGRI I at that time argued that it was addressing mainly institutional development issues rather than supporting production. In addition, the new options leading MINAG and public investments may have contributed to relegating the PROAGRI II document to a secondary plan. Nevertheless, it sets out a clear analysis of the way forward for agriculture-sector development, and much of its analysis remains valid today, particularly the issue of looking at the agriculture sector in a comprehensive context, as is done in the PEDSA strategy and the CAADP framework. PROAGRI II was based on six pillars, namely, (1) development of input and output markets, (2) rural finance, (3) development of infrastructure, (4) technology, (5) management of natural resources, and (6) an enabling environment for smallholder and private-sector development.

3.2.8 Agrarian Priorities Document

The Agrarian Priorities Document (*Documento de Prioridades*) was based on a MINAG internal priority setting exercise conducted in early 2006 with a focus on agricultural production. The document specifies annual production targets for each priority product (food and cash crops, livestock and forestry products) as well as generic priority interventions to pursue those production targets. This document was discontinued and apparently replaced by the Agrarian Intensification and Diversification Programme mentioned below.

3.2.9 Agrarian Intensification and Diversification Programme (PIDA)

PIDA (*Programa de Intensificação e Diversificação Agrária*) was announced by MINAG in late 2006 as one of the highlights of its annual economic and social plan for 2007. The program aimed to address food insecurity problems and the country's structural cereal deficit through increased production and productivity. In order to reach these objectives it

proposed distributing agricultural inputs, disseminating technology and providing credit to selected farmers in areas of high agroecological potential.

3.2.10 Fisheries Policy and Implementation Strategy (PPEI)

Launched in 1999, the PPEI (*Política de Pescas e Estratégia de Implementação*) comprises three objectives, namely, (1) to increase the capacity of the fisheries subsector to supply the internal market and to reduce part of the food deficit by increasing fisheries throughputs and reducing losses after fishing; (2) to increase foreign exchange earnings from the fisheries subsector by ensuring permanent access to international markets of domestic fisheries products, especially prawns; and (3) to improve the living conditions of fishing communities by increasing the profitability of fishing activities and stimulating jobs within the fisheries value chain.

Government's role in implementing the PPEI focused on (1) increasing delivery of public services (quality control, licensing, research and extension), (2) increasing competitiveness in the sector, (3) diversifying the range of fisheries products for export, (4) promoting aquaculture for exports, and (5) promoting environmental sustainability through integrated management of the marine and coastal environment that protects important ecosystems.

3.2.11 Plan for the Development of the Fisheries Sector (PDSP)

Designed in 2002, the PDSP (*Plano de Desenvolvimento do Sector das Pescas*, 2002–06) envisages operationalizing the PPEI. Thus, it has the same objectives, namely, to (1) improve the domestic supply of fisheries products to reduce the domestic food deficit, (2) increase export earnings, and (3) improve the living conditions of fisher communities. It comprises six components: (1) artisan fishing, (2) semi-industrial fishing, (3) industrial fishing, (4) the processing industry, (5) aquaculture, and (6) public administration. Each component focuses on regulations and laws, research and extension, infrastructure, financial services, human resources, and management and monitoring systems. The PDSP presents specific activities and indicators, and provides estimated costs for its implementation.

3.2.12 Action Plan for Poverty Reduction (PARP)

PARP (*Plano de Acção para Redução da Pobreza*) is the third national poverty reduction strategy and will be approved soon under the coordination and preparation of the Ministry of Planning and Development (MPD). Similar to the first action plan, it includes agricultural development. While in PARPA I and II, agriculture was a key sector among other social sectors such as education and health, as well as infrastructural development, the upcoming PARP prioritizes improved agricultural productivity and production as a key goal to be pursued.

3.2.13 Strategic Plan for the Development of the Agriculture Sector (PEDSA)

PEDSA (*Plano Estratégico de Desenvolvimento do Sector Agrário*) was approved in May 2011. It is the latest overarching strategy document for the agriculture sector and has been under development since 2007, following the agreement between GoM and DPs that sector development should be guided by a framework strategy document. Apparently, the preparation of PEDSA was delayed for various reasons, including leadership changes at MINAG and the priority given to other processes, namely the development of the GRS and

PAPA. PEDSA is expected to be implemented under the CAADP process which was officially launched by the government in December 2010.

3.2.14 Irrigation strategy (EI)

The EI (*Estratégia de Irrigação*) was approved in December 2010 and is expected to guide irrigation development for the next 10 years. The strategy is aimed at ensuring effective use of irrigated land and its expansion, and at promoting an effective pluralistic system in irrigation (government, private sector, NGOs and water user associations) with the ultimate goal of contributing to agricultural productivity and profitability.

3.2.15 National Extension Programme (PRONEA)

PRONEA (*Programa Nacional de Extensão*) addresses the effectiveness of agricultural extension, particularly the public extension services. As with previous public extension strategies, PRONEA emphasizes the need to develop an effective pluralistic and innovative extension system, focused not only on national but also on local priorities. Human capital development and effective links with research and markets are key issues to be accomplished.

3.3 Formulation and implementation of agricultural policies, strategies and programs

3.3.1 Policy and strategy formulation process

The formulation of Mozambique's agricultural policies, strategies and programs has been led mainly by MINAG. Specific formulation teams composed of MINAG senior staff members, often appointed at ministerial or cabinet level, have been responsible for their formulation, often with occasional or temporary technical assistance.

The process of formulating policies, strategies and programs varies considerably, ranging from a few months to years. For example, while the ERV (MINAG 2007) and PAPA (MINAG 2008) took less than 6 months each, about 4 years were spent on formulating PEDSA and the Agricultural Research Strategic Plan. Factors that influence the length of the process include the priority given to formulating a specific policy or strategy, the commitment of MINAG leadership in following up the formulation process, the extent of consultation of relevant stakeholders and available resources to support the process particularly when technical assistance is needed.

3.3.2 Similarities in goals of various policies, strategies and programs

In general, the main objectives of the various policies, strategies and programs are to contribute to increased productivity and production, and to improve natural resources management in moving towards the government's overarching strategic goals of reducing poverty and improving food security and nutrition. Smallholder farmers have been the main target population, although commercial farmers are also recognized as important actors. Improving and expanding public services (for example, extension and irrigation technical assistance), promoting a pluralistic agriculture sector (government, private sector and NGOs), facilitating input and output market linkages for smallholders, disseminating relevant information among producers, supporting local development projects and

promoting farmer organizations, are some of the common planned interventions of the various policy and strategy documents. Cross-cutting issues such as gender, HIV/AIDS and environmental sustainability are referred to in almost all policy documents.

3.3.3 Implementation issues

The implementation of most of the policies, strategies and programs, including action plans, seems to be affected by a number of limitations. First, the level of implementation in terms of planned *versus* allocated resources as well as in terms of the planned implementation period can be below targets. The first Extension Master Plan (MINAG 1998) which had an estimated total cost of US$24 million was underfinanced (MINAG/PROAGRI I 2007; Gêmo et al. 2005; Gêmo 2006). The National Extension Programme (IFAD 2005) which had a total estimated cost of US$50 million was prematurely suspended in late 2010 for redesign with expectations that it would be reinitiated by 2012. With regard to PAPA implementation (with an estimated cost of US$28 million) there are indications that the allocated resources are below the planned budget, despite government and some development partners being interested in supporting the initiative (MINAG/DNSA 2010). These examples suggest that planning and decision making on resources distribution at MINAG have not necessarily been related to the implementation of the various approved policies, strategies and programs, although limited resources may also be contributing to this situation.

Second, there has been a weakness in pursuing shared priorities which have been translated into medium- to long-term investment options in terms of either areas of intervention (research, extension, livestock, etc.) or agricultural commodities. For example, despite some criticism of PROAGRI I (1999–2004/06) for its emphasis on MINAG capacity building rather than on supporting production (Ashley and Gêmo 2010), this program had the merit of clearly defining MINAG institutional development as one of the main goals. As another example, PAPA is focused on food crops selected on a priority basis, livestock products and fisheries among other things. However, given the wide scope of priorities and limited resources, it was not easy to focus on some key commodities (along the respective value chains), particularly in three agricultural seasons as planned for in PAPA implementation (2008–10).

Third, needed interactions and complementarities in implementing related policies, strategies and programs have been a challenge even within MINAG, particularly with regard to subsector strategies, which are important in contributing to the overall performance of the agriculture sector. For example, public extension shifted from being narrowly oriented on food crops to a Unified Extension System (SUE) in 1998–99 comprising food crops, livestock and agroforestry activities. The former National Directorates of Livestock (DINAP) and of Forestry and Wildlife (DNFFB) then became responsible for providing subject matter specialists (SMS) to both central and local levels to support SUE, which was effective until 2003–04. Since then SMS at the central and local levels (provinces and districts) have moved to other positions and tasks, even within MINAG, consequently reducing the level and consistency of their contribution to SUE. Despite many statements over time that the linkage between research and extension is crucial, apart from some

periodic and dispersed collaboration initiatives, the linkage is weak (Gêmo 2007; 2008).[13] Another example is irrigation; MINAG made some efforts to expand irrigated land through rehabilitation and establishing new irrigation schemes, but without bringing together complementary technical assistance services for water management, extension (market-oriented farming and promotion of water user associations) and even research in order to promote evidence-based interventions in irrigation (Gêmo 2011). For livestock, the attempts to implement an effective national program of vaccinations have accomplished remarkable results, but have not met the need. For example, procurement of vaccines was placed at central level (DNSV) only after learning lessons from decentralizing this responsibility to the provinces during the implementation of PROAGRI I.

Fourth, MINAG's approaches to planning and performance evaluation, at least over the last 10 years, might be contributing, along with other factors, to the fragmented implementation of subsector strategies and programs. Since the start of the implementation of PROAGRI I in 1999, MINAG's planning and M&E processes have been conducted vertically, and focused on separate 'components' (research, extension, irrigation, land management, etc.). There has been little consistent horizontal harmonization and coordination in planning and implementing the annual and medium-term activities, based on defined priorities within the ministry.

Fifth, the dissemination and sharing of policies, strategies and programs with agriculture-sector stakeholders have focused mainly on the central level, many times involving a limited number of stakeholders. As the successful implementation of the strategies and programs extends beyond MINAG, it is of paramount importance to ensure that they are widely disseminated and shared with key stakeholders at both the central and local levels. PEDSA implementation under CAADP should take this aspect into account (Ashley and Gêmo 2010).

Sixth, information and knowledge management on the implementation of subsector strategies and programs is still limited. In general, there is limited evidence and information on how different subsector strategies, programs and action plans are implemented, the accomplishments and failures, and the lessons learned. For example, in the third and last year of implementation (2008–11), evidence-based information on PAPA implementation is still limited. Evidence-based information on irrigation-related issues is also limited, despite government projects in collaboration with DPs having spent millions of dollars on them.

In addition, the sharing and use of available evidence and information seem to be limited. For example, PROAGRI I was subject to medium-term and final evaluations (MINAG/ PROAGRI I 2007) and some case studies were also conducted, for example, looking at the information management system in MINAG (MINAG/KPMG 2005). However, most of the identified institutional constraints affecting MINAG's performance, such as limited

[13] The profound institutional changes in MINAG's organizational structure made in 2005–2006, with the closing of the former DINAP and DNFB and the creation of the new National Directorates of Veterinary Services (DNSV) and of Land and Forestry (DNTF) may also have contributed to the current situation, as the new directorates did not readdress attention to SUE.

prioritization in planning, weak strategic staff management, and weak information and knowledge management, still appear to be prevailing (Ashley and Gêmo 2010; Gêmo 2011).

3.4 Alignment of agriculture-sector policies and strategies with regional and continental (NEPAD/ CAADP) shared goals and performance indicators

Relevant intersectoral and agriculture-sector policies and strategies (for example, the food security and nutrition strategy) address some of the key shared regional agricultural and food security and nutrition targets within the context of the SADC/RISDP (see Box 3.1).

As mentioned above, the increase in the level of technology adoption leads to improved productivity and production. In this respect, the expansion of irrigated land, the increase in the population of livestock species such as cattle, goats and chickens, due in part to reinforcing animal health and sanitary efforts, and the reduction of food insecurity vulnerability levels have been key goals of relevant intersectoral and agriculture-sector policies and strategies over time. However, it seems that the country has not been linking or aligning national targets with regional ones.

With regard to the need to increase technology adoption and productivity, the expansion and effective use of irrigated land and fertilizers have been addressed over time. However, national efforts and accomplished results on these issues are far from the stated SADC/ RISDP 2015 targets. Again, it is not clear to what extent the planning and expenditure of effort on these two specific areas of intervention (irrigation and fertilizer use) have been related to the regional targets, and how feasible it is to achieve them by 2015 in the context of Mozambique. In contrast, national planning and efforts to address food security and nutrition (FSN) seem to be more related to the 2015 regional targets.

Box 3.1. SADC/RISDP annual performance indicators and 2015 targets.

The specific SADC/RISDP targets relating to sustainable food security and poverty reduction in southern Africa (SADC 2006) are:

- Achieving GDP growth of at least 7% a year.
- Halving the proportion of the population living on less than US$1.00 per day between 1990 and 2015.
- Doubling crop land under irrigation from 3.5 to 7% by 2015.
- Increasing fertilizer consumption from 44.6 to 65 kg/ha of arable land by 2015 (world average is 98.8 kg/ha).
- Increasing cereal yield from an average of 1,392 to 2,000 kg/ha (world average) by 2015.
- Doubling the adoption rate of proven technologies, such as improved seed varieties, and management of water and land by 2015.
- Reducing the incidences of transboundary animal diseases (TADs), in particular, foot and mouth disease by half by 2015 with the ultimate objective of eliminating it.
- Increasing livestock production by at least 4% annually.
- Increasing the daily per capita dietary energy and protein intake from 2,160 to 2,700 kilocalories and from 49 to 68 g, respectively, by 2015.
- Halving the proportion of people who suffer from hunger by 2015.

Source: SADC/RISDP 2006.

With regard to aligning agricultural policies and strategies with the CAADP framework, the government launched the CAADP process in December 2010 as an official signal of its commitment to the CAADP framework in implementing national policies and strategies.

The recently approved PEDSA (2011) provides a comprehensive framework of what to address within the agriculture sector based on some of the principles, values and pillars stated in the CAADP framework. The primary CAADP goals of allocating at least 10% of the total public budget to agriculture and achieving a minimum annual growth rate of 6% are key targets of PEDSA, which also emphasizes the key needs of improving policies and investment options, enhancing the use of evidence and information in planning and decision making and building or reinforcing relevant institutions, among others. The recent approval of the Irrigation Strategy (MINAG 2010) can also be viewed as a sign of political effort to reinforce one of the key intervention areas of PEDSA, one which is also relevant to the CAADP pillars.

For implementation purposes, and in order to eradicate poverty, increasing public investment in agriculture within the CAADP framework should be aligned with domestic strategies and programs. The special focus of CAADP is on small- and medium-scale farmers, particularly women (NEPAD 2010). To meet the target, all African governments are committed to aligning their national agricultural plans and strategies to the CAADP framework. CAADP translates the NEPAD vision and sets a framework through which African countries can foster agriculture-led socioeconomic development.

Chapter 4. Public Budget Allocation and Expenditure on Agriculture

This chapter analyzes trends in public budget allocation and expenditure on agriculture in Mozambique. The period covered is 2001 to 2009, with special attention given to the years 2008 and 2009. It highlights how Mozambique has performed in making progress towards meeting the Maputo Declaration target of 10% allocation of national expenditure to agriculture. It also discusses the structure of the budget, budget execution rates, the composition of agricultural expenditure, expenditure by core functions, and internal and external sources of public investment.

4.1 Background on CAADP targets of 10% budget allocation and 6% growth

The dismal performance of the agriculture sector in many sub-Saharan countries, particularly relative to that of other regions, has been attributed to reduced government expenditure on public goods and services (World Bank 2010). In Asia, where governments have been allocating around 11%, on average, of total budgets to the agriculture sector (principally as part of the Green Revolution), numerous countries have reached around 6% annual average growth rates in the agriculture sector.

In recognition of the challenges posed by low public investment in agriculture, African Heads of States are committed through the African Union (AU) Maputo Declaration of 2003 to increase public investment in agriculture to a minimum of 10% of their national budgets. This commitment was expected to enable countries to achieve improved productivity and reach the annual sector growth rate of at least 6%, which is subsequently expected to increase the sector's contribution to total GDP, poverty reduction and food security.

4.2 Trends in budget allocation and expenditure

This section illustrates trends in agricultural budget allocation and expenditure in Mozambique and highlights how actual agricultural expenditures deviate from approved expenditures. The aim is to examine whether the GoM has reached the target set in 2003 to increase budgetary allocations to agriculture to at least 10% of national budgetary resources.

Budget allocations to different sectors of the economy reflect the development priorities set by the government. Table 1.2 provides an overview of the trends in budget allocation and expenditure between 2001 and 2009. The table also indicates how much of the budget and expenditure are accounted for by the agriculture sector.[14]

[14] As indicated earlier, agriculture is defined as encompassing crops, livestock, forestry and fisheries subsectors.

Table 1.2. Budget allocation and expenditure for agriculture and nonagriculture in Mozambique, 2001–09, (constant MZM million, 2003 = 100).

Year	Approved budget			Actual expenditure		
	Total	Agriculture	Nonagriculture	Total	Agriculture	Nonagriculture
2001	27,076	1,192	25,883	27,076	516	26,560
2002	29,822	1,610	28,212	29,821	1,779	28,041
2003	29,213	3,106	26,107	29,213	1,635	27,578
2004	28,607	3,287	25,320	28,607	2,333	26,274
2005	34,204	2,528	31,676	34,204	3,061	31,142
2006	36,931	2,851	34,080	36,939	2,806	34,133
2007	43,338	4,860	38,478	43,337	2,799	40,538
2008	59,852	2,163	57,689	46,868	1,525	45,343
2009	62,626	2,597	60,029	54,161	1,871	52,289
Annual averages						
2003–09	42,110	3,056	39,054	39,047	2,290	36,757
2001–09	39,074	2,688	36,386	36,692	2,036	34,656
Average annual growth (%/year)	4.70	3.44	4.77	3.75	4.30	3.75

Sources: Authors' calculations based on MF (2001–2007) and MINAG/Directorate of Administration and Finance (DAF) (2008–2009).

On average, the total approved budget exceeded actual expenditure.[15] Table 1.2 suggests that the total approved budget grew faster than actual expenditure. The annual average growth in the total budget was 4.7%, while growth in total expenditure was 3.8%.

A comparison of the budget allocation and expenditure for agriculture and nonagriculture sectors shows that the budget approved for the combined nonagriculture sectors grew at a higher annual average (4.8%) than that approved for the agriculture sector (3.4%). However, a reverse trend was observed in actual expenditure: agricultural expenditure grew at a rate of 4.3% per year while nonagricultural expenditures grew at 3.8% per year. The finding that the nonagricultural budget grew faster than the approved agricultural budget could suggest that the agriculture sector appears to be sliding down the public budget priority list relative to other sectors, which might limit the country's ability to implement the CAADP framework.

[15] The approved budget averaged MZM39,074 million over the entire period while the average expenditure for the period was MZM36,692 million.

In addition, Table 1.2 indicates that noticeable declines in the size of the approved budget for agriculture were recorded between 2004 and 2005 as well as between 2006 and 2008. The decline in 2005 coincided with the extension of PROAGRI I for the 2005–06 period. It is worth mentioning that some DPs, including the World Bank, USAID and the Government of the Netherlands opted for out of sector budget support in 2003/04, or reduced their direct contribution to PROAGRI. When the PROAGRI extension was completed, some other donors also abandoned sector budget support. For example, the PROAGRI II document intended to cover the 2007–10 period was signed by eight DPs out of the total of 15 that were initially involved in PROAGRI I (1999–2004/6). Some of the DPs shifted to sector budget support while others opted to fund the private sector and NGOs. The decline in budget allocation experienced in 2008 may be because of the completion of publicly funded mega irrigation projects.[16]

4.3 Progress towards meeting the Maputo Declaration of the 10% target

Figure 4.1 highlights the progress Mozambique has made towards reaching the Maputo Declaration target. The figure presents the share of the budget allocated to agriculture and actual expenditure. It suggests that while the share of the total budget going to agriculture rose between 2001 and 2004, this rise was interrupted in 2005. After 2005 the share of the national budget going to agriculture rose again and then declined in 2008. Between 2001 and 2009 Mozambique managed to attain the CAADP target on three occasions, in 2003, 2004 and 2007. The share of the total budget allocated to agriculture was 10.6, 11.5 and 11.2% in 2003, 2004 and 2007, respectively.[17]

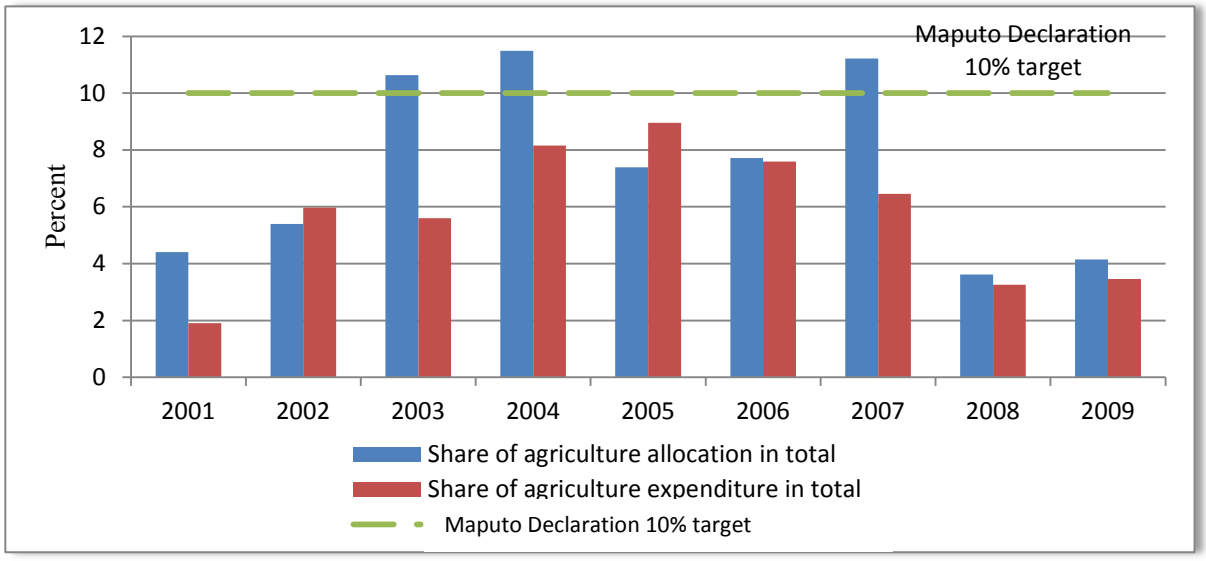


Figure 1.3. Real budget allocation and expenditure, 2001–09.

Sources: Authors' calculations based on MF, 2001–2007 and MINAG/ DAF (2008–2009).

[16] The rehabilitation of Massingir Dam (agricultural component) and Chokwe irrigation scheme in 2006 and 2007, respectively, accounted for a sizeable chunk of the agricultural budget.

[17] This happened at a time when Mozambique did not have a CAADP compact. The GoM was using different frameworks to support this share of spending.

Further computations suggest that the annual average share of the budget allocated to agriculture was higher in the 2003–09 period (8%) than in the 2001–03 period (6.8%). This could indicate that the government was acting on its commitments under the Maputo Declaration. The annual average share for the whole period, i.e., between 2001 and 2009, was close to 7.3%. The share of the national budget going to agriculture in 2008 and 2009 fell far below the Maputo Declaration target.

Overall, the share of total budget going to the agriculture sector is characterized by high variability. This variability was found to be relatively high at 49.1, 40.1 and 43% for the 2001–03, 2003–09 and 2001–09 periods, respectively. This suggests that the GoM had difficulties in increasing and maintaining the level of mobilized resources allocated to agriculture.

Trends in actual agricultural expenditure fell far below the CAADP target. Figure 4.1 shows that for the 2001–09 period, this target was never achieved. Thus in the 3 years in which the budget allocated to agriculture constituted more than 10% (2003, 2004 and 2007), actual spending did not match approved spending. The year-to-year variability in actual expenditure is similar to the variability in the size of the approved budget. The coefficient of variation in actual spending was 50, 36 and 42% for the periods 2001–03, 2003–09 and 2001–09, respectively.

4.4 Budget execution rates

Table 1.2 and Figure 4.1 suggest deviations between budget allocation and actual expenditure in the agriculture sector which could be indicative of a discrepancy between planned activities and their actual execution. In particular, Figure 4.1 suggests that even in cases where the budget allocated to agriculture constituted more than 10% of the total budget, spending failed to reach 10% of total spending. This raises the question of how much of the allocated funds were actually spent, namely the budget execution rates. Trends in budget execution rates, measured as the percentage difference between allocated funds and actual spending are shown in Figure 4.2. Given that not all approved funds are released on time for spending, approved funds cannot be entirely indicative of execution rates. On average, actual agricultural spending fell below the approved budget. An average of close to 77.5% of allocated funds was spent. This implies that the approved budget allocated to agriculture was not being fully absorbed. Specifically, the budgets approved in 2003, 2004 and 2007 were not fully executed or spent.

Notably, 2002 and 2005 had execution rates that were above 100%.[18] In these years, actual spending exceeded the approved budget. This could be due to the injection of additional funds into the agriculture sector by the government through supplemental budgets to address drought and floods. Mozambique was hit by severe floods in 2000 and 2001 and this prompted the government to introduce humanitarian agriculture-relief efforts. In addition, this discrepancy could be due to a lag between the year the budget was approved and the year the funds were actually spent. This is particularly relevant for budgets from external sources where donors disburse funds at the end of the year that are only intended to be spent the following year.

[18] Execution rates of about 110.5 and 121.1% were recorded for 2002 and 2005, respectively.

Several factors could have influenced the observed deviations between budget allocations and actual expenditure. These include, among others, delays in disbursement of funds from development partners (DPs), delays in release of funds by the Ministry of Finance, possibly due to delays in accounting for previously disbursed funds to the sector, government's inability to capture and report spending on some projects, and budget reallocation within the sector.

Unfortunately, data limitations did not permit an assessment in this report of the extent to which funds that were actually released were executed.

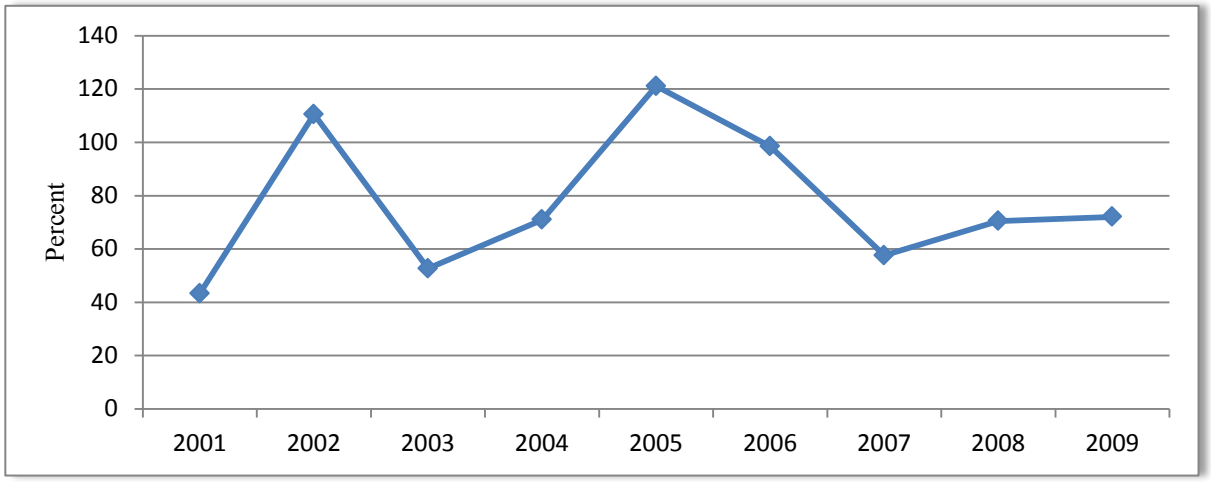


Figure 1.4. Budget execution rates in the agriculture sector, 2001-09.

Sources: Authors' calculations, based on MF (2001–07) and MINAG/DAF (2008–09).

4.5 Structure of the agricultural budget

Figure 4.3 indicates the structure of the agricultural budget by providing the relative weight and trends of recurrent versus investment/development allocation in agriculture. The figure suggests that, consistent with the objectives of PROAGRI II, the bulk of the allocation to agriculture is set aside for investment purposes. Throughout the period under analysis, the share of the total agricultural budget allocated to investment remained above 80%, averaging around 83.8%. Focusing on the post-Maputo Declaration period (2003–09) shows that the annual average allocation for investment purposes was around 84.2% of the total allocation to agriculture while the annual average allocation for recurrent expenditure was 15.7% in the post-Maputo Declaration period and 16.2% for the entire period.

Although the portion of the agricultural budget allocated to investment is higher than the portion allocated to recurrent expenditure, further computations suggest that, on average, the allocation for recurrent expenditure grew faster than the allocation for investment, with recurrent expenditure showing an average annual growth of 4.2%, compared to 3.3% for investment.

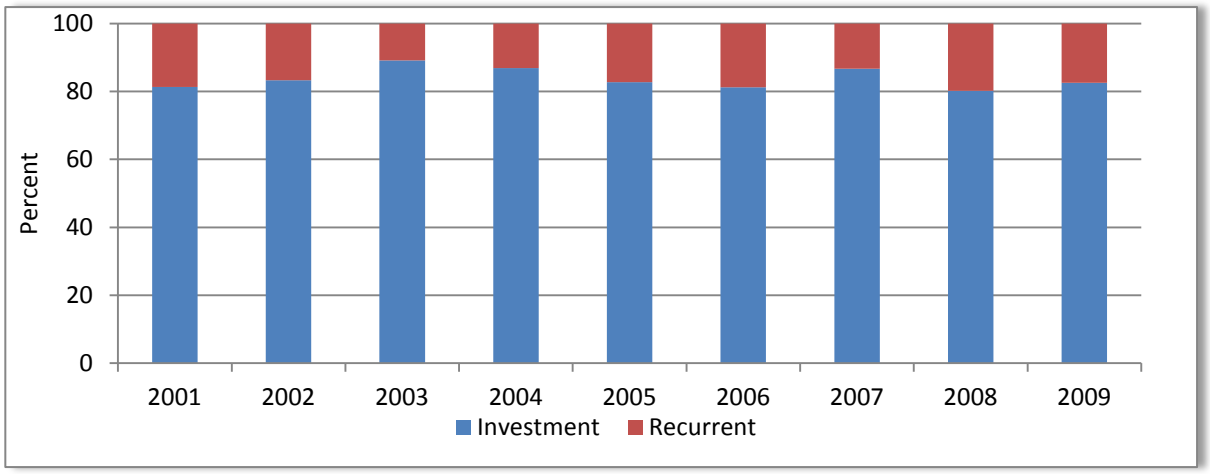


Figure 1.5: Shares of investment and recurrent allocation in total agriculture budget, 2001–09.

Sources: Authors' calculations based on MF (2001–07) and MINAG/ DAF (2008–09).

4.6 Agriculture budget allocation by subsector

Figure 4.4 illustrates the trends in budget allocation to agriculture by subsector, focusing on the Ministry of Agriculture (under which fall the subsectors of crops, livestock and forestry) and the Ministry of Fisheries.

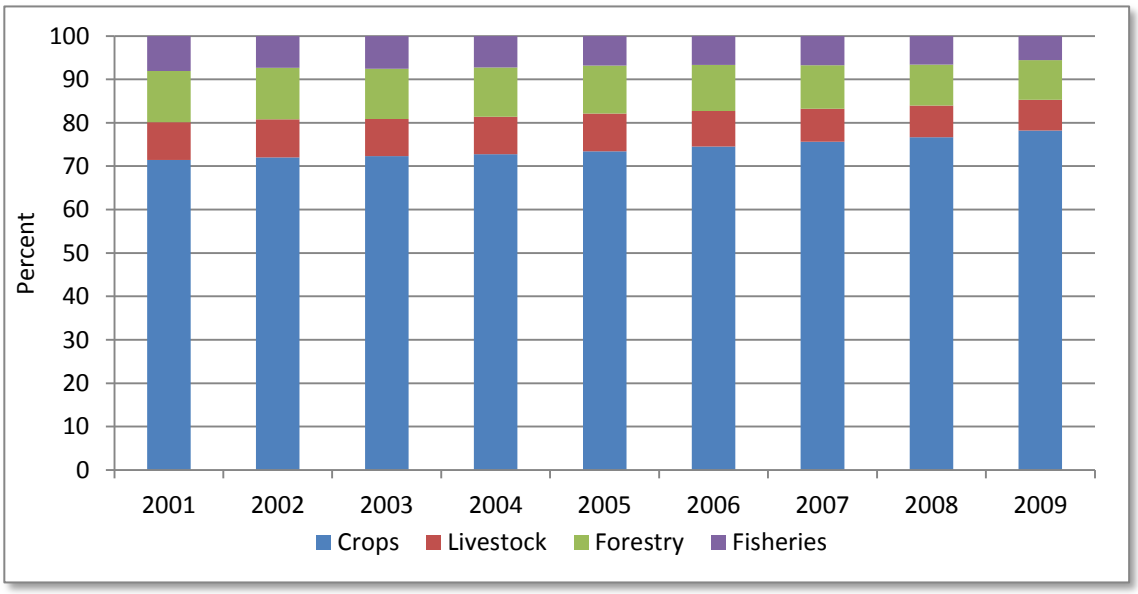


Figure 1.6. Shares of subsector allocation in total agriculture allocation, 2001–09.

Sources: Authors' calculations based on MF (2001–07) and MINAG/DAF (2008–09).

The figure indicates that the Ministry of Agriculture gets the bigger share of the total budget allocation to agriculture. This could simply be because the ministry covers a wider set of subsectors which would imply higher levels of financial responsibilities than the Ministry of Fisheries. The average allocation to crops, livestock and forestry was MZM2,338 million for

the 2003–09 period while it was MZM2,047 million for the whole period (2001–09). A positive 3.2% annual average growth in the allocation to crops, livestock and forestry was recorded between 2001 and 2009. The fisheries subsector experienced a marginally higher growth of 4.6%.

Table 1.3 shows the level and structure of total expenditure in the agriculture sector by subsector for the years 2008 and 2009 for which data are available. Further disaggregation by investment and recurrent purposes is also provided. The table shows that investment spending constitutes the greater share of total agricultural expenditure coming close to 75% in 2008 and 77% in 2009.

Table 1.3. Real agricultural expenditure by subsector, 2008 and 2009 (MZM million).

	2008		
Subsector	Investment	Recurrent	Total
Crops, livestock and forestry	998.93	287.74	1,286.67
Fisheries	144.27	93.72	237.99
Total expenditure	1,143.20	381.46	1,524.66
	2009		
Subsector	Investment	Recurrent	Total
Crops, livestock and forestry	1,237.88	301.55	1,539.42
Fisheries	212.41	119.58	331.98
Total expenditure	1,450.29	421.12	1,871.41

Source: Authors' calculations based on MINAG/DAF (2008–09).

4.7 Composition of agricultural expenditure

To illustrate the composition of total agricultural expenditure, Table 1.4 reports the level of expenditure by MINAG by key economic classification in constant 2003 prices. The categories are expenditure on personnel emoluments (salaries), goods and services and capital expenditure.

Expenditures on services and social benefits grew the fastest at an average of 11.56% per year followed by expenditure on personnel emoluments at 9.16%. Capital expenditure experienced an average annual growth of 3.71%, the lowest growth among the four categories. Such low growth in expenditure on capital items could undermine the productive capacity of the agriculture sector in Mozambique.

In order to assess whether the government provides the goods and services that workers need to do their work, Figure 4.5 provides trends in the ratio of expenditure on goods and services and expenditure on personnel emoluments. The fact that for all years, except 2001, 2008 and 2009, the ratios are higher than unity (i.e., 1) suggests that the government does pay for operations or goods and services that MINAG workers need to execute their duties. The average ratio was 1.04, meaning that each metical of public agricultural expenditure spent on salaries (personnel emoluments) was accompanied by MZM1.04 spent on operational support (goods and services) between 2001 and 2009. During this period, the

ratio was highest in 2007 when it reached 1.46 which was close to the ratio of 1.42 recorded in 2003.

Table 1.4. Real expenditure by MINAG by key economic function, 2001–09 (MZM million).

	Personnel emoluments	Goods and services	Social benefits	Capital expenditure	Total expenditure	Share of capital expenditure in total (%)
2001	227	217	13	127	585	21.77
2002	293	320	12	256	881	29.04
2003	355	505	19	253	1,133	22.37
2004	392	423	26	147	988	14.88
2005	371	451	43	97	962	10.06
2006	407	554	53	234	1,248	18.76
2007	452	661	45	219	1,376	15.89
2008	1,303	584	79	263	2,229	11.81
2009	1,540	611	95	430	2,677	16.07
Average	593	481	43	225	1,342	17.85
Average annual growth (%/year)	9.16	4.88	11.56	3.71	6.87	

Source: MINAG/DAF 2001–2009.

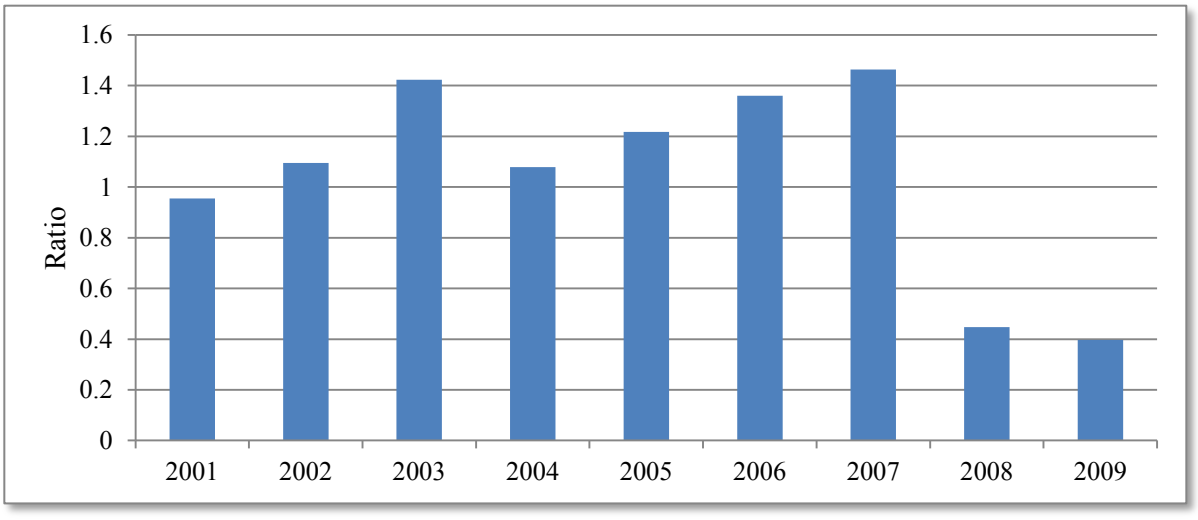


Figure 1.7. Ratio of expenditure on goods and services and on personnel emoluments, 2001–09.

Source: MINAG/DAF (2001–2009).

Figure 4.6 below presents the ratio between capital and recurrent (the sum of expenditures on personnel emoluments, goods and services and social benefits) expenditure. The figure

shows that the priority placed on capital expenditure has been declining over the years. Throughout the period from 2001 to 2009 the ratio remained below one, meaning more is spent on combined personnel emoluments, goods and services and social benefits than on capital items. This greatly undermines the sustainability of MINAG's operations and calls for more emphasis to be put on capital expenditure.

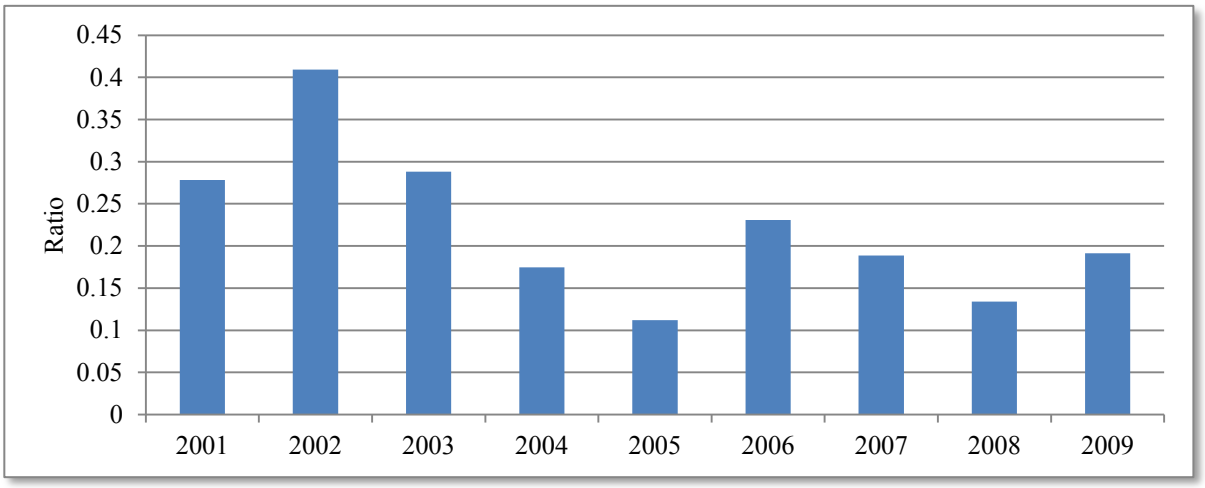


Figure 1.8. Ratio of capital and recurrent expenditures, 2001–09.

Source: MINAG/DAF 2001–2009.

4.8 Investment expenditure shares by core functions

The investment expenditure shares of each core government function by MINAG are illustrated in Figure 4.7. Besides common expenses, expenditure on institutional and production support accounts for significant shares of total investment expenditure by MINAG.

Focusing on the average share between 2001 and 2009 indicates that institutional support accounted for an average of 20% of total investment expenditure by the Ministry, followed by production support at an average of 13%. The function with the least share in total expenditure during this period was irrigation, with an average share of 1%. The relatively high shares of expenditure on institutional support can be partly attributed to the priority given to institution-building by strategies such as PROAGRI I. Another reason could be that the provincial level had challenges in classifying expenditure during the first stages of using the internal accounting system in MINAG. As a result, many were classified under institutional support.

In terms of average annual growth rates, further computations reveal investment expenditures in production to have grown the fastest between 2001 and 2009, at an average of around 20% per year (see Figure 4.8). This is followed by growth in livestock services at 19% per year.

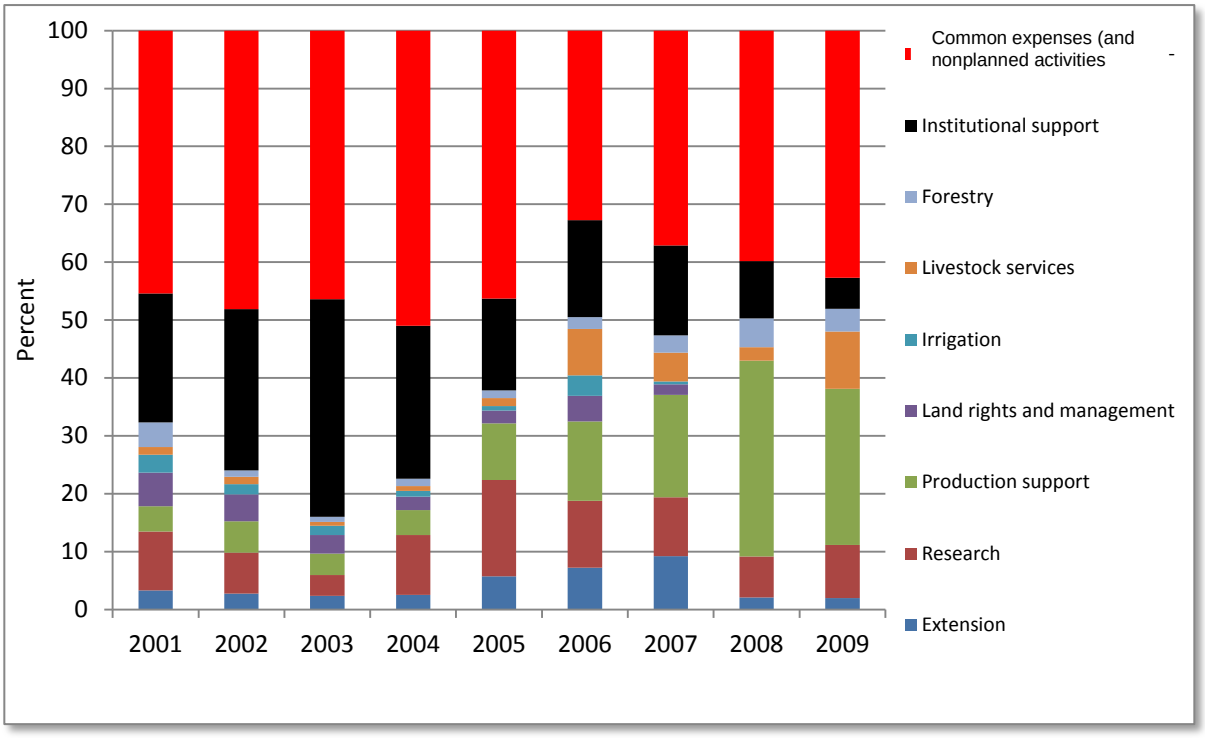


Figure 1.9. Investment expenditure shares in total agricultural expenditure by core functions of government, 2001-09.

Source: Authors' calculations based on MINAG/DAF 2001–2009.

In fact, Figure 4.8 suggests that although expenditure on institutional support accounted for the biggest share of expenditure by MINAG, actual expenditure has been declining, on average, between 2001 and 2009. Expenditure on institutional support has decreased at an average of 0.6% per year. Expenditure on irrigation has experienced the biggest decline of 1.4% per year.

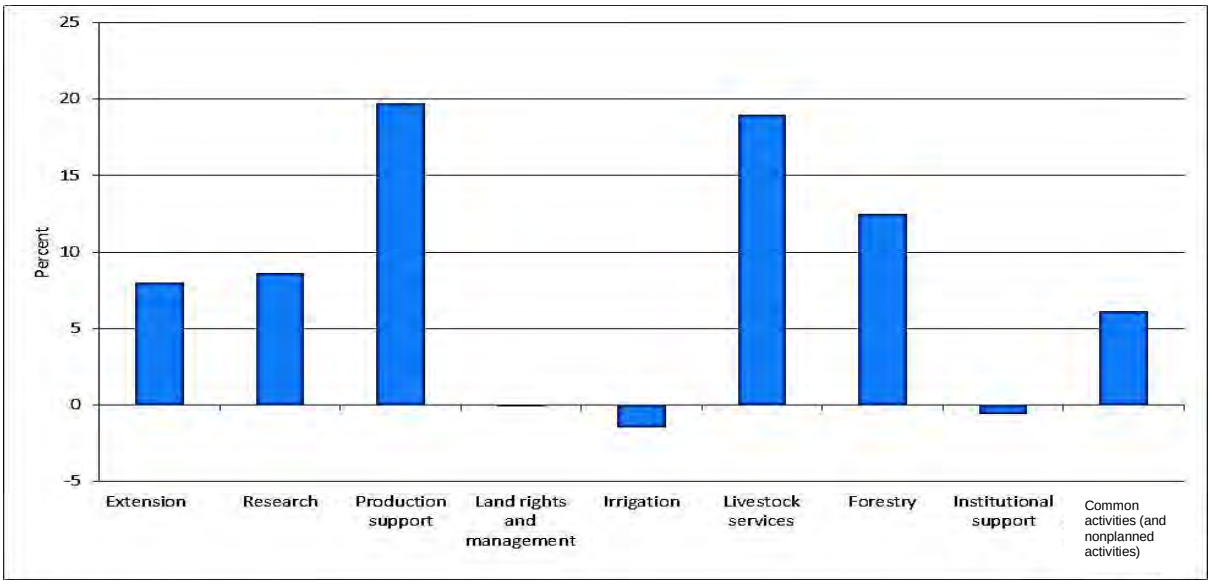


Figure 1.10. Annual average growth in the share of investment expenditure by core government functions, 2001–09 (% per year).

Source: Authors' calculations based on MINAG/ DAF (2001–2009).

4.9 Decentralization of budget allocation

As an indicator of decentralization in Mozambique, Figure 4.9 presents the distribution of the budget by MINAG between the central and provincial levels. On average, the central MINAG budget accounted for 68% of total expenditure by the Ministry between 2001 and 2009. The level of decentralization increased between 2007 and 2008.

However, as shown in Figure 4.10 budget execution rates are higher at provincial level, probably because the bulk of agricultural activities take place in the provinces. This underscores the need to decentralize further as this could facilitate improved budget execution. In cases of more than 100% execution rates in 2005 and 2006, this could be due to additional expenditures that were not registered in the original budgets.

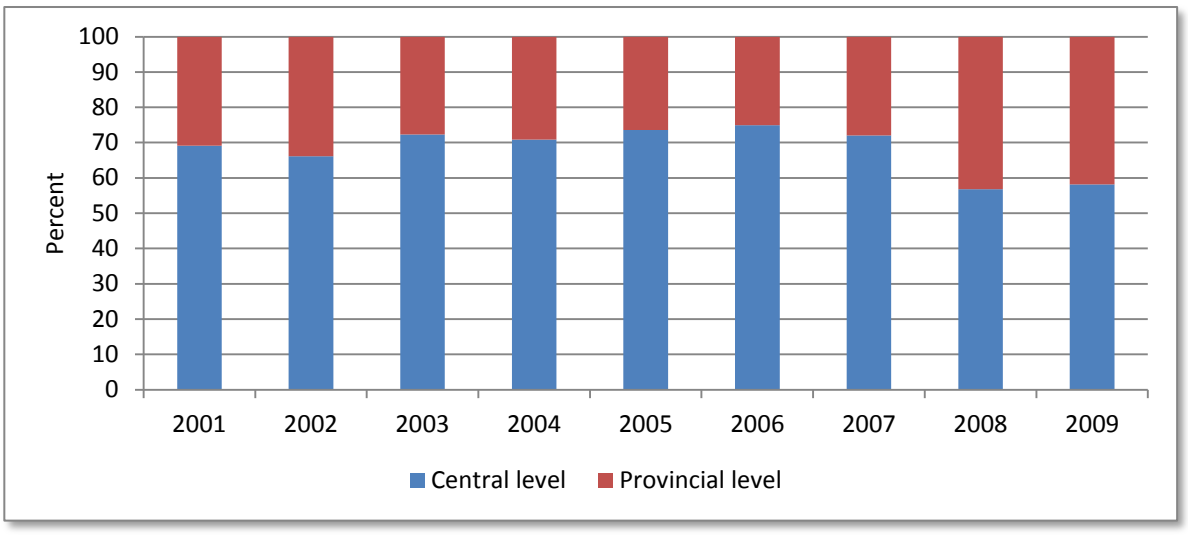


Figure 1.11. Budget decentralisation by MINAG, 2001-2009.

Source: Authors' calculations based on MINAG/ DAF (2001–2009).

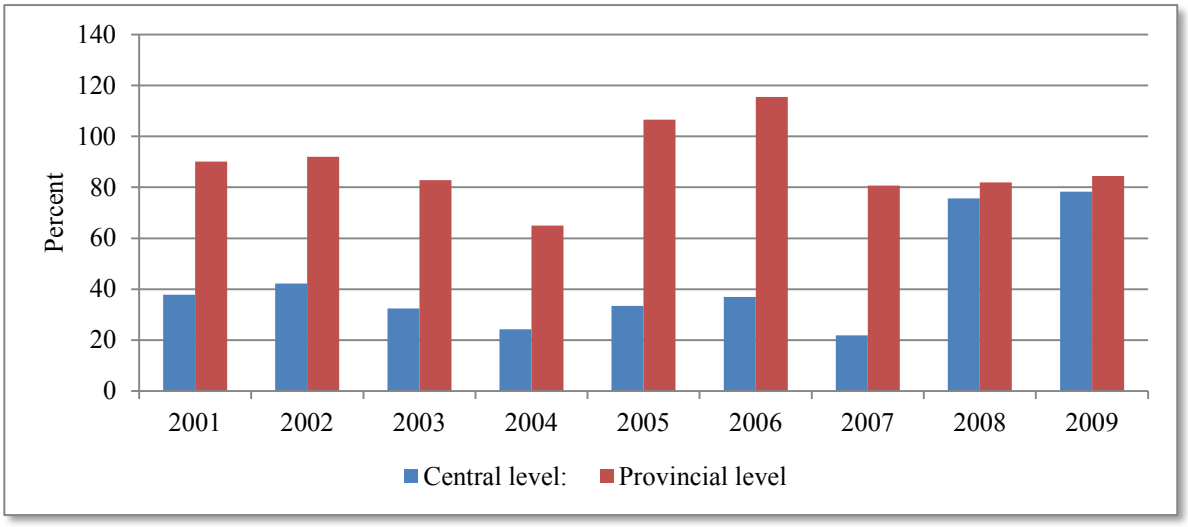


Figure 1.12. Budget execution rates of MINAG at central and provincial levels, 2001–09.

Source: MINAG/DAF 2001–2009.

4.10 Share of internal and external sources in investment funds to agriculture

To establish the relative weight between internal and external sources of investment funds allocated to agriculture, Figure 4.11 indicates the contribution of each source to total agricultural allocation and expenditure for the years 2008 and 2009 for which data were available.

Figure 4.11a. Investment allocation.

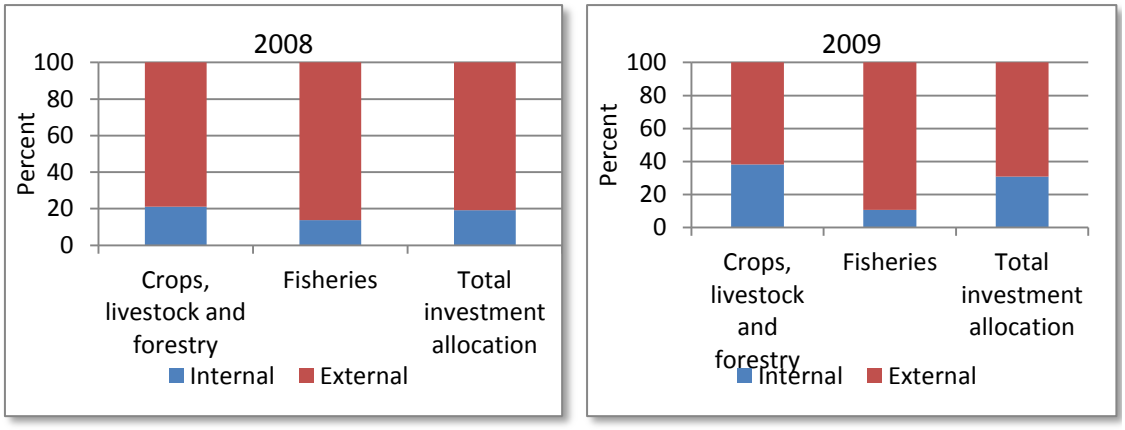


Figure 4.11b. Investment expenditure.

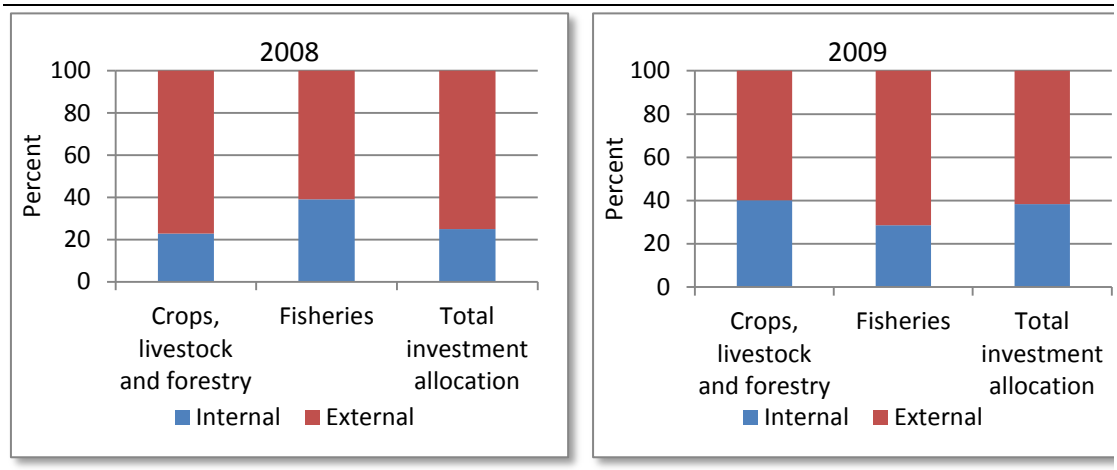


Figure 1.13. Shares of subsector investment expenditure, 2008 and 2009.

Source: Authors' calculations based on MINAG/DAF 2008–2009.

In both years, external sources dominated investment allocation and expenditure in agriculture (see Figure 4.11). Investment allocation from external sources accounted for close to 81 and 69% of the total in 2008 and 2009, respectively. However, in terms of actual spending, the proportion was lower, although it still accounted for the bulk of agricultural expenditures. External sources contributed around 75 and 62% to total expenditure in 2008 and 2009, respectively. In terms of subsector sources of funding, investment funding to the fisheries subsector comes mainly from external sources, with external funds accounting for around 86 and 89% in 2008 and 2009, respectively. Similar to the trend at sector level, the proportion of actual spending from external sources is lower than the proportion of actual spending of budget allocations, accounting for 61 and 71%, respectively, of total agricultural spending in the two years. Figure 4.11 suggests that external funding to the crops, livestock and forestry subsectors declined from 78 to 62% in the case of allocation and 77 to 60% in the case of expenditure.

To explore the possibility of delays in releasing funds by donors/external sources accounting for lower budget execution rates for external funds, Figure 4.12 presents the budget execution rates by source of funding for the years 2008 and 2009. The figure suggests that budget execution rates are generally higher for internal funds than for external ones, lending support to the contention that delays in releasing funds by donors/external sources derail budget execution rates. In 2008, the execution rate for internal funds was around 85% while the corresponding rate for external funds was 61%. A fairly similar pattern was shown in 2009, whereby the execution rate for internal funds was close to 84 and 60% for external funds. Furthermore, Figure 4.12 indicates that execution rates for internal funds are particularly higher in the fisheries subsector (96 and 100% in 2008 and 2009, respectively) than for external funds (23 and 29% in 2008 and 2009, respectively). In the crops, livestock and forestry subsectors, on the other hand, execution rates for internal funds were 83% in 2008 and 82% in 2009, while the corresponding rates were 74 and 76% for external funds.

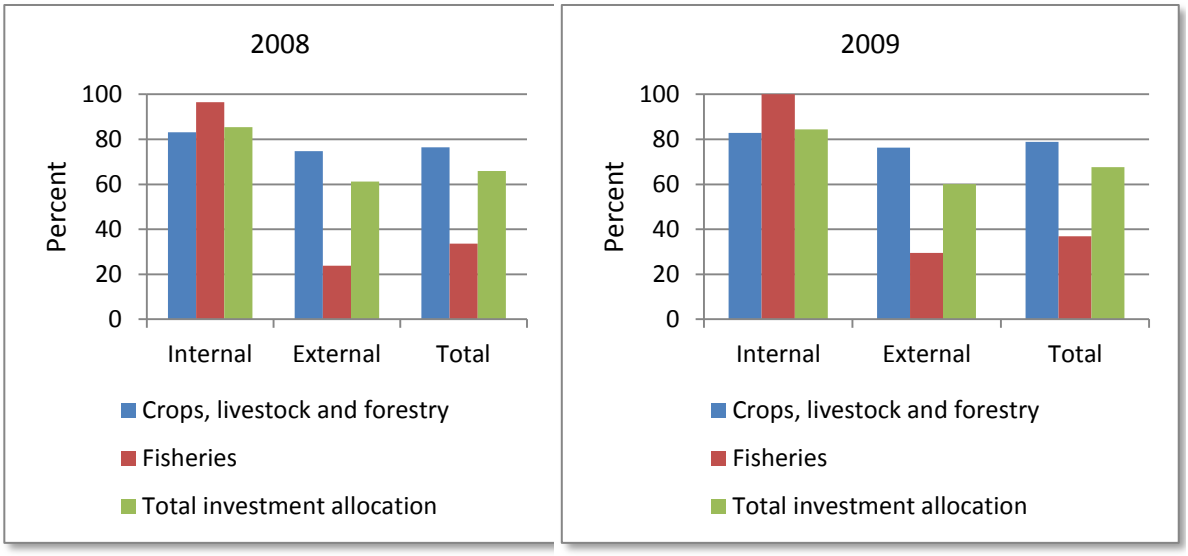


Figure 1.14. Budget execution rates in the agriculture sector by source of funding, 2008 and 2009.

Source: Author's calculations based on MF/National Accounts 2001–2007 and MINAG/DAF 2008–2009.

Chapter 5. Agricultural Production and Crop Intensification Trends

This chapter assesses the performance of the agriculture sector in Mozambique by examining the composition of agricultural output (GDP), agricultural GDP growth, and growth of agriculture subsectors namely crops, livestock, fisheries and forestry. In addition, the chapter assesses whether or not Mozambique is on track to achieve CAADP's 6% agricultural growth target. It also explores reasons for low agricultural productivity by examining level of technology use and access to complementary support services among smallholder farmers.

5.1 Composition of primary agricultural GDP

As mentioned already in chapter 3, the agriculture sector contributes about 25% of total GDP in the Mozambican economy. Primary agriculture sector GDP comprises output from crops, livestock, forestry and fisheries subsectors. The contribution of various agriculture subsectors to total agricultural GDP is illustrated in Figure 5.1. The crops subsector drives the trends in primary agricultural GDP. The contribution of crop production to total agricultural GDP ranged from 71% in 2001 to 78.2% in 2009. The crops subsector's contribution has been on a consistent upward trend since 2001. The annual average contribution rose from 71.9 to 74.8% between the 2001–03 and 2003–09 periods. This is not surprising considering that crop production is the economic occupation of the majority of Mozambicans. The contribution of the other subsectors declined, on average, from 8.7 to 7.1% for livestock, 11.8 to 9.1% for forestry, and 8.1 to 5.6% for fisheries. The decline in livestock can be attributed to the mortality due to livestock diseases (for example, Newcastle disease in indigenous chicken) and farmers using tradition livestock husbandry practices. The observed drop in fisheries output is associated with the decline in prawn harvesting as a result of fishing controls imposed by government particularly since 2006.

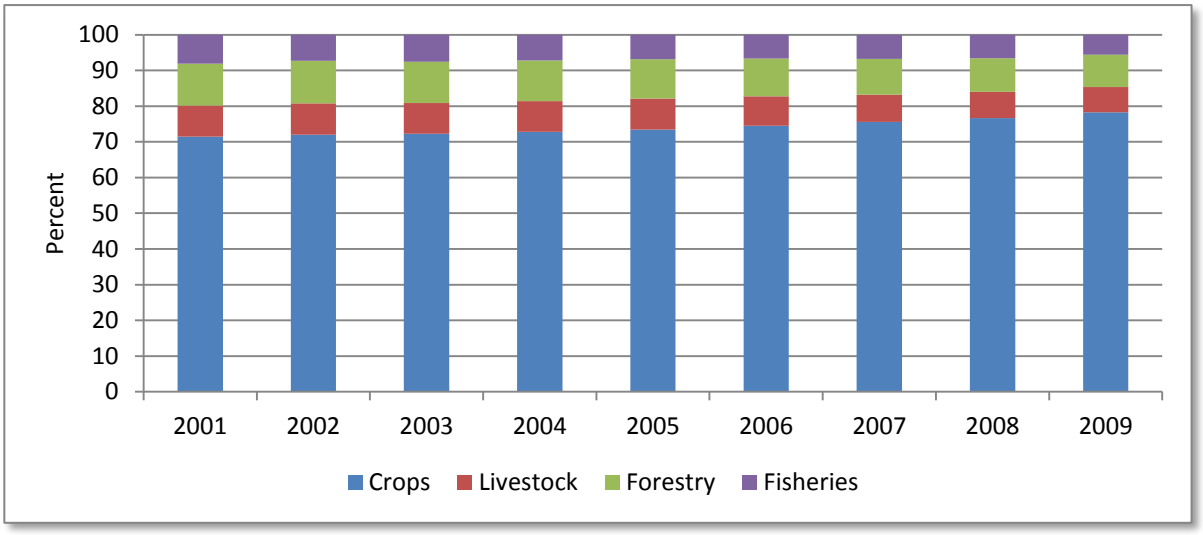


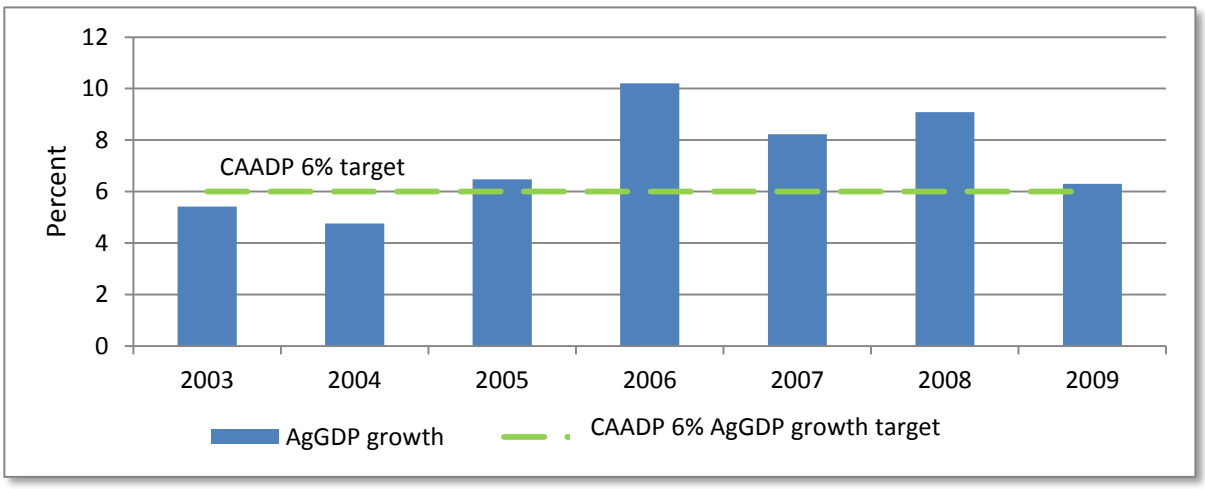
Figure 1.15. Contribution of each subsector to total agricultural output, 2001–09.

Source: INE(2010.

5.2 Agricultural GDP growth

The annual change is used to assess the progress Mozambique has made towards achieving the CAADP 6% agricultural growth target. This assessment is done first for the whole agriculture sector as shown in Figure 5.2 and by each agriculture subsector in Figure 5.3.

Figure 5.2 represents year-to-year changes in agricultural GDP. Positive annual changes in agricultural GDP were experienced across all years between 2002 and 2009. The lowest year-to-year change in agricultural output was recorded in 2003 (4.76%) while the highest level was in 2002 (11.2%). With regard to the CAADP 6% growth target, Mozambique is shown to have reached this target in 2002 and every year from 2005 to 2009.[19]



[19] It is important to point out that year-to-year changes in output are a crude measure of growth.

Figure 1.16. Agricultural output and the CAADP 6% growth target, 2003–09.

Source: Authors' calculations based on data from the INE 2011.

In terms of the agriculture subsector growth trends, Figure 5.3 suggests that the crops subsector has been growing, particularly in 2004 and from 2006 to 2009. Interestingly, fisheries grew the fastest in 2003, growing at a rate of close to 9% between 2002 and 2003. However, in 2009 the subsector experienced a negative growth of around 10%. Livestock, on the other hand, had the highest growth rate in 2005, growing at a rate of 7.4% which was marginally higher than the growth in the crops subsector. With respect to the CAADP 6% target, Figure 5.3 indicates that the crops subsector reached this from 2005 to 2009, livestock only in 2005, fisheries in 2003 and from 2006 to 2008. Forestry, however, never attained the 6% growth in the period under analysis.

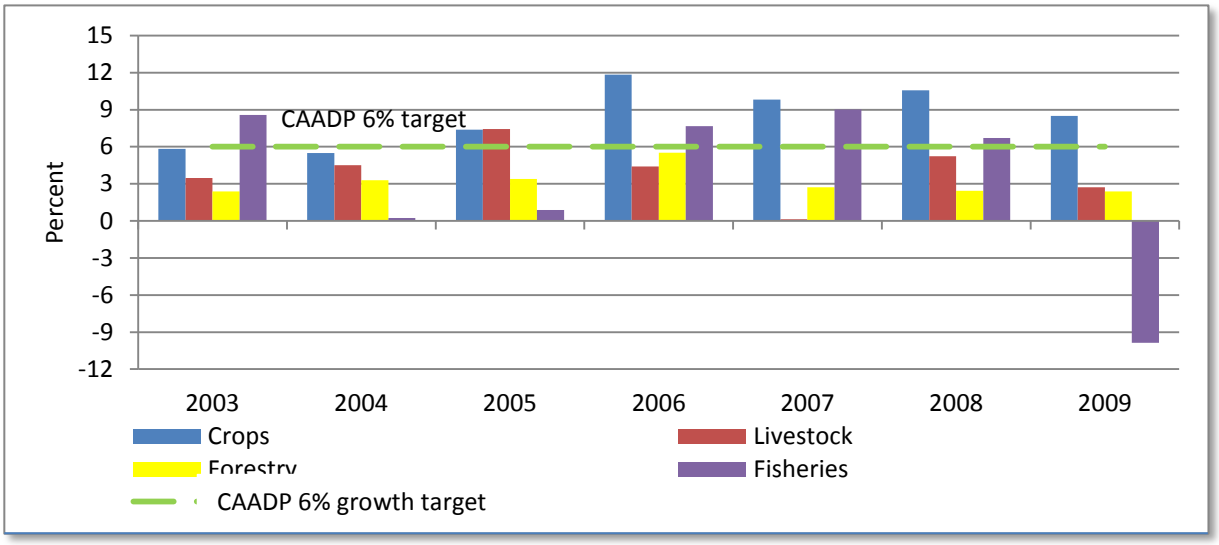


Figure 1.17. Percent annual change in agricultural output by subsector and CAADP 6% growth target, 2003-09.

Source: Authors' calculations based on data from the INE 2011.

5.3 Relative economic importance of selected crops

Figure 5.4 shows the average contribution of different crops to the total value of crop output. On average, cassava contributes 40% of the value of crop output in Mozambique. Although it is the single-most widely produced crop in Mozambique, it is trending downward in relation to export crops which are the second- most important category.[20]

[20] Export crops include cotton, cashew nut, sugarcane, tea, tobacco, citrus and coconut.

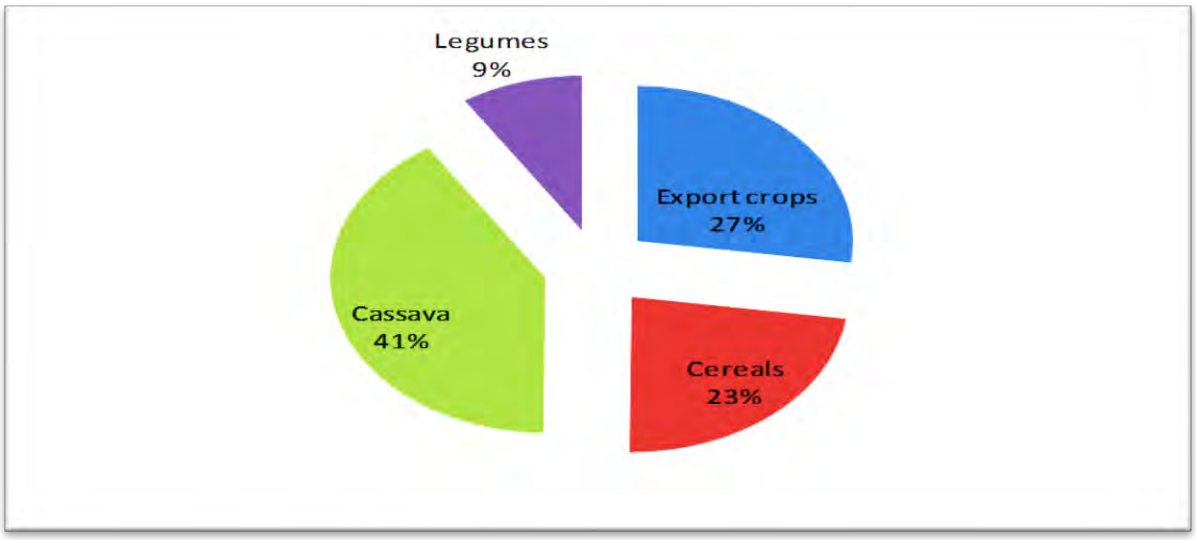


Figure 1.18. Average annual contribution of various categories of crops to total value of crop output, 2000–08.

Source: TIA and EWS data.

On average, export crops contributed 27% of the annual value of crop output. The cereals group[21] contributed 23% to the total annual value of crop output. Legumes, contributed 9% to the total annual value of crop output. Legumes include crops such as groundnuts, beans and cowpea.

Figure 5.5 shows the trends in the contribution of various crop categories to total crop value. The role of legumes in Mozambique's cropping systems has not changed with their contribution remaining fairly constant in the review period. The contribution of cereals to the total value of crop output has shown a downward trend declining from a high of 26% in 2000 to a low of 16% in 2005 before rising to 22% in 2008. It appears that there were relatively few interventions targeting cereal production during this period. In addition, farmers may be shifting resources away from cereals and cassava towards cash crops. Maize marketing has inherent uncertainties and farmers appear set to continue producing maize primarily for own consumption.

[21] Cereals cover maize, rice and sorghum.

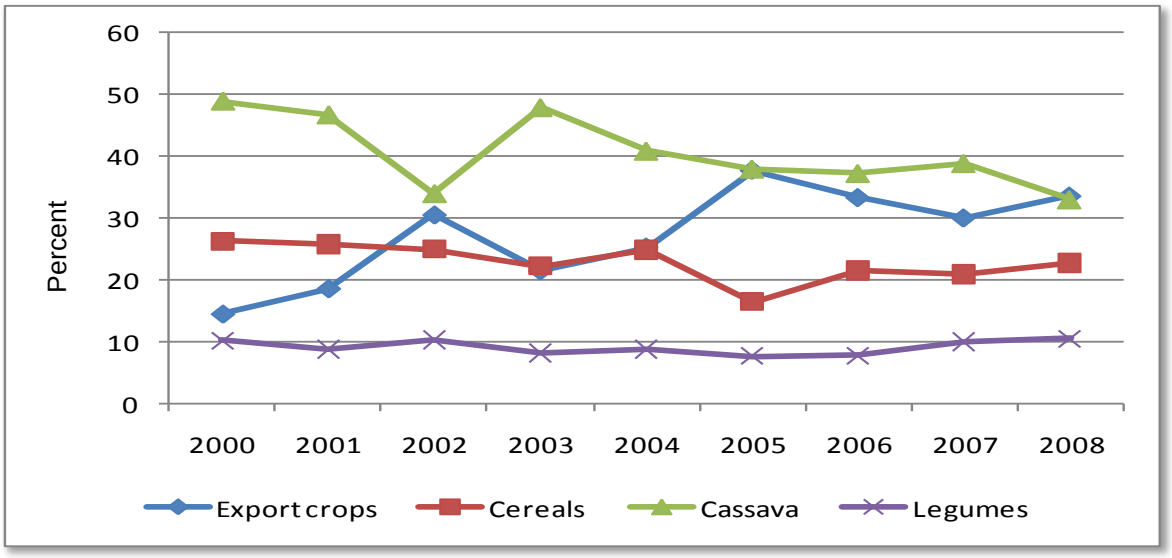


Figure 1.19. Trends in the contribution of various crop categories to total crop value, 2000–08.

Source: TIA and EWS data.

The contribution of export crops to total crop output showed an aggressive upward trend. In 2000, export crops contributed only 14% to total crop output, but this share rose to 37% in 2005 before declining to 30% in 2008. This upward trend was spurred by increases in sugar and tobacco production between 2000 and 2005. Given lucrative markets and attractive producer prices, there was considerable investment by the private sector in sugar and tobacco production. Farmers were aware that they could sell all the tobacco they produced and responded positively to the low risk of not finding buyers. The rehabilitation of old irrigation schemes brought over 20,000 ha under irrigated production. This investment benefited producers of crops such as sugarcane.

The surprising trend is that the dominant crop in Mozambique, cassava, is on the wane. In 2000, cassava contributed 48% to total crop value but by 2008 its contribution had declined to 32%. There are several explanations for the decline in cassava in economic importance. The outbreak of cassava mosaic virus in the late 1990s had a severe impact on production. Besides, industrialization of cassava has not taken off. The incomplete development of the cassava value chain partly explains the declining fortunes of cassava production.

5.4 Comparison of TIA and EWS production estimates

Figure 5.6 compares data on crop production from the TIA and the EWS and shows that estimates from these surveys do not match. Results from the EWS are consistently higher than the TIA results for both Cassava (Figure 5.6a) and maize (Figure 5.6b). From 2002 to 2006, the estimates for cassava were moving in harmony (Figure 5.6a). Since 2006 the estimates have ceased moving with one accord. Estimates of maize and cassava production by TIA trended downward from 2006, yet EWS output estimates continued with an upward trend for the same period.

Figure 5.6a. Cassava production trends.

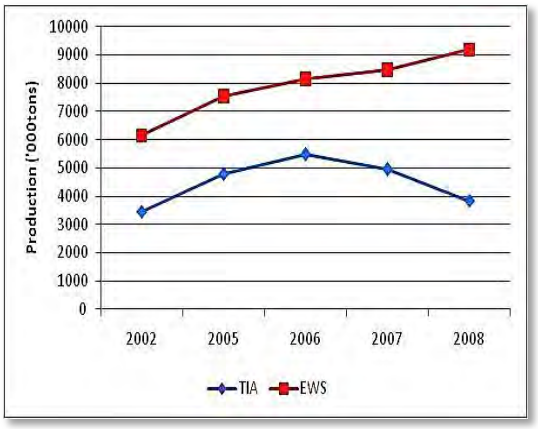


Figure 5.6b. Maize production trends.

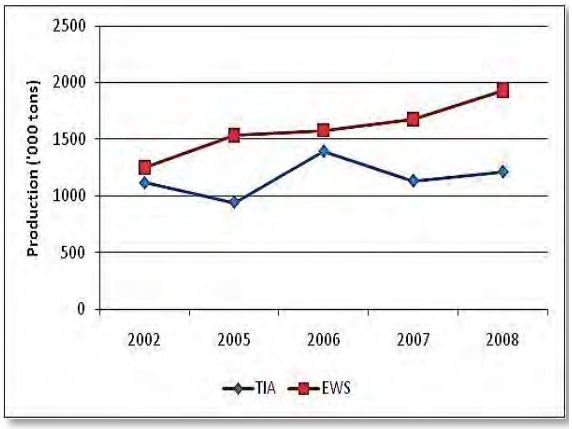


Figure 1.20. Comparison of the EWS and TIA survey estimates of maize and cassava production, 2002–08.

Source: TIA and EWS 2002–08.

This disharmony between the estimates is a source of concern. MINAG uses EWS production data because they are readily available and come on time. However, other stakeholders, including the Ministry of Planning and Development use the TIA data in poverty assessments. The methods of estimating production in the EWS and TIA surveys need to be harmonized to reduce disagreements in the assessment of performance results. Deriving recommendations using data that are not comparable can lead to policy inconsistency between these ministries.

Production growth trends estimated from these two data sets are consistent but it is the size of positive growth rates that differ. Table 5.1 shows estimates of production growth for EWS and TIA data. EWS estimates reflect larger growth for the selected crops than TIA estimates. This discrepancy needs to be resolved in order to harmonize indicators of agricultural performance.

Table 1.5. Average annual growth rates for production of selected crops, TIA and EWS 2002–08.

Crops	TIA	EWS
Maize	1.55	4.19
Sorghum	0.84	1.92
Paddy rice	1.53	2.74
Beans	4.10	3.49
Groundnuts	0.74	2.73
Cassava	1.09	3.98

Source: Authors' calculations, based on TIA and EWS data 2002–08.

5.5 Trends in area planted and physical output of food crops

The total area planted with major crops[22] has increased from 3.4 Mha in 2000 reaching 4.8 Mha in 2008. This expansion represents an average growth rate of 1.8% per year. The average cultivated area per farmer was 1.3 ha in 2001 and 1.6 ha in 2008. This indicates that there was a small increase in area per farmer. This can be attributed to most farmers using hand-hoes for land preparation and weeding.

Data for 2002, 2005, 2006, 2007 and 2008 are from TIA and the rest (2000, 2001, 2003, and 2004) are from the EWS. Other sources have quoted the EWS data as FAO data but they are basically EWS data. Given that we are dealing with shares of area planted within the same year, using both data sets to complete the series was not a real issue. The share is within the same season and within the same data year. Since shares are simply percentages, it was feasible to complete the series (2000–08) using both data sets to arrive at an average for the period observed.

Among the major crops, maize is dominant in terms of the area planted. On average, it took up 38% of the area planted and is produced widely across Mozambique. Table 1.6 shows that the share of area planted with maize was consistently the largest over the period 2000–2008. However, the actual area planted with maize increased from 1.17 to 1.96 Mha during this period. This expansion represented an average growth rate of 2.3% per year (see Figure 5.7). Despite this growth in the area planted, output barely increased by 0.6% per year.

Table 1.6. The share of area planted to major crops by smallholder farmers, 2000–08 (%).

Year	Maize	Rice	Sorghum	Groundnuts	Cassava	Beans
2000	35	5	14	8	28	11
2001	36	5	14	8	27	11
2002	42	9	9	9	19	12
2003	36	5	14	8	27	11
2004	36	5	14	8	27	11
2005	39	7	8	9	23	15
2006	39	8	9	8	20	16
2007	37	8	8	9	22	17
2008	41	6	8	10	20	15
Average	38	6	11	8	24	13

Source: Authors' calculations, based on TIA and EWS data (2000–08).

[22] The crops considered here include maize, rice, sorghum, groundnuts, cassava and various varieties of beans.

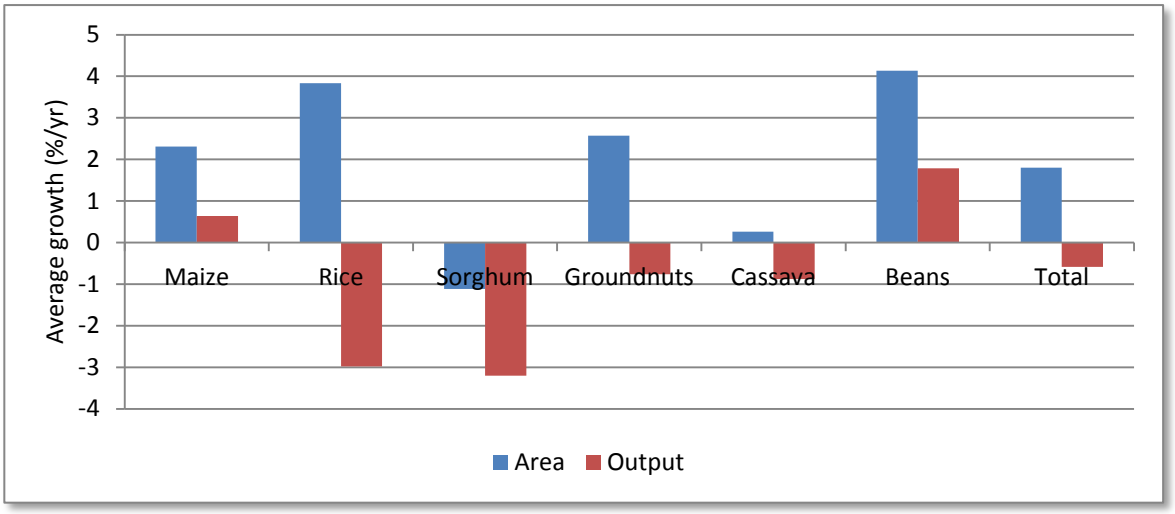


Figure 1.21. Average annual growth in physical output of selected food crops, 2000–08 (%/year).

Source: Authors' calculations, based on TIA and EWS data.

Maize is followed by cassava in terms of the area planted although its share of the area planted has decreased from a peak of 28% in 2000 to 20% in 2008. Despite the loss in relative importance, the area planted with cassava remained constant at 0.95 Mha. However, this did not stop an 0.8% per year decline in physical output.

Beans[23] play an important role in the cropping systems of smallholder farmers and took up an average of 13% of the planted area. Of all the major crops produced by smallholder farmers, the area planted with beans increased the most, by 4.1% per year (see Figure 5.7). The output of beans, however, increased at a slower rate of 1.8% per year.

Sorghum is an important cereal for farm households and took up 11% of the total area planted, on average. Its share of the area planted has decreased from a peak of 14% in 2000 to only 8% in 2008. The actual area planted with sorghum has declined at 1.1% per year. Sorghum output declined even faster at a rate of 3.2% per year.

Groundnuts are an important grain legume produced widely across Mozambique. On average, groundnuts took up 8% of the area planted, which remained fairly constant during the period under review. Despite an increase of 2.5% per year in the area planted, output has declined at 0.8% per year signifying a significant loss of productivity. Threats to productivity include the rosette virus. Furthermore, industrial interest in groundnuts has been weakened by high levels of aflatoxin which rules out any potential for exports.

Rice is also an important cereal that is produced and took up 6% of the planted area. Its share of the area planted has remained generally constant with seasonal fluctuations. However, the actual area planted has increased tremendously at 3.8% per year, but output has decreased at 3% per year. Clearly, this indicates declining yield or productivity of rice.

[23] Beans include mungbean, common beans, pigeon beans and cowpea.

Overall, the increase in the area planted has not led to any increase in output. This result points to serious challenges in productivity, which has actually declined, although the expansion in the area planted has kept output largely the same.

Smallholder farmers are not expanding production of sorghum and cassava. These crops have poorly developed value chains and there is no industrial demand for them in Mozambique despite industrial utilization of cassava and sorghum in the region. Production is primarily for home consumption and it is no surprise that production has not expanded. Instead, farmers are expanding production of crops with well-developed markets, such as rice, groundnuts and beans.

Prior to 2005, the International Institute of Tropical Agriculture (IITA) used to disseminate disease-resistant cassava planting material extensively. This project closed in 2005 and the level of effort put into improving the genetic material of planted cassava has declined. While cassava is a versatile crop that withstands seasonal weather changes, it is adversely affected by brown streak disease and the mosaic virus.

Although marketed output would give a good picture of the relative market importance of agricultural crops, it is not discussed here due to scarcity of data. The trends in farm area per farmer are also not addressed due to lack of data.

5.6 Fisheries output

Fishing is an important agricultural activity in Mozambique and contributes a significant share to total agricultural output. Fishing is organized into three categories: industrial and semi-industrial fishing, craft fishing and aquaculture. Industrial fishing is done mainly in deep-sea waters and several products are harvested including crustaceans,[24] deep-sea fish and tuna. There is also some freshwater industrial fishing harvesting sardines.[25] Artisanal fishing is done closer to shore, harvesting fish, prawns and sharks. The main product for aquaculture is prawns but other fish are also produced. On average, 47% of fish output by value comes from crustaceans, 48% from sea fish and 5% from sardines. The bulk of fishing activities in Mozambique are conducted on the sea despite the presence of extensive bodies of inland water. Figure 5.8 shows the trends in the contribution of various fish categories to the total fish output.

The trends reflect the declining contribution of crustaceans to the fishing industry. In 2002, prawns and other crustaceans contributed 80% of the output. In 2008, this had declined to about 25%. Sea fish, on the other hand, has increased its contribution from a low of 10% in 2002 to over 70% of output in 2007.

[24] The main product is prawns but crayfish, lobsters and crab are also harvested.
[25] These are commonly known as kapenta and are industrially harvested from the freshwaters of Lake Cabora Basa, and Lake Nyasa.

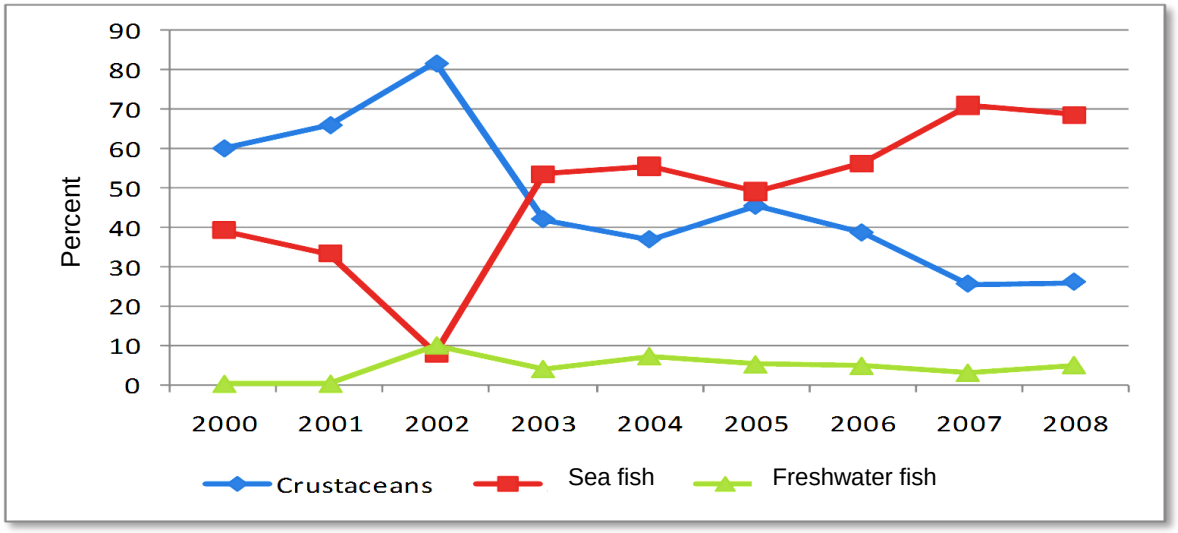


Figure 1.22. Trends in the contribution of various categories of fish products to total fisheries output, 2000–08.

Source: Authors' calculations, based on data from MP 2000–08.

Industrial fishing in inland freshwaters is a relatively minor activity. The contribution of freshwater fishing has not increased much during the period under review. Table 5.3 shows the average annual growth in physical output of the three categories of fish products for two distinct time periods, 2000–04 and 2005–08. Between 2000 and 2004, a tremendous growth was observed for kapenta (40.8% per year) and sea fish (13.5% per year). The harvest of prawns and lobsters was sluggish during this period because of fishing controls imposed by government and low prices in the international markets.

Table 1.7. Average annual growth in physical output of selected fish products, 2000–08 (%/year).

	Period	
Product category	2000–04	2005–08
Crustaceans	2.3	-7.6
Sea fish	13.5	6.8
Freshwater fish	40.8	-0.8

Source: Authors' calculations, based on MP (2000–08).

Between 2005 and 2008, the harvest of prawns actually declined by 7.6% per year but the harvest of sea fish continued to increase, albeit slowly (6.8% per year). Freshwater fishing levels declined slightly in the latter period.

During the period under review, the authorities have prohibited the licensing of newcomers into the prawn and lobster industry in order to sustainably manage the resource. It is no surprise, therefore, that prawns are being produced using aquaculture.

Considerable foreign direct investment in industrial fishing was observed in the early part of the period under review.[26] This additional investment explains the growth in sea fish output. However, between 2007 and 2008, industrial fishing was affected by rising fuel prices. Fuel costs are an important factor in industrial fishing activities, and rising fuel costs impact negatively on the profitability of operations.

The harvesting of freshwater sardines (kapenta) is a relatively infant industry in Mozambique. These sardines are destined for export markets in neighboring Zimbabwe. While harvesting of other freshwater species is conducted informally, statistics on this activity are not available. This tends to underestimate the role of freshwater fishing.

5.7 Livestock resources

The livestock subsector is important for Mozambique. Cattle dominate this subsector followed by goats, sheep, pigs and poultry.[27] The two main livestock-raising provinces are Maputo and Gaza. Livestock are raised in an extensive manner on natural pastures. Figure 5.9 shows the average annual growth rate of the population of cattle, goats, chickens, sheep and pigs.

Cattle: Between 2000 and 2008, the cattle population grew tremendously. Most of Mozambique's cattle are concentrated in the southern part of the country, which is free from the tsetse fly. According to Timberlake (1990), Mozambique has one of the lowest cattle population densities in the region,[28] due to endemic diseases, large areas of woodland unsuitable for cattle-rearing and the lack of an animal husbandry tradition among much of the population.

In the earlier half of the period 2000–04, cattle herds grew at 4% per year on average (see Figure 5.9). This phenomenal growth can be explained by the active implementation of a restocking program supported by the African Development Bank, the then Caisse Française, and the European Commission (EC), including Italy, among others. Through this program, improved cattle breeds were imported and artificial insemination services set up to boost breeding capacity. The program lasted 5 years. Since it ended, cattle numbers have continued to increase albeit at a slower pace of 2.5% per year.[29] Furthermore, access to veterinary services could be a challenge at a time when the service is being reorganized. Vaccination and other livestock services have been decentralized to provincial administrative centers. Some provinces are doing well but others are not investing much in livestock services. These missing links could be responsible for the decline in the growth of cattle numbers.

[26] The Japanese are among some of the new entrants in sea fishing off the shores of Mozambique.
[27] According to FAO estimates, in 2002, cattle contributed 62%, poultry 28% and sheep and goats 5% to total livestock units. Pigs contributed the balance. In terms of total meat production, in 2002, poultry provided 42%, beef 41%, pork 16% and the balance was provided by mutton and goat.
[28] Density was given as 1.77 cattle/km^2
[29] This growth rate is higher than the 2.3% achieved immediately after independence.

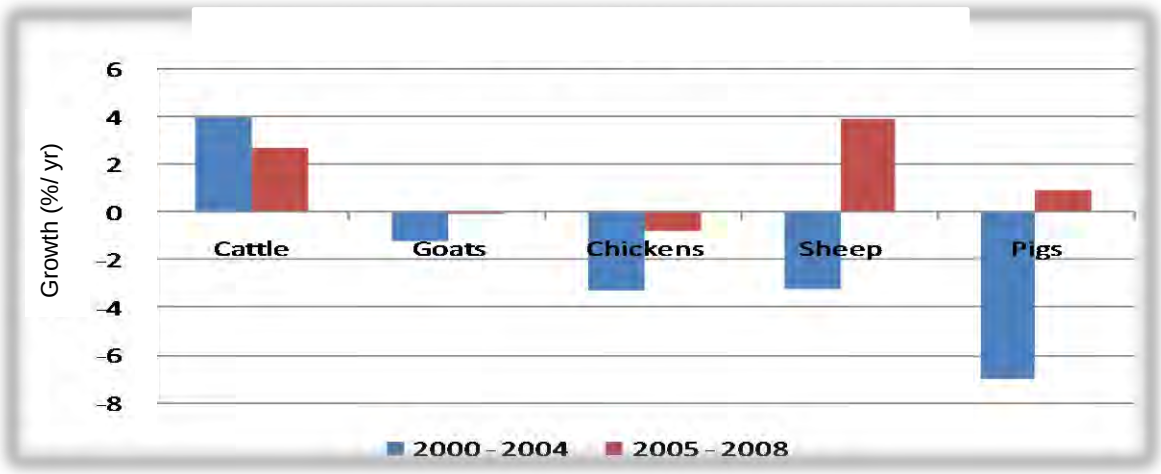


Figure 1.23. Average annual growth in population of selected livestock, 2000–08. (%/year).

Source: Authors' calculations, based on MINAG/National Directorate of Veterinary Services (DNSV), 2002-2008.

Goats and sheep: Goats and sheep represent a valuable form of livestock production for smallholder farmers in Mozambique. Small ruminants are an important source of income, especially in drier parts of the north. These animals are more evenly distributed across the country than large stock.

The number of goats has declined slightly during the period under review (see Figure 5.9). Since goats are the preferred species for culling in rural areas, their numbers have not increased much. Efforts to restock goats have been undertaken but have been limited in scope and the farmers have relied on local breeds. The productivity of herds has not improved because traditional management practices are widespread.

The number of sheep also declined at over 3% per year between 2000 and 2004. Fortunately, in the recent past, sheep numbers have increased at close to 4% per year. It is not clear what is responsible for this turnaround in the number of sheep.

Pigs: Smallholder farmers also rear pigs with the majority leaving their pigs to forage rather than keeping them in enclosures. As with small ruminants, the population of pigs declined between 2000 and 2004, in this case at an average of 7% per year. More recently, the number of pigs has begun to increase but very slowly at 1% per year.

Poultry: Smallholder farmers rear chickens, but not for commercial purposes. Commercial chicken-rearing is conducted in peri-urban areas. The number of chickens declined at more than 3% per year during the earlier part of the period under review due to increased mortality rates. Newcastle disease has devastated chicken flocks in rural Mozambique.

There is considerable room to expand livestock numbers in Mozambique. Given that meat and milk consumption exceed production, Mozambique imports meat products to meet local

demand. In 2002, 16% of poultry, 26% of milk, 12% of egg and 3% of beef consumption was met through imports (FAO 2005). Despite some pressure on pastures in some areas with a high density of cattle or goats, such as in the south of Tete and the center of Manica provinces (Libombo J., National Deputy Director, DNSV, personal communication, July 2011), overgrazing is still not a problem (Timberlake, n.d.). However, animal diseases are rife and threaten the viability of livestock-rearing. In order to reduce mortality rates and develop the livestock industry veterinary services to control these diseases are needed in producing areas.

Decentralization of services should be supported adequately so that farmers can access veterinary services. Furthermore, farmers need training not just in animal husbandry but in the business of livestock rearing. Traditional herders raise livestock for noncommercial reasons and practically all the cattle, small ruminants and poultry in the smallholder sector are raised using traditional management practices. To improve productivity in livestock herds, smallholder farmers need to adopt improved livestock management practices which can lead to increased offtake rates of meat and milk, and increased animal draft power for plowing and transportation. In addition, livestock value chains need to be fully developed so that most smallholder farmers can realize the value of their stock.

5.8 Increasing productivity through input intensification

Intensification of production in Mozambique's smallholder agriculture can only happen if technologies are widely disseminated. As discussed earlier, there have been several attempts by government to align with and implement the RISDP targets by including intensification objectives in PARPA II and PROAGRI II. Both regional and national plans recognize the need to improve productivity levels in order to achieve food and nutrition security and reduce poverty. In Mozambique, the PAPA (2008) was developed with an explicit focus on implementing an agricultural revolution in Mozambique. These intentions recognize the importance of modernizing smallholder agriculture in order to reduce rural poverty. Improved production technologies such as certified seeds, fertilizers, pesticides, animal traction, irrigation and other management practices such as conservation farming are essential to achieve productivity growth. However, improved production technologies are not adopted partly because of lack of capital and lack of knowledge, among other factors.

This section looks at trends in technology use by smallholder farmers and sheds light on the extent to which production and productivity are being enhanced through the use of modern inputs and implements. The section also explores whether past efforts by MINAG and other stakeholders to intensify smallholder production are leading to widespread diffusion of technologies and access to essential services such as extension, credit and market information. TIA data are relied on to assess the extent to which households utilize several technologies. The available data only elucidate the use in a particular season and do not give any indication of whether use has been continuous and how intensive the use of these technologies has been at the household level.

5.8.1 Technology use by smallholder farmers

Crop yields among smallholder farmers are generally low. Table 1.8 below shows average yields for selected grain crops based on farmer recall of area planted and quantity harvested. The yields are a small fraction of what can potentially be achieved under high-level

management. This discrepancy, as Table 1.8 shows, is largest for maize and smallest for sorghum.

Over much of the last ten years, yields for grain crops have not improved. A limited increase of 1.6% per year in yields was only observed for rice (see Table 1.8). For maize and sorghum, yields have stagnated. As for groundnuts, yields are decreasing.

The question these trends pose is why productivity levels in Mozambique have not improved. Why are Mozambican smallholder farmers not benefiting from global and regional improvements in crop production technology? The following discussion identifies the level of technology use by smallholder farmers in order to explain why crop productivity has remained very low.

Table 1.8. Average yields for selected grain crops, 2002–08.

Yields	Maize	Rice	Sorghum	Groundnuts
2002	0.707	0.279	0.396	0.312
2005	0.508	0.203	0.300	0.202
2006	0.839	0.273	0.497	0.262
2007	0.681	0.284	0.435	0.255
2008	0.618	0.284	0.329	0.223
Average yields	0.671	0.265	0.391	0.251
Potential yields	5.0 – 6.5	2.5 – 6.0	0.8-2.0	
Average growth (%/yr)	0.10	1.60	0.01	-1.90

Source: Authors' calculations, based on TIA survey data.

Data shown in Table 5.4 on actual yields are based strictly on TIA data. However, the potential yields indicated in the table were obtained from secondary data sources (Coughlin 2006). The growth indicators are based on a simple linear growth path. The growth factor is the slope or gradient of a straight line plot of the data. The absolute figures are sensitive to starting and end points but the indicators are consistent when comparing across crops.

Pesticides: Figure 5.10 shows trends in the proportion of households which used pesticides. Use of pesticides has hovered just above 5% during the period under review. Pesticide use in Mozambique is limited to cotton and cashew producers. For cotton, distribution of pesticides to farmers is done by outgrower companies. Cashew growers use pesticides in fumigation. Access to these fumigants is through the National Institute of Cashew (INCAJU). Non-cotton producers are less likely to use pesticides as access is limited. Uaiene et al. (2009), report that 56% of cotton growers used pesticides in the 2001/02 production season but only 4% of non-cotton growers used pesticides in the same season.

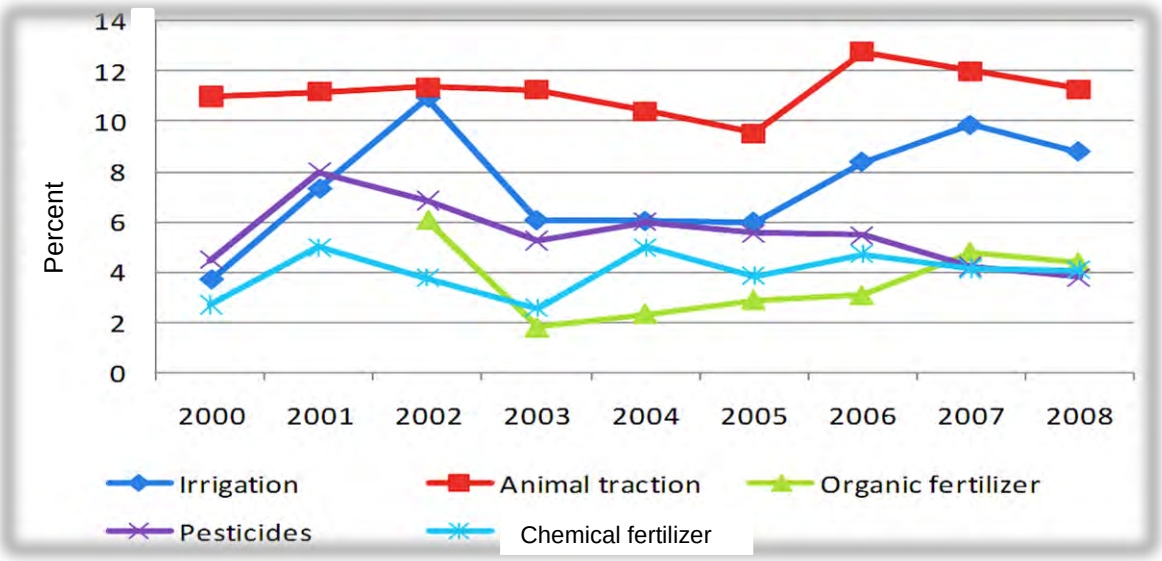


Figure 1.24. Trends in percentage of smallholder farmers utilising various technologies, 2000–08.

Source: Authors' calculations, based on 2000 Agriculture Census and TIA surveys.

Fertilizers: The use of fertilizers is also very low among smallholder farmers. The majority of fertilizer users are tobacco and sugarcane growers, and horticulturalists. Figure 5.10 shows that less than 5% of smallholder producers were using fertilizers. Uaiene et al. (2009) reported that 36% of tobacco growers reported using fertilizers compared to only 4% for non-tobacco growers. Other farmers producing commodities such as maize lack incentives to use fertilizers because of poor returns. Surplus maize producers in the north are far away from major consumption centers. Agro-dealers also have no incentive to retail fertilizers given the low effective demand. But farmers in peri-urban areas use fertilizers on Irish potato, tomato and other horticultural products. The secure markets for horticultural products provide an incentive for farmers to use fertilizers when producing these commodities. Coughlin (2006) argues that unless fertilizers can be provided on credit and repaid at harvest, most smallholders have no capacity to purchase fertilizers, especially given the risks of drought, floods and plagues. Table 1.9 gives the amount of fertilizer consumption during 2006–10 (tons).

Table 1.10. Amountof fertilizer consumption, 2006–10 (tons).

Agricultural season	Tobacco	Sugar	Others	Total
2006/7	13.000	10.000	5.500	28.000
2007/8	13.000	10.000	5.000	28.000
2008/9	15.000	12.000	5.000	32.000
2009/10	16.000	12.000	5.000	33.000
2010/11	31.400	15.000	5.000	51.400

Sources: Tobacco, Mozambique Leaf Tobacco; Sugar and Others, Agrifocus.

Note: Others include the bulk of importers composed of *Agrifocus*, *Tecap*, *Hidrotech* and *Agroquimicos*.

An even smaller proportion of farmers use organic fertilizers in the form of animal manure and compost. Figure 5.10 shows that the proportion of farmers using organic fertilizers increased from 2% in 2003 to about 5% in 2007. Use of organic fertilizers is limited to those households that own or rear animals.

The SADC/RISDP has a target of increasing fertilizer consumption from 44.6 kilograms per hectare (kg/ha) of arable land to 65 kg/ha of arable land by 2015 (world average is 98.8 kg/ha). The averages of 4.8 kg/ha estimated for Mozambique in 2007 and 5.3 kg/ha in 2008 (FAO 2010), indicate very low use of fertilizers in Mozambican agriculture. The estimate although not crop-specific is important in that it highlights the fact that low fertilizer use is one of the factors contributing to low agricultural productivity in Mozambique.

Improved seeds: The use of improved seeds is also restricted to a small percentage of smallholder farmers. Coughlin (2006) reported that only 5–10% of all seeds used by smallholder farmers in Mozambique was improved. The majority of farmers use seeds selected from previous harvests.

Error! Reference source not found. shows that the proportion of maize producers who planted improved varieties nearly doubled from 5.6% in 2005 to 10% in 2007. The proportion of groundnut producers using improved seeds trebled from 2% in 2005 to 6.4% in 2007. These positive trends can only persist if commercial distribution outlets are developed and a dense network of agro-dealers is established. Rice shows a different trend to maize and groundnuts. The proportion of producers planting improved rice varieties has not changed between 2005 and 2007. Previously, distribution of improved rice seed varieties was conducted under emergency relief programs. The rice seed value chain is not completely developed. As a result, private seed companies do not realize the favourable returns from distributing improved rice seeds that they realize from improved maize and groundnut seeds.

Table 1.11. Percentage of smallholder farmers using improved seeds, 2005–2007.

Crop	2005	2006	2007
Maize	5.6	9.3	10.0
Groundnuts	2.0	4.2	6.4
Rice	3.3	4.0	2.9

Source: Authors' calculations, based on TIA surveys.

The low proportions of farmers using improved seeds show that the diffusion of improved seeds has not taken off among smallholder farmers in Mozambique. Howard et al. (2001) cite the high seed to grain price ratio (>7.1) as one explanation for the low usage of improved seed varieties. High seed prices are attributed to high transport and distribution costs. Coughlin (2006) has also cited scant domestic research and production of improved seeds as responsible for the low use rates. Underinvestment in the national seed system is

denying the nation significant productivity gains through the system's failure to distribute known and available improved seeds. Rohrbach (2001) estimated that Mozambique was losing up to $262 million per year from nonuse of known grain, legume, cassava and sweet potato varieties. This translates to $92 per farm household per year, which is half of the average per capita income. Also, there is the issue of seed distribution which has crowded out private investment that could have contributed to developing commercial seed markets. Further, purchasing power is a real issue here as agriculture is not yet a business in Mozambique.

As long as farmers do not realize any gains from purchasing improved seeds, they will not use them. Poorly developed commodity markets are a clear risk for farmers and, therefore, they do not purchase improved seeds. Farmers would rather use cheap local seeds than seeds whose output they can neither sell nor store easily.

Irrigation: Rain-fed production systems in Mozambique produce only one crop per year. Areas where farmers can produce two crops a year are limited to pockets of land in northern and central Mozambique as well as in the irrigated areas in the southern region. Therefore, land use intensity across much of rural Mozambique can only be improved with the provision of irrigation facilities. Rough estimates suggest that Mozambique has the potential to irrigate 3 Mha of arable land (MINAG 2010). Total land equipped for irrigation is estimated at 120,000 ha but the operational area is very limited. From 2002 to 2010 the actual area being irrigated increased from 40,000 to 60,000 ha (MINAG/DNSA 2010; MINAG 2010). While the area irrigated increased by more than 50% from 2002 to 2010, this is a small fraction (2%) of the potential. Under the RISDP, SADC member states agreed to double the irrigated area by 2015.

A simple form of small-scale irrigation is commonly practiced by manually pouring water on fields. This is practiced by peri-urban farmers who grow vegetables, while rice farmers do flood irrigation in marshlands. Modern irrigation practices that use pumps and pipes to distribute water are restricted to sugar estates, a few private companies engaged in agriculture and a few emerging medium commercial farmers.

Figure 5.10 above shows that the percentage of farmers reporting the use of irrigation fluctuated between 6 and 10% during much of the period under review. TIA data are not specific on the type of irrigation technology being employed by farmers and the extent of the area to which irrigation is applied. Despite government's pronouncements on support for irrigation it is too early to conclude that Mozambique would double the pre-2000 area irrigated by 2015. The slow rate of adoption and limited investments in rehabilitating old irrigation schemes suggest that this target may not be achieved.

Animal traction: Animal traction is the most extensively used technology. More than 10% of smallholder producers utilized animal traction consistently from 2000 to 2007 (see Figure 5.10). Given the relatively large capital investments required to acquire animals and implements, this relatively widespread adoption of animal traction ahead of less-expensive technologies, such as using improved seeds, is surprising. However, from the late 1990s to 2006, government implemented a nationwide livestock restocking program, which largely bore the initial cost of animals and equipment. This program emphasized cattle restocking

and included a component of animal traction. Smallholder beneficiaries of this program were required to make a relatively insignificant contribution.

5.8.2 Access to complementary services

TIA surveys have consistently collected data on farmers' access to credit, market information and agricultural extension. Figure 5.11 shows the trends of the proportion of smallholder farmers accessing these services.

Access to price information: Over 30% of smallholder farmers have access to the price information collected and distributed by the Agricultural Market Information System (SIMA), a unit in the Department of Statistics in MINAG. This unit collects prices of agricultural produce from several retail markets in all provinces of Mozambique, and produces weekly and monthly price bulletins. These bulletins are widely broadcast by public and community radio stations.

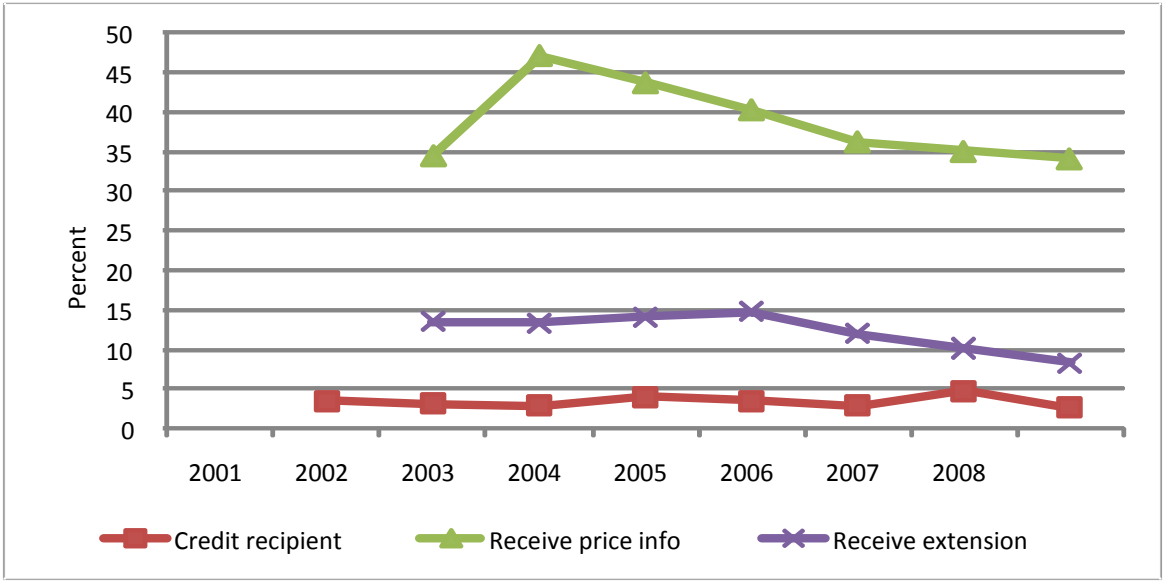


Figure 1.25. Percentage of farmers accessing agricultural services, 2001–08.

Source: Authors' calculations, based on TIA surveys.

SIMA collaborates effectively with field extension agents in disseminating information on prices. In 2004, over 45% of the smallholder farmers were able to access information on prices mainly from TIA and outgrower schemes. Figure 5.11 shows that from 2004, the trends were consistently downward. Evidence suggests that SIMA's operational coverage was reduced because of budget constraints. During the initial years of SIMA's operations, its budget was fully covered and provided directly by USAID. Since 2000, SIMA no longer receives funding directly from USAID but through the MINAG budget support. After MINAG took over the responsibility of allocating funds across its units, funding to SIMA had somehow declined (Miguel A., Head of SIMA, personal communication, August 2010). Furthermore, the decentralization of this function to provinces also diluted support to SIMA as its role did not command high priority from the DPAs.

Access to credit: Access to credit services is low among smallholder farmers. Figure 5.11 shows that less than 5% of smallholder farmers receive credit. This is not surprising considering that formal credit markets did not exist in rural Mozambique in the past. However, recently some banks like BCI (*Banco Comercial de Investimentos*) have entered rural areas. The few smallholder farmers accessing formal credit receive it from outgrower companies supporting cotton and tobacco production as well as emerging outgrower initiatives in sugar production. The result shown in Figure 5.11 does not recognize the importance of the informal credit system in rural Mozambique. Rural based agro-dealers do provide credit to farmers to access inputs but the arrangements are based on trust.

Access to agricultural extension: Access to agricultural extension is also very minimal. Figure 5.11 shows that the proportion of smallholder growers accessing extension services has averaged around 12% during the period under review. The extension referred to covers extension provided by the public system, private companies and local and international NGOs. Between 2005 and 2008, access to extension services declined consistently from 14% to less than 8%. Reasons for this decline have not yet been documented.

It should be mentioned that due to limited public funding, among other reasons, the number of field agents has stagnated, varying between 600 and 700, despite the geographic expansion of the public extension service in the years from 2005 to 2009 from about 66 to 127 rural districts (Gêmo and Chilonda forthcoming).

5.8.3 Emerging issues in technology use

Trends in technology use reveal that most crop production is taking place without the benefits of modern inputs. Modern inputs have the potential to increase cassava production by 67% and maize production by 500% (Coughlin, 2006). Unfortunately, inputs such as seeds and fertilizers are not widely diffused for use in food crop production.

Intensive use of inputs by smallholders is restricted to export crops such as cotton, tobacco and sugarcane (there are some emerging initiatives in subcontracting smallholders for sugarcane production). Outgrower schemes for cotton, tobacco and sugar are the current drivers of technology adoption for smallholder farmers. Smallholder farmers who are not participating in these schemes have limited access to credit and commercial inputs. Crop marketing firms allow farmers to access a package of complementary services which makes uptake of the individual components attractive, cheaper and faster.

In their study of the determinants of technology adoption in Mozambique, Uaiene et al. (2009) established that households with access to credit and extension advisory services, and membership of farmers' organizations were more likely to adopt technologies. Evidence from countries like Zimbabwe and Kenya shows that the inputs provided by outgrower firms to contracted farmers spill over to other crops that are not targeted by these marketing companies. Minde et al. 2008 established that the spillover effects occur at field, household and village level and benefits are realized in the production of other crops. Commercially oriented producers were more productive producers of food crops than less commercially oriented producers.

Over the past few years, state policies to boost inputs use by smallholder farmers have emphasized subsidies. The GoM is no exception. A 2-year pilot input subsidy program was

started in 2009 targeting 25,000 farmers with the capacity to co-pay from five provinces and 17 districts. Farmers received either a rice input pack (40 kg seeds and 2 bags of fertilizers) or a maize input pack (12.5 kg seeds and 2 bags of fertilizers). Farmers contributed 30% of the cost of inputs. The private sector was responsible for distributing inputs from wholesale outlets. Tostao (2007) found that households which received emergency inputs were less likely to buy inputs during the same season.

It is not clear whether this and other NGO programs continued beyond 2010. Continued direct distribution of subsidized inputs and emergency inputs prevents the development of input markets in productive regions and should be discontinued. If emergency or subsidized inputs are distributed, beneficiaries should not receive these inputs for free. Instead, beneficiaries should be targeted and made to work for the inputs. If these programs continue, the private sector should continue to procure and distribute the inputs in order to build capacity and ensure sustainability.

An alternative approach to increasing input use and farm productivity is to take steps to reduce inefficiencies in input procurement and distribution. This implies that government takes the lead in providing complementary investments. According to the International Fertilizer Development Center (IFDC), resources utilized in supporting input subsidies can be redirected towards supporting the *five* pillars of market development, which are policies, human capital, finance, infrastructure and market information, and quality assurance. Presently, policy reforms have made the importation and retailing of inputs easier in selected areas. Additional reforms are required to reduce entry barriers.[30]

The importance for technology uptake of well-developed output markets is poorly understood. Tostao (2007) has argued that shallow output markets are partly responsible for the sluggish development of input markets in rural Mozambique. Underdeveloped output markets increase the risk attached to using purchased inputs.[31] Well-developed value chains, observed in the tobacco and cotton industries, enable farmers to receive attractive producer prices and affordable inputs.

Ultimately, the input to output price ratio is an important determinant of whether farmers will be able to make money from using purchased inputs. If the cost of inputs is high relative to output prices, farmers will be forced to raise productivity in order to break-even. At current levels of productivity and output market development, purchased inputs are not economically attractive. A low return from the use of modern inputs is a major reason for the lack of productive investments by farmers.

In addition, well-trained and competent agro-dealers are not available in rural areas. Stockists need technical competence in order to offer an attractive service to farmers. Agro-dealers are constrained by low effective demand, poor access roads, high transport costs, high cost of capital, high start-up costs and complex licensing and other bureaucratic procedures related to trading and low returns to investments for agro-dealers.

[30] For example, retail licences approved by governors are difficult and time-consuming to access (Jeje et al. 1998).

[31] If farmers cannot sell the surplus, purchasing inputs and producing an unsalable surplus will only increase their poverty. In these circumstances there is no economic incentive to purchase inputs.

Chapter 6. The Evolution of Agricultural Marketing and Pricing Policies

This chapter presents a historical background of agricultural marketing in Mozambique. It covers aspects of input marketing (fertilizers and seeds), commodity marketing and agricultural pricing policies

6.1 Historical background

Before independence, agricultural marketing was driven by the private sector, although the government intervened in pricing policy and by imposing other controls. Mozambique had two distinct market structures, one for export crops and the other for domestically consumed crops. There were different production structures for each market. The marketing of most export crops such as sugar, copra, tea and citrus was handled by the commercial companies which grew the crops on their own plantations and processed them in their factories, or through their producer associations. State controls were exercised through the Mozambique Cereals Institute (ICM, *Instituto Cereais de Moçambique*) and the Cotton Institute (IAM, *Instituto do Algodão de Moçambique*) which, among other activities such as extension and technical assistance, forced smallholders to produce and market rice and cotton. The linkage between the family sector and the institutes was via small private traders known as *cantineiros*. All other crops such as food crops, and oil-seeds, which were grown by both settlers and the family sector, were marketed through the private trading channel. The *cantineiros* supplied consumer goods and agricultural inputs to the producers. At independence, the departure of the private traders, who were predominately Portuguese and Indian, created shortages in skills which affected the continuity of marketing functions.

The new government replaced the rural market operated by the *cantineiros* with two parallel structures: (1) the National Directorate for Agricultural Economics and Marketing (DINECA) in the Ministry of Agriculture, handling the remnants of the ICM and the IAM (Quadros et al. 1996). The directorate had the responsibility for input supply and crop purchase, storage and marketing; and (2) the Organisation of People's Shops (*Lojas do Povo*), which were state enterprises handling the supply of consumer goods in rural areas. Lack of manpower, inefficiency and bureaucracy led to the first restructuring of the *Lojas do Povo*. In 1978, it was decided to transfer the marketing responsibility to the Ministry of Trade and at the same time to promote the reestablishment of the private trading system in the rural areas. In 1980, the Lojas do Povo was abolished with over 90% of its shops being sold to private traders and the rest to consumer cooperatives.

In 1981, AGRICOM replaced DINECA as a parastatal under the Ministry of Internal Trade and, together with the network of private traders, now provides the main structures for crop marketing and the supply of consumer goods for the family sector in rural areas. The marketing of most other agricultural products follows a similar pattern with private traders and state enterprises coexisting. Marketing for fruits and vegetables is the responsibility of

Hortofrutícola. In the livestock sector, *Gapecom* was set up in 1977 as a specialized company under the Ministry of Agriculture responsible for the marketing of slaughter stock, hides and skins.

6.2 Input marketing policies

The success of agricultural development depends, among other things, on the existence of an efficient marketing system, which plays a significant role in resource allocation to realize the vision of widely shared economic growth that will bring a difference to the livelihoods of the rural poor.

Cognisant of this, the GoM has placed considerable emphasis on the market and marketing issues to enhance rapid, sustainable and broad-based economic growth and to reduce poverty. To this end, market-centered agricultural development is considered as one of the main thrusts in all government policy documents, such as PROAGRI II, agricultural policy and food security strategy, and the Sustainable Development and Poverty Reduction Programme (PARPA). As part of furthering the enforcement of market liberalization, market-centered agricultural development aims at linking smallholders to both local and international markets through continually improving their productivity and competitiveness. This is aimed at enabling smallholders to secure a reasonable share of the benefits from the value-adding effect of local and global agricultural marketing systems.

The strategy also considers the backward and forward linkages of agricultural industry. Smallholders will be encouraged to produce a standard quality of high-value food and cash crops at competitive prices by taking into account the market demand as a governing principle in making production decisions. With regard to the international market, the objective of the strategy is to make effective use of global market opportunities by improving productivity and the quality and competitiveness of exportable agricultural commodities, and by minimizing production costs. Furthermore, market-centered agricultural development will dwell on diversification, specialization and setting a specified standard even for nontradable and locally consumed farm products. Both producers and consumers will be informed about the best practices to be considered.

6.2.1 Input marketing

The majority of smallholder subsistence farmers in the country have limited access to improved agricultural inputs. The inputs being utilized by those who have access are chemical fertilizers and improved seeds. Various programs and projects have tried to address some aspects of input-related issues. To some extent they have achieved their goals and have gone a long way in implementing policy reform, helping to build institutions, and extending inputs to increase agricultural productivity. However, the task of establishing sustainable input availability and marketing systems is far from complete. Ensuring timely and adequate input availability, sound marketing systems and better credit services are common problems to overcome in order to improve agricultural input marketing.

Currently, the use of purchased inputs in Mozambican agriculture is very limited. According to a national survey conducted in 2007, only 4% of farmers use any fertilizers. However, during the 2009/10 agricultural season, through PAPA, the government distributed 1,600 tonnes of maize seeds and 2,000 tonnes of rice seeds to all provinces except Tete and Manica, and 150 tonnes of soya seeds to the provinces of Sofala, Manica, Tete, Zambezia and Nampula. In an effort to increase crop production in the second season and compensate for the relatively poor season in the south and parts of the center, the government also distributed 497 tonnes of maize seeds, 1,412 tonnes of wheat seeds, 2,125 tonnes of seed potato, 107 tonnes of bean seeds and 1.7 tonnes of assorted vegetable seeds. Ninety tractors and various other pieces of agricultural equipment, including hand-held cultivators and irrigation pumps were also distributed (MINAG/DNSA 2010). This intervention by government can be criticized in that it represents policy reversal and sends wrong signals to potential investors in input and produce marketing. The government should not be in the business of distributing inputs but should aim at creating opportunities and using the private sector to do so.

Fertilizer marketing: Until the late 1980s the *Inter-Química* and *Boror* parastatals were responsible for the import, and the wholesale and retail trade in fertilizers and other agro-chemicals. With the liberalization of the economy in the mid- to second-half of the 1980s the parastatals withdrew, and the private sector was expected to step in. However, this did not happen because the private sector was not structured to perform the role of importing and distributing fertilizers in a significant fashion for a number of different reasons, for example, the huge capital investment required to engage in fertilizer distribution and the potential threat of government intervention in fertilizer distribution for political reasons as often happens in other African countries.

Presently there are three main importers namely (Zandamela, C., Senior Agronomist, Rice expert, personal communication, July 2011):

- Agri-Focus, a private company, through an agreement with different private enterprises which imports mainly from South Africa. Currently, the imports through Agri-Focus (and its partners) represent approximately 10% of total fertilizer imports. This proportion is mainly used in food crops.
- The sugar industry comprising four farms and/or factories (*Maragra, Xinavane, Marromeu* and *Mafambisse*).
- Tobacco companies, with Mozambique's Leaf Tobacco dominating imports and distribution.

Seed production and marketing: The national seed industrial policy and strategy (1985) is the main regulatory instrument and the Seed Department at MINAG oversees the implementation of the policy. Mozambique's Agrarian Research Institute (IIAM), among its other functions, is responsible for developing breeder seeds. A private enterprise, MozFood, is involved in research activities and in multiplying, processing and distributing seeds, particularly through contract farming. Another two major private enterprises, PANNAR Seed and SEMOC are also involved in producing and marketing certified seeds, including through contract farming. It should be noted that the commercial network for seeds is still very limited, and more than 85% of those involved are in urban and

semiurban areas. The shops selling seeds are concentrated in regions which have basic infrastructure such as Chókwè, Manica and Angónia.

6.3 Commodity marketing policies

Market liberalization and the subsequent reforms made by the government have introduced new opportunities as well as challenges to the agriculture sector, especially for smallholders. The reform has liberalized agricultural output marketing activities that used to be under government control. The most notable measures of reform include the elimination of price controls, liberalization of commodity marketing and reduction of import licensing and foreign exchange controls. As a result, smallholders are now free to sell their produce in any market. The country has two major output market channels: (1) for food crops, such as maize, cassava, beans, cashew and others crops (for example, fruits) that are marketed by small and medium traders and (2) for export crops, such as cotton and tobacco that are given to the marketing concession. In the last 5 years, a new trade network has been developed. For example, for sesame, traders give seeds to the farmers and, by so doing, acquire exclusive rights to buy in the area.

Distribution of traders in Mozambique

After more than 18 years of marketing liberalization the network of wholesalers and retailers that has emerged is concentrated around Maputo City, Maputo province and Nampula and Sofala. Out of an estimated 10,224 wholesalers (MIC 2010), 63% are located in Maputo City, 11% in Maputo province, 9% in Nampula, and 5% in Sofala. The spatial distribution of retailers follows a similar pattern, with 41% of the 19,461 retailers found in Maputo City, 13% in Maputo province, 12% in Nampula, and 7% in Sofala. The spatial distribution by region indicates that 77% of wholesalers and 64% of retailers are found in the south, while the center and the north have nearly equal shares of the remaining 23 and 36% of the totals.

The country's storage capacity is presented in Table 6.1. The estimated available capacity is 560,735 tonnes. Nearly 77% of this capacity is in the form of warehouses with silos making up the rest. Government owns 45% of the total storage capacity with the rest belonging to the private sector. The capacity is below what the country needs and there are several initiatives, both private and public, to increase this capacity by building new silos. In terms of location, most of the storage infrastructure is located in the south around Maputo, Sofala and Nampula in the vicinity of the major ports of Nacala, Beira and Maputo where demand is higher. Notably, most of the infrastructure is located in urban and semiurban areas while rural areas continue to be neglected. The central and northern regions are more suitable for agricultural production and have the highest population densities.

Table 1.12. National warehouse storage capacity.

Province	Public sector (tonnes)	Private (tonnes)	Silos (tonnes)	Warehouse (tonnes)	Total (tonnes)
Maputo	51,140	80,000	45,000	86,140	131,140
Gaza	20,580	5,000	0	25,580	25,580

Inhambane	6,700	5,000	0	11,700	11,700
Manica	13,900	21,900	15,000	22,800	37,000
Sofala	7,400	88,000	28,000	67,400	95,000
Tete	23,100	6,000	0	29,100	29,100
Zambezia	43,520	0	0	43,520	43,520
Nampula	35,427	99,000	43,000	91,427	134,427
C. Delgado	24,338	0	0	24,338	24,338
Niassa	20,730	7,000	0	27,730	27,730
Total	248,835	311,900	131,000	429,735	560,735

Source: MIC (Ministry of Industry and Trade) 2010.

6.4 Agricultural pricing policy

Significant progress has been made in reforming price and trade policies since the structural adjustment program was implemented in the mid- to late 1980s, particularly after price liberalization was adopted in 1987. Price controls are now limited to essential products, including food aid sold through a ration system in urban areas and utility and transport services in order to protect poor people. Prices are being adjusted to reflect international parity levels. Parity pricing makes imported inputs very expensive and discourages farmers from using inputs that improve productivity such as imported fertilizers. As a result, farmers will continue to grow crops which use hardly any, or no, fertilizers. In addition to getting the prices right, Mozambique needs to pay attention to infrastructural development.

Agricultural prices have been freed and minimum/reference prices only apply to a few crops (for example, reference prices are still set for cotton). Fixed prices for manufactured products have been replaced by a system of ex-post review that gives enterprises flexibility in increasing prices. Notably, the share of products subject to price controls fell from 69 to about 15%. At the same time, the government opened domestic trade, allowing increased competition among traders and permitted enterprises to trade directly with one another in domestic and international markets. Prices of most commodities are now determined by market forces.

In summary, the pricing policy and marketing environment for agriculture have undergone transformation from the colonial period to the present. During the colonial period, private traders controlled marketing, but with independence, this system collapsed and price controls were introduced in socialist Mozambique. In the late 1980s, the state-controlled system of fixed prices was dismantled and replaced by indicative or reference prices. Despite liberalization, farmers still face adverse agricultural terms of trade in major crops. The destruction of markets during the years of turmoil continues to be a major factor undermining incentives for higher productivity growth (World Bank 2006). The underdevelopment of liberalized market institutions has a major negative effect on smallholders, contract farmers, and larger enterprises as they face a price system that is partly official and partly market-determined.

Chapter 7. Trends in Agricultural Trade

This chapter analyzes the trends in agricultural trade over the period 1995–2009. It highlights Mozambique's trade policy and strategic location and potential to gain from agricultural and regional trade in SADC. It also compares agricultural and nonagricultural trade in value terms. Overall, it gives an assessment of the performance of agricultural exports and agricultural imports in terms of values and types of major commodities traded.

7.1 Trade policy

Promoting agricultural trade is an important avenue for alleviating poverty in Mozambique. Opportunities for agricultural trade increase real incomes for smallholder farmers and the urban poor. Given the country's geography, with a long coast line (over 2,000 km), imports represent a potentially cheaper source of supply. Ceteris paribus, Mozambique's exports are expected to be competitive relative to its landlocked neighbors.

An open trade regime is clearly in Mozambique's national interest (Tschirley and Santos 1999). Efforts to intensify production in Mozambique without an open trade regime are likely to fail. Mozambique is a member of several regional and international trade organizations. At international level, Mozambique is a member of the African Caribbean and Pacific Group of States where it enjoys preferential treatment for its exports. Mozambique is also a member of the World Trade Organization (WTO). At regional level, Mozambique is a member of the Southern African Development Community (SADC) and the Indian Ocean Rim Association for Regional Cooperation (IOR-ARC). At a bilateral level, Mozambique has a trade preferential agreement with South Africa. Mozambique also enjoys preferential treatment by the United States (US) under the African Growth and Opportunity Act (AGOA).

Looking at domestic and transborder trade perspectives, it is evident that the north of the country with the greatest agricultural surplus potential is separated from the center and south by long distances and poor road, rail and shipping links. As a result, trade with South Africa is important for supplying southern Mozambique. At the same time, trade with Tanzania and Malawi is important for managing surpluses in the northern and central regions.

7.2 Trends in agricultural versus nonagricultural trade

Mozambique imports more value than she earns in foreign currency.[32] This trade deficit status has been with Mozambique for a long time and it is likely to continue for the foreseeable future. Figure 7.1 illustrates that total imports rose from US$808 million in 1995 to US$4 billion in 2009. During the same time, total agricultural exports increased from US$295 million to US$3.3 billion.

[32] Between 1995 and 2009, Mozambique's current account deficit has averaged 90% of export earnings.

Figure 7.1 also shows that agricultural export earnings had a healthy lead over agricultural imports. This suggests that agricultural exports financed imports of nonagricultural commodities. The trend pattern only changed during the 2008 financial crisis. Agricultural exports increased from US$120 million in 1995 to over US$200 million in 2006 while agricultural imports increased from US$70 million in 1995 to over US$180 million in 2006. After 2006, exports decreased but imports continued to grow. By 2009, agricultural imports had risen to US$270 million while exports fell to US$150 million.

Unlike agricultural trade, nonagricultural trade has produced a trade deficit throughout the period. During the financial crisis, nonagricultural imports rose but exports stagnated, as shown in Figure 7.1. The financial crisis was associated with a deepening current account deficit for Mozambique.

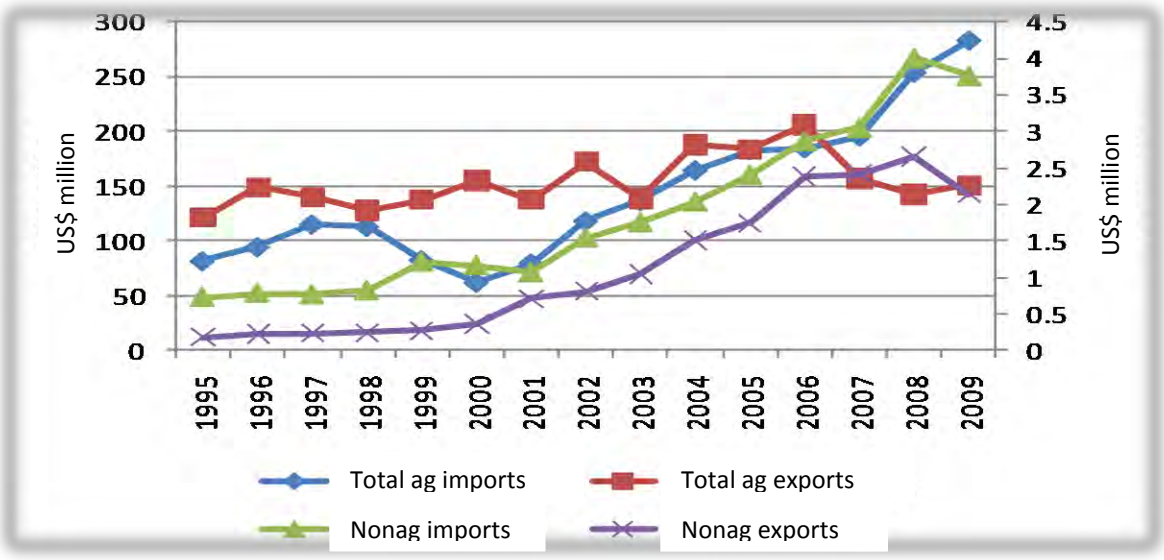


Figure 0.1. Trends in the value of agricultural and nonagricultural trade, 1995–2009.

Source: Authors' calculations, based on data from MIC and INE.

Table 1.1 shows the average annual growth of agricultural and nonagricultural trade for selected time periods. Over the last 15 years, agricultural exports expanded slightly each year. But nonagricultural exports grew at a massive 9.6% per year.

Table 1.1. Average annual growth in value of agricultural and nonagricultural trade. 1995–2009 (%/year).

	1995–1999	2000–04	2005–09	1995–2009
Agricultural imports	0.88	10.79	5.16	3.74
Agricultural exports	0.45	1.69	-3.31	0.78
Nonagricultural imports	4.62	7.03	5.33	5.73
Nonagricultural exports	4.17	14.04	2.27	9.62
Total imports	4.34	7.27	5.32	5.56

Total exports	2.79	11.74	1.86	7.95

Source: Authors' calculations, based on Ministry of Industry and Trade (MIC) and INE.

The restrained growth of agricultural exports from 1995 to 2004 disappeared during the period associated with the financial crisis. Mozambique's agricultural exports decreased 3.3% per year from 2005 to 2009. Although the value of nonagricultural exports grew immensely over the whole period, they grew at a much slower pace during the financial crisis.[33] At this time, when all exports were growing at snail's pace, agricultural and nonagricultural imports grew at more than 5% per year. The acceleration in agricultural imports was even sharper than in nonagricultural imports.

The contribution of agriculture to the generation of export earnings decreased consistently between 1995 and 2009 (see Figure 7.2). In 1997, agricultural exports contributed 50% to foreign exchange earnings. This contribution decreased to below 10% in 2006 and 2007. Similarly, the share of agricultural imports in the total value of imports also decreased. The share of agricultural imports in total imports in 1996 was under 20%. This share declined to less than 5% in 2008.

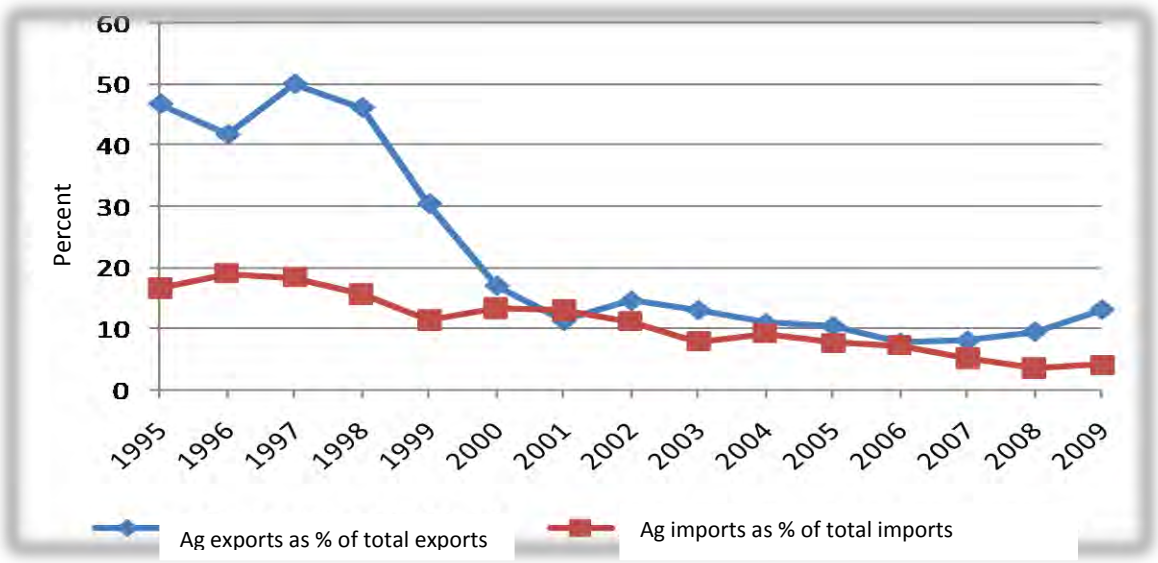


Figure 1.2. Contribution of agricultural trade to total trade, 1995-2009.

Source: Authors' calculations, based on data from MIC and INE.

Notwithstanding growth in the value of agricultural trade in Mozambique, it appears trade in the nonagriculture sectors (e.g., mining and gas) is growing faster than agricultural trade (Table 1.1). This result potentially reflects on the level of public and private support agriculture is receiving relative to support received by nonagriculture sectors. These trends reveal the declining relative importance of agricultural trade in Mozambique's economy. Exports from other sectors such as mining and manufacturing are growing robustly. This

[33] The phenomenal growth (14%) seen from 2000 to 2004 decelerated rapidly during the 2005 – 2009 period.

entails some diversification in export commodities away from agriculture to mining and manufacturing.

The bulk of Mozambique's food crops can be considered as nontradable. Crops such as cassava, millet, sorghum, sweet potato and yam have no market beyond the national borders. Maize is the most important tradable food crop. Mozambique's traditional agricultural exports include cashew, cotton and tobacco. Sugar, fish, and maize can be grouped as mixed tradables. These crops are exported and imported during the same period. The decision to import and export is purely a commercial one.

7.3 Agricultural exports

Figure 7.3 illustrates trends in the individual share of various agricultural exports between 1995 and 2009 when, on average, 50% of Mozambique's agricultural exports came from prawns. Exports of cotton represented 19% while exports of cashew nuts represented 16% of total agricultural exports.[34] Timber exports represented 13% of total agricultural exports.[35]

The contribution of prawns to total agricultural exports rose to 67% in 2001 but declined to just above 30% in 2008. Similarly, cashew's contribution peaked at about 30% in 1998 but fell to 6% in 2003. Cotton and timber, the other major agricultural exports show different trends. In 1996, cotton contributed 8% to total agricultural export value but this share rose to 32% in 2008. In 1996 timber contributed 5% to total agricultural export value but its contribution rose to 25% in 2009. It appears that the cotton and timber industries are attracting investments. Timber logging in particular is attracting immense interest from Chinese investors. The other important export crop is tobacco but due to lack of data it is not discussed here.

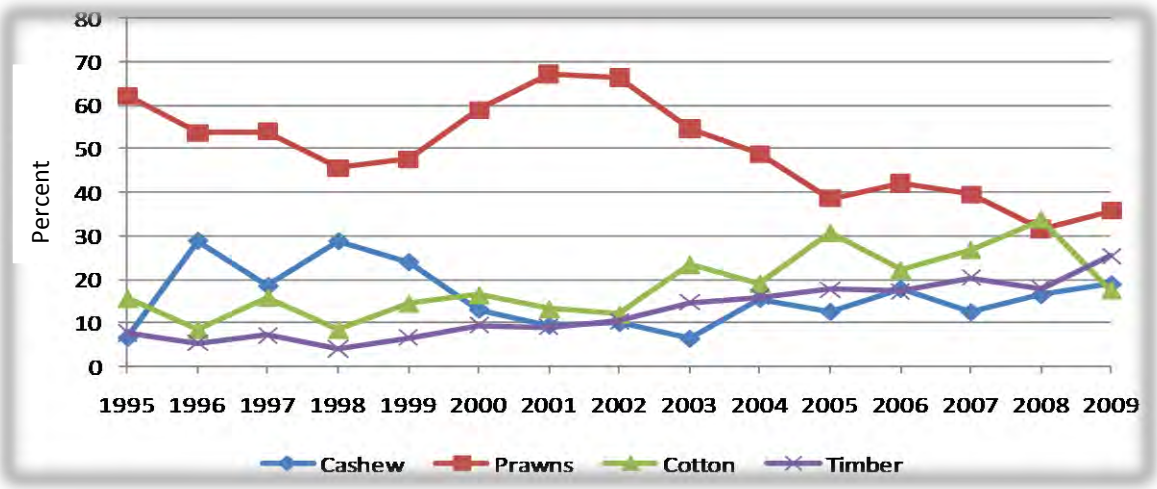


Figure 1.3. Trends in the contribution of various agricultural subsectors to the total value of agricultural exports, 1995–2009 (%).

Source: Authors' calculations, based on data from MIC and INE.

[34] Processed and raw cashew nuts represented 6 and 10% of total agricultural exports, respectively.
[35] The balance of 3% comprised lobsters, citrus fruits and coconuts.

Prior to 2000, the cashew nut was the only industry which posted growth in export revenues. Cashew export revenues grew at 11% per year from 1995 to 1999 (Table 7.2). On the other hand, export earnings from prawns, cotton and timber all decreased during this period. The export value of prawns in 2008–09 decreased to about 50% of its 1995 value as a result of the decline in prices for prawns and shrimp in international markets.

Between 2000 and 2004, earnings from cashew exports continued to grow but at a relatively slower pace of 7.7% per year. Trends of cotton and timber exports changed positively. Export revenues for timber and cotton grew at 8 and 5% per year, respectively. The pattern, however, was different for the prawn industry. Earnings from exports of prawns decreased consistently throughout the period under review.

Table 1.2. Average annual growth in the value of exports from various agricultural subsectors 1995–2009 (%/year).

	Period		
Subsector	1995–1999	2000–04	2005–09
Cashew	11.18	7.68	-2.55
Prawns	-2.58	-0.83	-5.22
Cotton	-0.19	5.44	-6.33
Timber	-2.03	8.36	-0.02
Sugar	-3.47	19.12	3.82
Total agriculture exports	0.45	1.69	-3.31

Source: Authors' calculations, based on data from MIC and INE.

7.4 Agricultural imports

Figure 7.4 illustrates the composition of agricultural imports. The bulk of primary agricultural imports are cereals comprising rice, wheat and maize. These commodities take up over 56% of the value of imports. Fish and sugar are the other primary agricultural imports which together take up 15% of the total agricultural import value. Even though Mozambique has a long coastline, the country imports significant volumes of fish. It appears the simultaneous exporting and importing of fish is for money-making reasons. Another 16% of imports are made up of processed dairy, meat, cereal and vegetable products and eggs. Vegetable and animal fats and oils make up the balance 12%.

Imports of rice take up the largest share of primary agricultural imports. The bill for rice imports was over US$90 million in 2006. Local production is taking off but the bulk of consumption requirements are met through imports.

The value of wheat imports trebled between 2000 and 2006 (see Table 1.3). Mozambique imports 99% of its wheat requirements for baking. This trend is likely to be maintained for the foreseeable future. The capacity to produce wheat locally is yet to be developed. The successes in sugar production could equally be repeated in wheat production. However, the

sugar industry is somewhat protected in Mozambique while this is not the case for wheat. Most wheat comes from monetized wheat which may discourage domestic production.

Maize imports feature in the agricultural import bill as well. Despite Mozambique being a major exporter of maize in the region, it also imports maize regularly. This is consistent with Mozambique's trade policies to allow exports from the north into Malawi while allowing imports from South Africa into southern Mozambique.

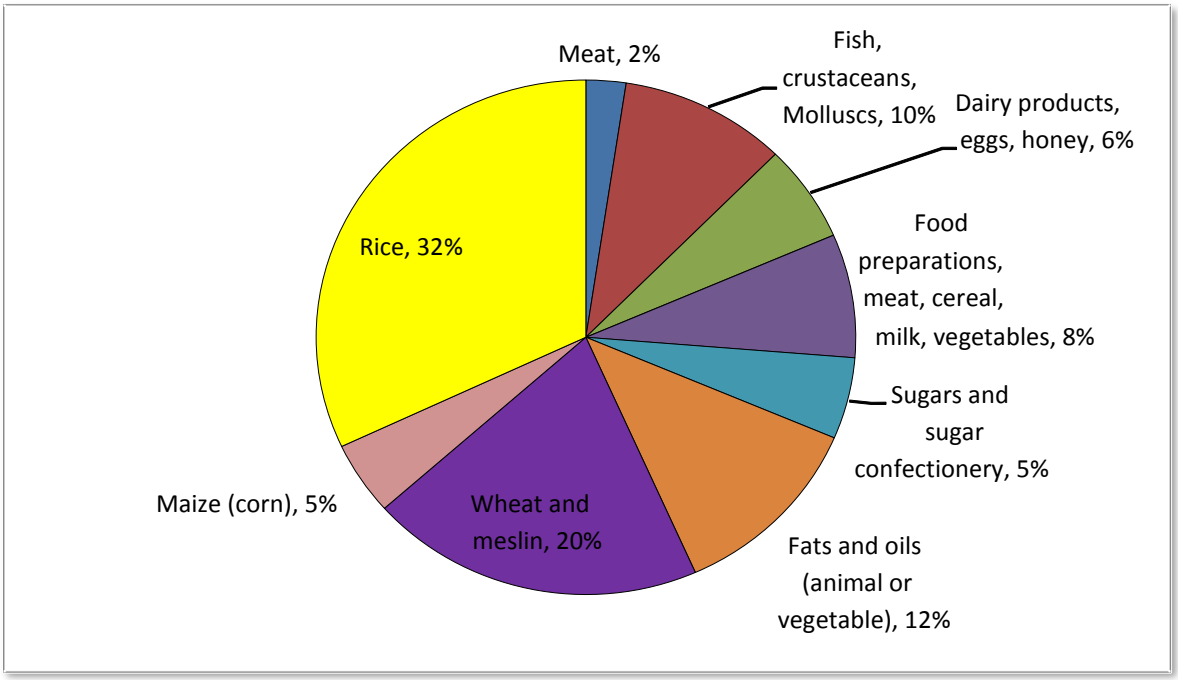


Figure 1.4. The contribution of various agricultural products to the total agricultural import bill, 2000–06.

Source: SADC trade data 2000–2006.

Note: This figure includes both primary and some secondary agricultural imports and depicts the average for the period 2000 to 2006.

Mozambique imports meat products (chicken, sausage, pork and beef) every year. The primary source of beef products is South Africa but the bulk of the chickens come from Brazil. There is an upward trend in meat imports into Mozambique, particularly chickens from Brazil. The GoM is considering removing import duties on poultry feed. This may change the dynamics in broiler production since it will decrease production costs. The value of meat imports grew at an average of 16% per year.

Imports of dairy products, eggs and other food preparations have also shown an upward trend. The value of dairy imports trebled from US$10 million in 2000 to over US$32 million in 2006. This represents an average annual growth of 12.6%.

The value of sugar and sugar confectionery imports has been stagnant during the period. The growth in sugar imports has been checked by the growth in local sugar production and

refining. The protection enjoyed by the sugar industry has encouraged rehabilitation of old irrigation schemes and expansion of local production thereby driving down the demand for imported sugar.

In summary, the value of agricultural exports has trended upwards in value terms. However, the economic importance of agricultural trade has declined in the face of the growing importance of nonagricultural trade. Throughout much of this period, agricultural exports have led agricultural imports. Agricultural imports exceeded exports during the period of the financial crisis as was the case with nonagricultural trade. The financial crisis period was characterized by growing imports and declining exports exacerbating the trade deficit that was observed throughout this period. In terms of agricultural imports, rice and wheat dominated. Cereals took up more than 50% of the agricultural import bill. Interestingly, maize, fish and sugar are exported and imported at the same time. This mixed trade status for these commodities was purely driven by commercial reasons.

Table 1.3. Trends in the value of agricultural imports and average annual growth, 2000–06 (US$ million).

Product	2000	2001	2002	2003	2004	2005	2006	Av growth
Meat	2.50	0.86	1.73	3.82	6.75	8.97	10.20	15.9
Fish, crustaceans, molluscs	7.57	6.65	16.28	33.35	24.68	28.15	29.24	11.4
Dairy products, eggs, honey	10.83	3.26	3.55	7.37	9.61	22.34	32.09	12.6
Food preparations, meat, cereal, etc.	16.91	15.88	7.38	12.87	17.30	19.67	23.31	3.5
Sugars and sugar confectionery	12.22	6.37	4.12	10.92	21.79	11.63	7.67	2.3
Fats and oils (animal or vegetable)	12.32	10.83	10.61	26.47	33.56	34.84	45.77	11.5
Wheat and meslin	19.85	25.31	26.40	46.97	54.50	53.26	66.50	9.1
Maize (corn)	6.01	3.48	5.66	15.59	7.46	8.90	20.05	8.9
Rice	31.35	45.88	42.21	64.13	82.57	108.56	91.55	8.7

Source: SADC trade data 2000–2006.

Note: Av = Average.

Chapter 8. Poverty, Demographic and Basic Social Indicators

This chapter assesses progress made by Mozambique towards meeting the first Millennium Development Goal (MDG1) of halving the 1990 poverty and hunger rates by 2015. The MDG1 targets are also shared by the RISDP, and Mozambique is a signatory to both instruments. Mozambique's economy is still agriculture-based and the role of agriculture has been highlighted as crucial in fighting poverty and in contributing to social welfare. The chapter also discusses some of the socio-demographic indicators with a bearing on poverty and food insecurity in the country.

8.1 Poverty trends

Poverty trends[36] in Mozambique have shown an impressive decline since the late 1990s from 69.4% in 1997 to 54.1% in 2003.[37] The intended target for poverty reduction for 2009 was 45%. But from 2003 to 2009, the poverty level increased marginally from 54.1 to 54.4%, indicating that very limited progress has been made over the period considered in this report in reducing poverty at the national level (MPD 2010). Figure 8.1 shows national poverty levels.

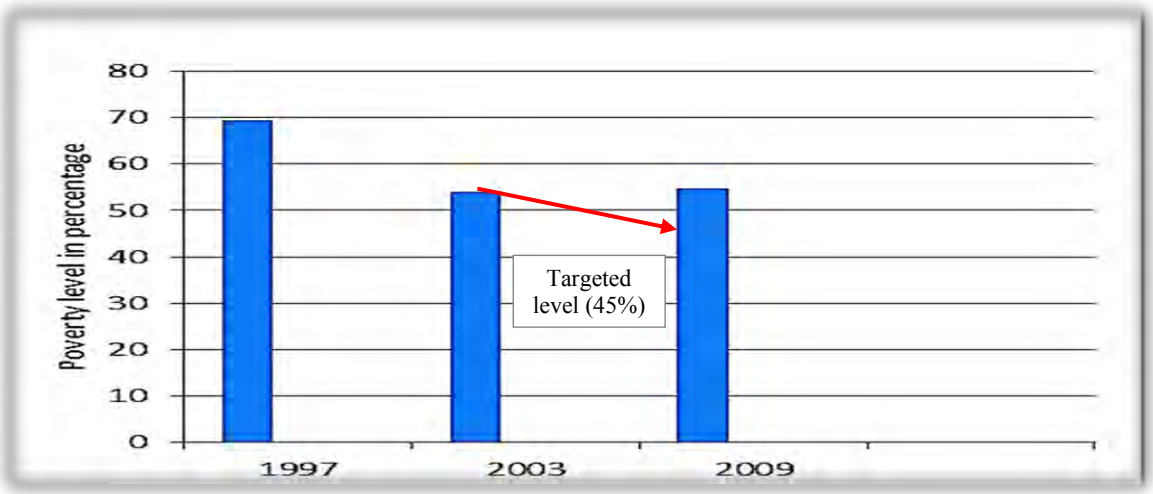


Figure 0.1. Poverty trends at the national level, 1997–2009.

Source: MPD (IAF, Household Surveys, 2002-2003 and IOF, Household Budget Surveys, 2008-2009). .

[36] Note that the poverty rate in 1997 was calculated using a fixed food bundle, and later using a flexible food bundle

[37] It is worth mentioning that the 1997 poverty rates were calculated using a fixed food bundle, and the 2003 rates using a flexible food bundle.

Despite the challenges associated with reducing poverty levels, particularly between 2003 and 2009, if the current overall economic growth rates (about 7%) and agricultural growth rates (above 6%) are sustained, the country has a chance of meeting the target of reducing poverty to 42% by 2014 set under PARP (2011), and to 40% by 2015 as targeted under the first MDG. However, economic growth leads to poverty reduction only if it is pro-poor and leads to improvements in equity. This means that poverty reduction is still a serious challenge for the future.

8.2 Socio-demographic indicators

The limited agricultural diversification and growth might have contributed to the low progress in poverty reduction. Agriculture affects diverse social indicators which in turn influence agricultural performance. For the purposes of providing a comprehensive social characterization of Mozambique's agriculture sector, Table 1.1 shows some of the main socio-demographic indicators considered to have a direct or indirect relationship with agriculture.

Table 1.1. Some social indicators with a direct or indirect relationship with agriculture.

Indicators/reference years	1997	2007	2011 (projections)
Total population	16,075,708	20,632,434	23,049,621
Men	7,703,031	9,930,196	11,108,128
Women	8,372,677	10,702,238	11,971,493
Total households	3,634,581	4,634,807	
Average household members	4.1	4.4	
Population at age 0-14 (in %)	44.5	46.9	45.3
Population at age 15-59 (in %)	50.9	48.6	50.1
Population in urban areas (in %)	29.2	30.4	31.0
Population in rural areas (in %)	70.8	69.6	69.0
Population growth rate (in %)	1.7	2.8	2.8
Infant mortality rate (per 1,000)	143.7	93.6	86.2
Life span at birth (in years)	42.3	50.9	52.4
Total illiteracy rate (in %)	60.5	50.3	
Male illiteracy rate (in %)	44.6	34.5	
Female illiteracy rate (in %)	74.1	64.1	

Source: INE 2010.

8.2.1 Population structure

As shown in Table 1.1, there was a moderate growth in total population between the 1997 and 2007 population censuses. Increasing population brings various socioeconomic challenges including increased needs for social services such as education, health, housing, and so on. In addition, increased population implies increasing food needs which relate directly to agriculture.

Demographic indicators also show that the country has a significant proportion of population in the 0–14 age cohort, an important structural demographic issue that needs to be taken into account. Although some people in this age cohort can be economically active, as happens in rural areas among smallholder households, these people are principally dependents in terms of their food needs, school fees, clothing, etc. But, at the same time, the people in this age cohort represent the future economically active population.

8.2.2 Participation of the labor market

A significant proportion of the population is between the ages of 15 and 59 and, therefore, consists of potentially economically active people (EAP). The term 'economically active people' refers to the proportion of people old enough to work, and who are working or actively seeking jobs, thus constituting a potential labor force for service provision and production of goods. In 2007, the number of EAP was estimated at 7,437,056 (69.2% of people aged 15 years or older). Males represented about 73.6% and females about 65.2% of EAP. The rural areas have the major proportion of EAP estimated at 76.5% against 54.4% in urban areas. Agriculture is still the main occupation of the majority of EAPs in rural areas (INE 2010).

8.2.3 Illiteracy level

Illiteracy remains a challenge that may continue to constrain the effectiveness of agricultural development efforts for years to come, particularly with regard to interventions aimed at contributing to increased productivity and development of the value chain. Figure 8.2 shows estimated illiteracy rates from 2002 to 2010.

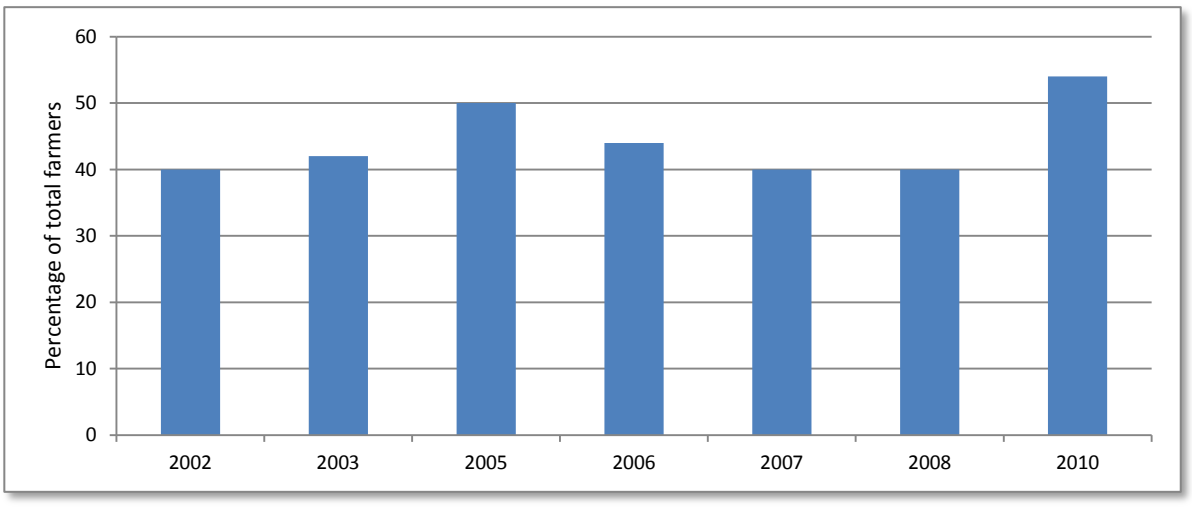


Figure 1.2. Percentage of total farmers without any formal education.

Sources: TIA 2002–2008 and CAP 2010.

It should be mentioned that while prevailing illiteracy in urban areas affects mainly the adult and aging population, in rural areas it also affects younger farmers. Table 1.2 shows illiteracy rates affecting different age cohorts, based on the 2007 Population Census.

Thus, the reduction of the total illiteracy rate from 60.5 to 50.3% between 1997 and 2007 was encouraging but more needs to be done to address the continuing problems of illiteracy, especially in rural areas where the majority of the economically active population lives and where agriculture is the main activity supporting livelihoods. Illiteracy adversely affects people who are economically active, particularly those in the 20–24 and 50–59 age cohorts. Most informal traders working in the agriculture sector are women (the so-called *Maguevas*). Women in both urban and rural areas are the most affected group, an issue that needs to be taken into account by policymakers, particularly in connection with enhancing the role of women in agriculture and food security.

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Table 1.2. Illiteracy rates affecting different age cohorts in urban and rural areas (%).

	Urban areas			Rural areas		
	Total	Men	Women	Total	Men	Women
Age cohorts	25	14.2	35.4	62.8	45.3	77.4
05-19	13.5	9.8	17.2	42.7	30.2	54.0
20-24	18.7	11.1	25.6	56.6	38.2	69.6
25-29	22.0	13.4	30.3	63.9	45.9	78.1
30-39	25.2	14.0	35.5	65.6	47.4	81.0
40-49	28.6	12.7	45.4	66.2	44.9	85.7
50-59	42.8	20.6	65.3	75.6	55.0	92.4
>60	59.9	36.6	79.8	32.1	67.7	95.0

Source: INE 2010.

Despite the prevailing high illiteracy rates, considerable progress has been made from 1997 to 2007 in terms of the number of people completing secondary school. While in 1997 only 2% of the population had completed secondary education, the proportion rose to 8.3% in 2007. Of these, 6.2% had completed the first cycle (10 years of school) and 2.1% the second cycle (12 years of school). In addition, the proportion of the population with no schooling marginally declined from 78.4% in 1997 to 74.8% in 2007 (INE 2010).

8.3 Food security and nutrition

Food security and nutrition (FSN) are still ongoing challenges, despite the impressive recovery of agricultural production in the 1990s following the Peace Agreement in late 1992 and the considerable annual agricultural growth rates that have been reported at the national level. Since 2007/08, the government has been emphasizing the need to increase domestic

food production in order to improve FSN. To address the need to increase domestic food production, an Action Plan for Food Production (MINAG 2008) was approved by the Council of Ministers in October 2008 to be implemented until 2011. However, other pillars of FSN such as food distribution, access and utilization are additional challenges in the country.

8.3.1 Hunger trends

In general, the country has had no recent cases of extreme hunger affecting large numbers of the population, or extensive regions of the country for long periods. But food (reserve) shortages have been reported annually, mainly due to the effects of climatic shocks on production (droughts and floods). Regions with low agricultural potential and regions that are marginal for crop production are more exposed to the risk of poor harvests as a result of adverse climatic conditions as has happened many times in the past (SETSAN 2005-2011). Figure 8.3 shows the number of people who have been affected by food insecurity and who have had to rely on food aid for some period each year.

However, food insecurity may affect other people who are not identified in the current assessments. This means that the numbers shown in Figure 8.3 could underestimate the extent of food insecurity.

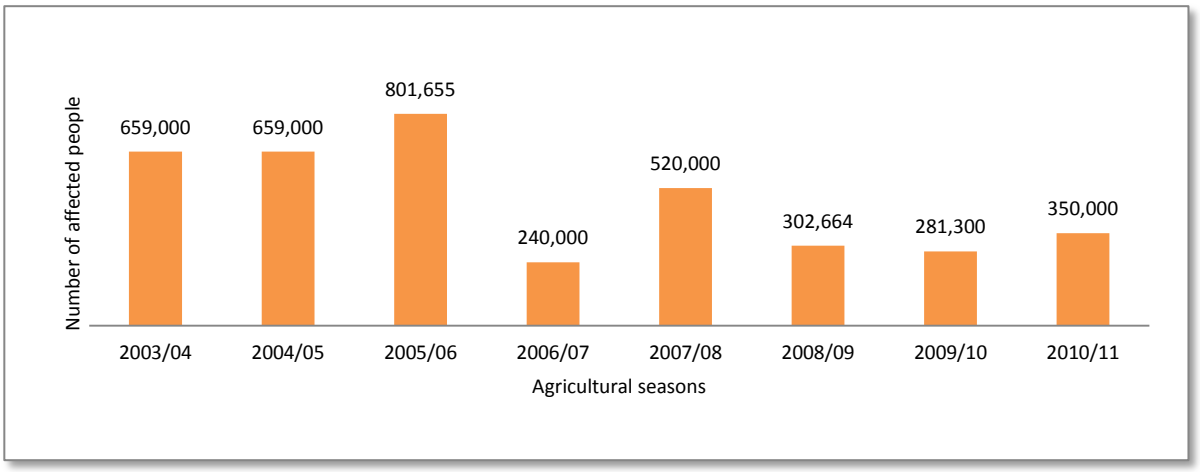

Figure 1.3. Estimated number of food-insecure people.

Source: SETSAN 2011.

8.3.2 Child malnutrition

The nutritional situation in the country has been another priority, particularly within the scope of work undertaken by the SETSAN, which includes partners such as MINAG, the Ministries of Health (MISAU), Industry and Trade (MIC) and Finance (MF), WFP and FAO among other partners. Figure 8.4 shows some figures on the nutritional situation at the national level for children (under 5 years) assessed in 2003 and 2008.

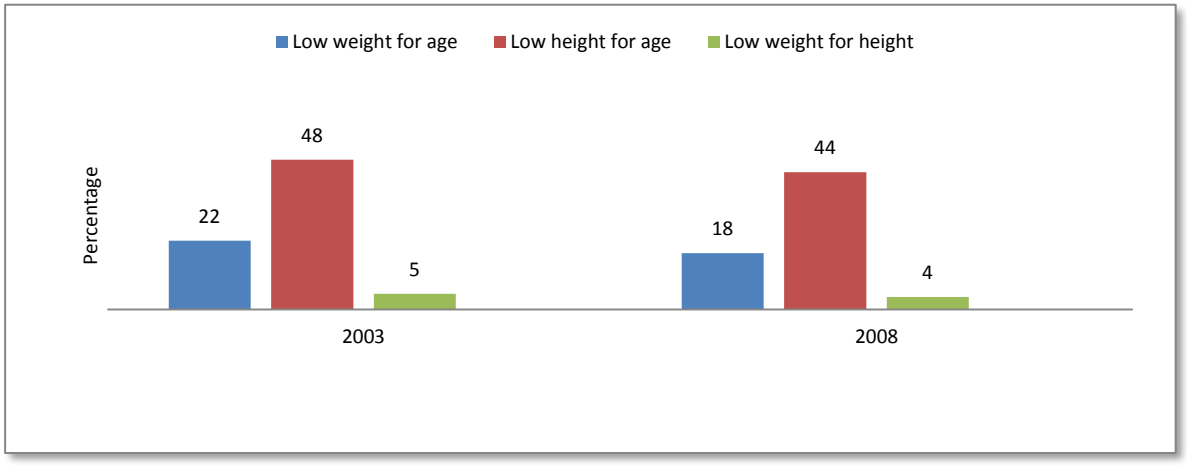

Figure 1.4. Child malnutrition at the national level.

Source: Ministry of Health (MH)/Demographic Health Survey (MH/DHS 2003) and INE/Multiple Indicators Clusters Survey (INE/MICS 2008).

Despite the progress reported on agriculture-sector performance, especially on the production of food staples, child malnutrition remains a challenge (see Figure 8.4). Interestingly, provinces with the most agricultural potential are revealed as having high levels of chronic malnutrition (See MH/DHS 2003 and INE/MICS 2008. Three indicators of child malnutrition are low weight for age, low height for age and low weight for height. Of these three measures, height for age tends to be used more extensively since it measures nutritional status in the long run. Figure 8.4 shows that as of 2008, 44% of children under 5 in Mozambique had low height for age (stunted) and 18% had low weight for age (underweight).

The levels in Cabo-Delgado and Nampula provinces are above 50% while other provinces with high agricultural potential, such as Niassa, Zambezia, Manica and Tete, have levels close to or above 45% (SETSAN 2010). The 2011–20 FSN Action Plan Against Chronic Malnutrition (SETSAN 2010) emphasizes the need to accelerate the decline of chronic malnutrition in children of under 5 from the 44% average at the national level in 2008 to 30% in 2015 and 20% in 2020.

8.3.3 Gross mortality

The infant mortality rate (per 1,000 live births) declined from 143.7 in 1997 to 93.6 in 2007. The gross mortality rate (average deaths per 1,000 persons per year in a population) declined from 21.2 to 15.6 at the national level within the same period. Figure 8.5 shows the situation in 2007.

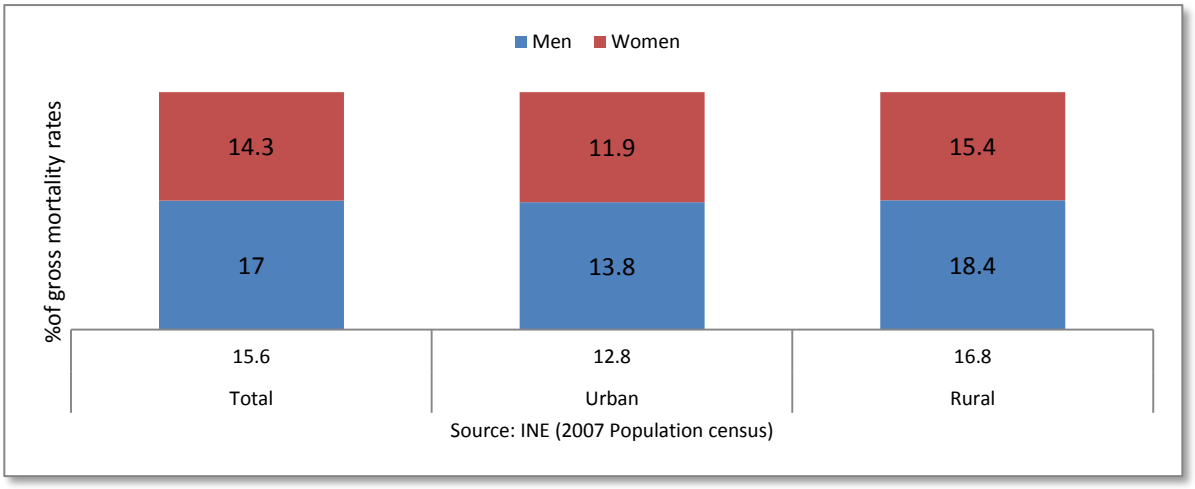

Figure 1.5. Gross mortality rates for men and women at the national level in urban and rural areas (deaths per 1,000 of the population in a given area).

Source: INE 2010 on the 2007 Population Census.

The gross mortality rate is an important factor that, in addition to population fertility rates and migrations, influences and helps to understand population growth and structure. As shown in Figure 8.5, male gross mortality rates are higher than those for females in both urban and rural areas, while they are higher for both men and women in rural than in urban areas.

8.4 Health and HIV/AIDS

Despite prevailing challenges on FSN, health-related issues such as malaria, which is the main cause of deaths in Mozambique, seem to be marginally improving at the national level. HIV prevalence at the provincial, regional and the national levels increased from 2001 to 2007 but decreased slightly between 2007 and 2009 (see Table 8.3). The prevalence rates have been relatively higher in the southern and central regions.

Table 1.3. HIV/AIDS prevalence at provincial, regional and national levels (% of total population).

Provinces/regions	2001	2002	2004	2007	2009
Maputo city	17	18	21	23	16.8
Maputo province	16	18	22	26	19.8
Gaza	19	21	25	27	25.1
Inhambane	8	9	10	12	12.6
Zambezia	16	17	18	19	15.5
Sofala	25	24	24	23	15.5
Manica	18	17	16	16	15.5
Tete	16	15	14	13	7.0

Niassa	6	7	8	8	3.5
Nampula	8	9	9	8	4.6
Cabo-Delgado	8	9	9	10	9.5
South region	15	16	19	21	17.8
Centre region	18	18	19	18	12.5
North region	7	8	9	9	5.6
National level	14	15	16	16	11.5

Source: National Commission for Combating HIV/AIDS 2010.

8.5 Wealth accumulation

Wealth accumulation cannot be easily attributed to agriculture, especially in urban areas where people rely on various economic activities not necessarily related to agriculture. However, since agriculture is still the main activity in rural areas, wealth accumulation in rural areas can be directly and/or indirectly related to agricultural performance. Table 8.4 shows wealth accumulation in terms of durable goods in the urban and rural populations in the periods 2002–03 and 2008–09.

Despite the fact that the majority of the population still lives in rural areas, there are considerable differences between the urban and rural populations in terms of accumulation of durable goods. Access to radio is the only case showing similar patterns between urban and rural populations. Thus, the radio is one of the assets with the most potential for disseminating information related to agriculture, such as weather forecasts, input and output prices and simple technical messages.

Table 1.4. Ownership of consumer durables (IAF 2002–2003)/(IOF 2008–2009).

Item	Source	Urban	Rural	National
Car	IAF02	4.3	0.4	1.6
	IOF08	5.0	0.6	1.8
	Difference	0.7	0.2	0.3
Motorbike	IAF02	2.3	0.7	1.2
	IOF08	5.2	2.9	3.6
	Difference	2.9	2.2	2.4
Bicycle	IAF02	19.4	31.8	28.1
	IOF08	24.1	43.8	38.1
	Difference	4.7	12.0	10.0
Radio	IAF02	54.9	41.5	45.5
	IOF08	47.7	44.9	45.8

	Difference	-7.1	3.5	0.3
TV	IAF02	19.5	0.7	6.3
	IOF08	35.9	2.8	12.4
	Difference	16.4	2.1	6.1
Telephone	IAF02	13.1	0.5	4.3
	IOF08Difference	53.7	11.4	23.7
		40.7	10.8	19.4
Refrigerator	IAF02	12.2	0.3	3.9
	IOF08	18.4	0.6	5.8
	Difference	6.2	0.3	1.9
Bed	IAF02	62.1	22.3	34.2
	IOF08	64.1	28.8	39.0
	Difference	2.0	6.5	4.9
Average		8.3	4.7	5.7

Source: Extracted from (MPD/National Directorate of Studies and Policy Evaluation (DNEAP) 2010.
Notes: All goods are coded as dummy variables, taking a value of one if a given household owns that asset; all changes are given as percentage points.
Key: IAF (Household survey); IOF (Household budget survey).

Bicycles are mainly owned by the rural population, particularly in the most populated provinces of Zambezia and Nampula. Bicycles are used as an important form of rural transport at household level and in some cases for renting out. They are also used for transporting produce for sale by thousands of smallholders mostly in the central and northern regions of the country.

Notably, the considerable gaps between the urban and rural population in terms of the accumulation of goods suggest income inequalities between these areas. It is also important to highlight that there still exist high proportions of both urban and rural populations with no consumer durables. For example, the 2007 Population Census (INE 2010) has estimated that the proportions of urban and rural populations with no goods at all comprised 30.1%t of the urban and 40.2% of the rural population, respectively. This fact may highlight poverty-related issues.

8.6 Progress made towards attaining MDG I of halving poverty and hunger

Two indicators of MDG1 (halving poverty and hunger) are considered here. Overall, Mozambique experienced a notable decline in poverty rates from 69% in 1997 to 54% in 2003. However, the poverty rates between 2003 and 2009 remained almost the same. This trend indicates that Mozambique faces a challenge in meeting the target of halving poverty to reach 45% by 2015. Achieving the 2015 poverty reduction target is possible if agriculture and the overall economy continue to grow as they have done recently, and if this is accompanied by national efforts to ensure equity in economic and social benefits.

The prevalence of child malnutrition is used here as an indicator of hunger. The standard measures of child malnutrition include height for age and weight for age. The weight for age gives the percentage of children under 5 whose weight for age is more than two standard deviations below the median for the reference population of 0–59 months. In Mozambique between 2003 and 2008, the prevalence of low weight for age malnutrition decreased from 22 to 18%. In the same period, low height for age malnutrition decreased from 48 to 44%. This indicates that weight for age malnutrition decreased close to 1% per year. At this rate, Mozambique has a chance of meeting the MDG1 target on child malnutrition, particularly if sound policies and actions are implemented in a consistent manner to address malnutrition.

Chapter 9. Summary and Conclusions

Monitoring the agriculture-sector performance contributes to, and promotes, the culture of evidence-based development planning. Regional commitments such as CAADP and national strategies such as PEDSA have developed monitoring and evaluation frameworks. This trends report signals MINAG's interest in, and effort towards, practically implementing these frameworks with the support of MozSAKSS.

By presenting evidence of the sector's performance, this exercise seeks to enhance the quality of debate on agricultural policy and investment planning. The process of developing the report has been premised strongly on strengthening the capacity of MINAG to institutionalize M&E. Given that MINAG will evaluate the sector's performance annually, this report serves as a template for similar future exercises.

9.1 Agricultural planning and institutional development

Since the first general elections in 1994, the GoM has consistently produced 5-year development plans (PQG, *Plano Quinquenal do Governo*) to direct public interventions and private investment to develop the economy. These center-driven plans are operationalized through specific sectoral action plans and strategies, principally through the annual Economic and Social Plans (PES, *Plano Económico Social*). Given that the majority of Mozambican nationals are poor, action plans have maintained a focus on poverty reduction. In this planning process, sector policies and strategies have been developed, some on the basis of the intersectoral action plans. Agriculture-sector policies and strategies have, in turn, been the building blocks for specific subsector strategies, programs and projects. It is not clear whether these plans are premised on a common long-term vision of where the nation would like to be in future in terms of agricultural development (priority subsectors, strategic commodities and public services). It is also difficult to identify clear relationships across the vertical hierarchy of plans and harmonization of plans among related agricultural services at different levels, principally at national and provincial levels over time. The evaluation has revealed that plans appear more like stand-alone documents.

As for public and nonpublic agricultural institutions, their evolution has been unsteady. The structure of public agricultural institutions, particularly MINAG, including key public services, has exhibited considerable changes that may have led to some institutional instability. While it is clear that agriculture covers the four subsectors of fisheries, livestock, crops and forestry (and also land management and irrigation), the supportive institutions have experienced some changes in the organizational structure with no clear evidence of benefits attained. Agricultural institutions are specialized/ technical in nature, and they need to progress over time in terms of human capital, information and knowledge management; and also be positioned in relevant organizational structures that can provide the necessary leadership, competence and visibility for them to function effectively. It should be mentioned that agricultural education institutions have been growing considerably since the late 1990s.

In this past decade, the GoM has been implementing decentralization of public administration and resources allocation, including in the agriculture sector. At present, some problems have arisen in priority setting at the local level, and between local and central levels. In addition, the decentralization process has severed linkages which the agriculture sector has relied on all along. For example, the provision of livestock vaccination and extension services has been affected due to some weaknesses in the criteria for prioritization in many provinces. Implementation needs to be reinforced, clarifying the roles of different stakeholders at central and local levels and strengthening local technical capacity in order to avoid creating gaps in the provision of key services, such as agricultural extension, animal health and technical assistance for irrigation, etc.

9.2 The macroeconomic environment

Mozambique's economy is still largely agriculture-based, and the role of agriculture in stimulating overall economic growth and poverty reduction remains critical as 69% of the country's population of 23 million remain rural-based and largely dependent on agriculture for employment and livelihoods. In 2007, the number of EAP in Mozambique was estimated to be 7,437,056 (69.2%t of people aged 15 years or older) with the rural areas having the highest proportion of EAP at 76.5 against 54.4% in the urban areas.

In the period 2000–09, there were huge fluctuations ranging from a minimum of 1% to a maximum of about 30% in values of year-to-year total and food inflation. The average total and food inflation was 11 and 13%, respectively. The observed peaks in inflation reflect, among other factors, the negative effects of drought and floods on food availability and the consequent high food prices. The troughs largely correspond to administrative controls in the form of price subsidies. Total inflation in Mozambique is mostly driven by food inflation which is closely linked to climatic conditions (i.e., floods and droughts) and external shocks. As such, there is a need to focus on strategies that will increase and stabilize agricultural outputs such as investing in technologies (e.g., irrigation) that will break the dependence on rain-fed agriculture. Reduced inflation will create a stable macroeconomic environment suitable for investment in agriculture and other sectors of the economy.

Average double-digit inflation rates of 11 and 13% for total and food inflation, respectively, prevailed between January 2000 and December 2010. Such double-digit inflation rates present a potential threat to long-term investments. Moreover, huge fluctuations in inflation are revealed suggesting macroeconomic instability. While the causes of inflation vary from year to year, the analysis suggests that the main drivers of inflation in Mozambique are low agricultural productivity owing to erratic rainfall patterns as well as dependence on imports associated with vulnerability to external shocks resulting in imported inflation. Thus, the GoM needs to devise ways of shielding its economy from global shocks. This could include, for example, investing in measures to increase agricultural productivity, such as increasing funding for agricultural research, extension and infrastructural development. These measures could reduce transaction costs that prevent the development of input and output markets and reduce the vulnerability of Mozambique to external market shocks.

The average floating exchange rate between 2000 and 2010 was MZM24 per US$1.00. The metical depreciated at the rate of 1.1% per year during this period. While this makes Mozambican exports attractive, since they become cheaper in foreign currencies, imports become relatively expensive. This could hurt the economy, especially given that the country relies on imports of, for example, machinery needed in production processes. Furthermore, a weaker metical also increases the prices of other imported goods thereby fueling inflation. It is also possible, however, that with appropriate policies increased import prices could stimulate domestic production as the country strives to be more self-sufficient.

Between 2000 and 2009, the average deposit and lending interest rates were 11.5 and 20.7%, respectively. While these were lower than the rates that prevailed in some countries in the region (specifically Malawi and Zambia), they were higher than those prevailing in South Africa, a key trading partner for Mozambique. Further, real interest rates indicate that the cost of money is cheaper in South Africa than in Mozambique. Overall, the interest rate spread – the difference between lending and deposit rates – has been narrowing, which partly suggests an improvement in the efficiency of intermediation. However, the cost of capital in Mozambique is still high, an issue undermining private investment, especially among small and medium enterprises.

Although Mozambique made gains in terms of doing business rankings, moving from a rank of 130 out of 183 countries in 2009/10 to 126 in 2010/11 (the lower the ranking the more conducive the environment to do business), the country ranks worse than the SADC averages of 109 in 2009/10 and 108 in 2010/11. Thus, more efforts are needed to further improve the business environment and subsequently improve the competitiveness of the country relative to other countries in the region. This will help attract private investments in general and agricultural investments in particular.

Overall, during the last decade there was no significant transformation in the structure of the economy in Mozambique. The average share in GDP for the service sector was 43%, followed by agriculture with 25% and manufacturing with 15%. This suggests that there is an urgent need to diversify the structure of the economy by developing value chains as emphasized in Mozambique's agricultural strategy (PEDSA) and CAADP to make the contribution of agriculture to other sectors more effective.

9.3 Public agricultural spending

About 80% of the public resources spent by the sector are generated from development partners. The agriculture sector is the only sector heavily supported by externally generated resources. While this is understandable, given the donor philosophy to support disadvantaged population segments and economic sectors, this dominance puts the sector in a shaky position. Over the last decade, Mozambique managed to attain the CAADP 10% allocation of the budget to agriculture in 3 years, namely 2003, 2004 and 2007, the share allocated to agriculture in the total budget in those years being 10.6, 11.5 and 11.2%, respectively. Over the decade, the average share of the budget allocated to agriculture was 7.3%, a value which is about 3% below the CAADP target. This indicates that meeting the CAADP 10% allocation of the national budget to the agriculture sector still remains a challenge for Mozambique.

In addition, these allocations, did not translate into actual disbursements and eventual spending. On average, around 78% of funds allocated to agriculture were actually spent between 2001 and 2009. These revealed discrepancies between allocation and actual expenditure could be due, among other factors, to delays in disbursement of funds from development partners (DPs); delays in release of funds by the Ministry of Finance, possibly due to delays in accounting for funds previously disbursed to the sector; government's inability to capture and report spending on some projects; and budget reallocation within the sector. This suggests that the GoM had difficulties in increasing and maintaining the level of mobilized resources allocated to agriculture. In order to achieve the goals of improving agricultural growth, food security and attaining the MDG1 targets there is a need to accelerate CAADP implementation in Mozambique.

The distribution of the budget by MINAG between the central and provincial levels for the period 2001–09 shows that, on average, the central MINAG budget accounted for 68% of total expenditure by the Ministry between 2001 and 2009. However, budget execution rates are higher at the provincial level, probably because the bulk of agricultural activities take place in the provinces. This underscores the need to decentralize further as this could facilitate improved budget execution. However, provinces have to harmonize locally driven plans and priorities with the national priorities in spending resources.

9.4 Agriculture-sector growth and productivity

Agricultural output or gross domestic product (GDP) in Mozambique consists of crop production (78%), forestry (9%), livestock (7%) and fisheries (6%). With regard to the CAADP 6% growth target, the Mozambican agriculture sector reached this target in 2002 and every year from 2005 to 2009. The lowest growth was 4.76% recorded in 2003 and the highest 11.2% recorded in 2002. At subsector level, the crops subsector reached the 6% GDP growth target from 2005 to 2009, the livestock subsector reached the target only in 2005, and the fisheries subsector reached this target in 2003 and from 2006 to 2008. Forestry, however, never attained the 6% annual growth in the period under analysis.

The crops subsector has been growing, particularly in 2004 and from 2006 to 2009. Interestingly, fisheries grew the fastest in 2003, growing at a rate of close to 9% between 2002 and 2003. However, in 2009, the subsector experienced a negative growth of around 10%. Livestock, on the other hand, had the highest growth rate in 2005, growing at a rate of 7.4% which was marginally higher than the growth in the crops subsector.

Overall, the crops subsector experienced better growth rates than other subsectors reflecting the fact that more investment and public expenditure have been channelled to this subsector than to other subsectors. The crops subsector is, however, constrained by low productivity emanating from the low uptake of modern technologies due to limited access to financial incentives, and poor access to output markets and value chains (5–10% of farmers used improved seeds and 5% used fertilizers, with fertilizer use in 2008 averaging only 5.3 kg/ha, and 10% used animal traction).

In addition, there is limited use of irrigation in Mozambique. Rough estimates suggest that Mozambique has the potential to irrigate 3 Mha of arable land (MINAG 2010). Between 2002 and 2010, the actual area being irrigated increased from 40,000 ha to approximately 60,000 ha (MINAG 2010), representing only 2% of the potential. Under the RISDP, SADC member states agreed to double the irrigated area by 2015. Therefore, land use intensity and productivity across much of rural Mozambique can be improved with the provision of irrigation facilities.

In the livestock subsector, consistent growth in the population of cattle occurred throughout the period under review but the numbers of small ruminants, chickens and pigs declined. This growth in cattle is attributed to the livestock restocking programs which only benefited cattle herders. To improve the contribution of the livestock subsector to GDP in Mozambique more investment is needed in animal health (vaccinations), improved management practices, improved breeds and livestock feeds, and the development of livestock value chains.

In the fisheries subsector crustaceans now lag behind sea fish in terms of economic importance. Harvesting of prawns has declined due to closure of fishing at a time when sea fish harvests have increased. The fisheries resource is potentially in need of improved management methods to sustain production. There is a need to explore aquaculture and mariculture as alternative fisheries investment options in view of dwindling sea fish resources.

The agricultural data collection systems (TIA and EWS) currently present conflicting data. An example is the case of cassava; over the period 2005–2008, TIA data showed a declining trend while EWS data showed an upward trend. Hence, there is a need to harmonize these data sources for accurate evidence-based investment decision making in the agriculture sector.

9.5 Price, marketing and trade policies

Mozambique has not benefited much from the globalization of economic relations. The trade policy framework has its roots in the colonial relationship Mozambique has had with Portugal. Before Independence, Mozambique, like all colonies, produced raw materials to supply manufacturing industries in Europe. With globalization, new markets opened up for Mozambican products. Deregulation, privatization and trade liberalization under structural adjustment programs are beginning to pay off in the form of increased exports. However, Mozambique continues to struggle to export processed agro-products.

Before independence, agribusiness was generally organized around regional monopolies. Government controlled and fixed both producer and consumer prices. After independence, the government continued with price fixing at all levels up to 1988. During the period leading up to the mid-1990s, government reformed pricing policy to a limited degree. Instead of fixed prices at all levels, minimum producer prices were introduced for maize, beans, groundnuts, cashew and cotton, but consumer prices remained fixed. Government continued to administer fixed prices for rice, sugar and tobacco. Interestingly, in this early period, the prices of cassava and tea were liberalized at all levels.

With structural adjustment in the mid- to late 1980s, government freed up trade and deregulated additional agricultural prices. The pricing system for all agricultural commodities except cotton was deregulated, which encouraged the private sector to enter domestic and international trading. Cotton is the only commodity whose producer price continues to be regulated. Government still sets minimum/reference cotton prices through negotiation with key stakeholders. This liberalized price policy has persisted for all other agricultural commodities to date.

The post-independence period has continued with the pre independence policy of regional monopolies, albeit for fewer crops. Cotton, tea and tobacco are produced and marketed under a closed geographical concession system. In the case of regional monopsonistic marketing structures, prices have not been liberalized. Tobacco concessionaries, for example, control pricing and grading, effectively administering fixed prices. For other crops marketing has been liberalized. Private traders have entered agricultural markets and restrictions on the movements of products across districts and within and across provinces no longer exist.

The agriculture sector has been protected from imports through a system of import tariffs and value added tax (VAT) on imports. Agricultural commodities have been subjected to a 20% tariff since 2006 except those considered as inputs or basic food stuffs. Maize and rice imports attract a lower tariff of 2.5%. Sugar normally attracts a tariff of 7.5% but there is an additional surcharge of 60–80%. When international sugar prices are high, as was the case in 2010, the surcharge is 0%. Mozambican sugar competes with sugar from Swaziland and South Africa. When world sugar prices fall, this surcharge will be brought back to protect the local industry from imports from neighboring Swaziland and South Africa.

To encourage local value addition, government initially banned export of raw cashew nuts in 1991. This policy was changed in favor of an export tax which was set at 30% of the free on board (FOB) price but was later reduced to 14%. Cashew export tax is still in place. The operations of the National Institute of Cashew (INCAJU) are financed through export taxes. Similarly, cotton exports attract a 2–3% export tax. The tax revenues finance the operations of the Cotton Institute of Mozambique (IAM). Additional trade policy reforms are required to eliminate unnecessary regulatory burdens for exporters.

International, regional and bilateral trade agreements have made tariffs less relevant. However, the next form of trade protection will be through technical barriers, sanitary and phytosanitary (SPS) regulations and other non-tariff barriers. Currently, Mozambique still has a weak system of standardization, quality assurance and accreditation for most export commodities. Mozambique's ability to compete in regional and world trade will depend on how quickly this capacity can be developed.

Until recently, producer subsidies have not been used as an instrument of intervention. More recently, production support for maize and rice has taken up a sizeable 13% of investment funding. The level of spending for subsidies has accelerated rapidly. Despite this increase, it is not clear whether government will continue to finance production support. While subsidies could stimulate input adoption by smallholder farmers, the experience in the region shows that subsidies are difficult to target and, unless carefully planned, crowd out

commercial input distribution. Other commodities such as cassava, groundnuts and beans hardly receive government support apart from import duties and VAT.

Cotton, sugar and cashew (including extension support to cashew production) are the commodities that appear to receive significant government intervention. Apart from import tariff and VAT protection, the sugar industry has investment incentives such as duty and VAT exemptions on imported capital goods. Other export industries such as cashew, fish and cotton do not appear to have similar incentives. Industry-specific trade policy regimes create distortions and biases. Instead, adoption of uniform tariff structures across all export industries would reduce any existing biases and allow Mozambique to exploit its competitive advantages.

9.6 Agricultural trade

The value of agricultural exports has trended upwards. However, the economic importance of agricultural trade has declined in the face of the growing importance of nonagricultural trade. Throughout much of this period, agricultural exports have led agricultural imports. Agricultural imports exceeded exports during the period of the financial crisis. This was also the case with nonagricultural trade. The financial crisis period was characterized by growing imports and declining exports. The financial crisis exacerbated the trade deficit that was observed throughout this period.

Prawns have dominated agricultural exports for a long time. Recently, the situation has changed radically with the export value of sugar surpassing that of prawns over the last 2 years. Exports of timber and cotton could also exceed exports of prawns in the future. It is not clear whether this pattern is a reflection of market demand or of supply.

In terms of agricultural imports, rice and wheat dominate. Cereals take up more than 50% of the agricultural import bill. Interestingly, maize, fish and sugar are exported and imported at the same time. This mixed trade status for these commodities is purely driven by commercial reasons.

9.7 Poverty and hunger outcomes

Regarding progress made by Mozambique towards attaining the MDG1 targets of halving hunger and poverty by 2015, there was a notable decline in poverty rates from 69% in 1997 to 54% in 2003, but from 2003 to 2009 poverty rates remained almost unchanged. This suggests that more pragmatic efforts aimed to reduce poverty are needed throughout the country, particularly in rural areas where the incidence of poverty is especially high. If the current overall economic growth rates (above 7%) and agricultural growth rates (above 6%) are sustained, the country still has some chance of meeting the target of reducing the poverty rate to 40% by 2015 as targeted under MDG1. However, it should be emphasized that growth in agriculture and the overall economy should also be accompanied by measures that ensure pro-poor equitable distribution of economic and social benefits.

Progress towards halving hunger by 2015, using the prevalence of child malnutrition as an indicator of hunger, showed a slight declining trend from 2003 to 2008. Although difficult, Mozambique stands a chance of meeting the target of reducing the 2008 chronic malnutrition rate (the under-5 weight for age) of 44% at the national level to 30% by 2015, particularly if sound policies and actions are implemented in a consistent manner to address malnutrition. The attainment of these MDG1 targets however can be derailed by greater vulnerability of smallholder farmers to adverse climatic conditions such as floods and droughts. In this regard, the government should take measures to provide social protection to the affected households.

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ANNEX: AGROECOLOGICAL ZONES OF MOZAMBIQUE

Mozambique is composed of ten agroecological zones, each comprising several production systems (National Institute for Agronomic Research [INIA] 1980). The description of the ten zones is as follows:

I. AGROECOLOGICAL Region (R1)

The Inland Maputo and South Gaza Region is a relatively small area covering an inland strip of the Maputo province and the south interior land of the Gaza province. The altitude of the major part of the region is under 200 m. The rains are concentrated in a November-March rainy season, and the average precipitation is 57 mm. Rain can occur in the cool season. The growing period during the rainy season has a moderately warm temperature regime (20-25 °C). With the exception of the soils in the regions of Pequenos, Libombos, Moamba and the valleys of the Limpopo, Incomati and Umbeluzi rivers, the texture of the soils is sandy loam. Family farmers cultivate the land during the rainy and the cool seasons. Crops grown include maize, cowpea, peanuts, cassava and sweet potato. This region has large areas of pasture and a rural population that has a tradition of raising cattle and goats. In this region, there are important areas of irrigation that could be increased in the medium term.

II. The Coastal Region South of the Save River (R2)

The Coastal Region South of the Save River is an extensive area from the southern Maputo province to the northern Inhambane province that has one of the highest population densities in the country. There is a warm rainy season between November and March. Rains can occur during the cool season that has particular benefit for cassava and cashew. With the exception of alluvial land and certain low zones, the soils have a sandy texture. The most important annual crops are maize, cowpea, groundnuts, sweet potato and cassava. Depending on the type of land, the cropping of maize/cowpea and cassava/groundnuts is dominant. Due to the limited availability of land, there is a tendency to intercrop all four crops. The production of cashew in this region is one of the most important sources of the rural population. The low areas and the river valleys are important for the production of rice.

III. Center and North of Gaza and the West Inhambane Region (R3)

The Center and North of Gaza and the West Inhambane Region consists of a vast interior with a relatively low population. It is one of the most arid regions of the country with an annual rainfall of 400-600 mm concentrated in the period between November and February. Due to insufficient soil moisture, sorghum and millet are the only crops grown in the region. Maize has limited potential. The family farmers also have smallholdings of cattle and goats. The Chokwe irrigation scheme is found in this region.

IV. Medium Altitude Region of Central Mozambique (R4)

The Medium Altitude Region of Central Mozambique is a region that includes land between 200 and 1,000 m above sea level located in the provinces of Sofala and Manica. It has an

annual rainfall of 1,000-1,200 mm concentrated in the period between November and March. The crop-growing period varies between 120 and 180 days. The majority of soils are light, with some occurrence of heavy soils. The average temperature during the crop growing period varies between 17.5 and 22.5 °C. Maize, sorghum, millet, cassava and cowpea predominate. In the moister areas, farmers cultivate sweet potato and rice. In this region there is good potential for growing cotton. It is a region with a moderate-to-high population.

V. Low Altitude Region of Sofala and Zambézia (R5)

The Low Altitude Region of Sofala and Zambézia embraces a strip of land on the coast which extends from the south of Sofala to the Pebane district in the Zambézia province. Depending on the topography, the soils have a sandy texture alternating with regions of heavy texture (fluviosols and vertisols). The region has moderate-to-high annual rainfall (1,000–1,400 mm) and a corresponding evapotranspiration range. The rainy period starts in November and ends between March and May, depending on the area. In the heavy soils areas the cultivation of rain-fed rice predominates. In regions with better-drained soils, the crops of maize, sorghum, millet, cassava and cowpea are found in association with one another depending on the availability of land and water. Cashew and cotton are important cash crops in these farming systems.

VI. Semiarid Region of the Zambezi Valley and Southern Tete Province (R6)

The Semiarid Region of the Zambezi Valley and Southern Tete province consists of a large area of land from the driest region of the Zambezi watershed upstream from the Mopeia district to the border of Zambia. The altitude of most of the land does not exceed 200 m and the rainfall is 500-800 mm, concentrated between November and March. A zone more downstream has higher rainfall with two district regions of annual evapotranspiration potential: one of 1,200-1,400 mm, and an area with a large water deficit for most of the year with high risk of crop loss. The crops of sorghum and millet predominate. There is great potential for the cultivation of cotton on well-drained land. Rice is cultivated in the margins of watercourses.

VII. Medium Altitude Region of Zambezia, Nampula, Tete, Niassa and Cabo Delgado (R7)

The Medium Altitude Region of Zambézia, Nampula, Tete, Niassa and Cabo Delgado is a vast region including the land with an altitude between 200 and 1,000 m (sub-planaltic, low planaltic and mid-planaltic) in the interior of Zambézia, Nampula and southern Cabo Delgado and Niassa. The annual rainfall and evapotranspiration potential of the region range between 1,000 and 1,400 mm. During the growing season there are areas with an average temperature above 25 °C (classified as a warm region) and others with temperatures between 20-25 °C (moderately warm). The texture of the soils varies from sandy to clayish, consistent with the topography. Crops grown include cassava, maize, cowpea, pigeon pea and peanuts, rice and sweet potato. There is beef production near urban centers.

VIII. Coastal Littoral of Zambezia, Nampula and Cabo Delgado (*R8*)

The Coastal Littoral of Zambézia, Nampula and Cabo Delgado consists of a strip of land of varying width on the coast from Pebane in Zambézia to Quionga in Cabo Delgado. The average temperature during the growing season is higher than 25 °C. The annual rainfall ranges between 800 and 1,200 mm and evapotranspiration ranges between 1,400 and 1,600 mm. The soils are generally of sandy type, with heavier soils in the lowest areas. The

production system is characterized by the production of cassava and millet. In the low areas, rain-fed rice is cultivated. Cashew has great importance for the income of the family farmers. The cassava-based system for food is intercropped with groundnuts and cowpea. Rice is produced mainly for consumption on hydromorphic soils. Large coconut plantations exist along the coastal strip. Cashews are important. Poultry and goats are the main livestock raised in the region.

IX. North Interior Region of Cabo Delgado - Mueda Plateau (R9)

The North Interior of Cabo Delgado includes the planalto (Portuguese for plateau) of Mueda and Macomia and the surrounding areas with an altitude above 200 m. The annual rainfall is 1,000–1,200 mm and the annual evapotranspiration potential is 1,200–1,400 mm. The rains are concentrated between December and March and are normally regular. The texture of the soils is generally loamy to sandy, with heavier soils occurring in the lowest areas. The dominant crop in the production system is maize. Sorghum, cowpea, cassava and sesame are also cultivated. Cashew is an important source of income. Maize is the dominant food crop cultivated as an intercrop with groundnuts, cowpea and sorghum. Due to cool weather, maize yields are relatively high. Sweet potato, rice, banana and sugarcane are produced along streams originating in the plateau. Poultry and goats are reared in the traditional way.

X. High Altitude Region of Zambézia, Niassa, Angónia and Manica (R10)

The High Altitude Region of Zambézia, Niassa, Angónia Maravia and Manica includes land above 1,000 m, notably in the planaltic regions of Lichinga, Angónia, Maravia, high Zambézia, Serra Choa, Manica and Espungabera. The annual rainfall is higher than 1,200 mm and the average temperature during the cool period is between 15 and 22.5 °C. The soil types are principally ferrasols of heavy texture. In this region, maize is the dominant crop, with a high production potential, while common beans and Irish potato are also important. Given the high levels of rainfall, erosion and the loss of soil fertility are significant problems. Finger millet is also cultivated in the area.

Mozambique SAKSS (MozSAKSS) is a collaborative program between the Directorate of Economics, Ministry of Agriculture (MINAG/DE) and three of the member centers of the Consultative Group on International Agricultural Research (CGIAR): International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), International Food Policy Research Institute (IFPRI), and International Water Management Institute (IWMI), supported by the Swedish International Development Agency (SIDA). The fundamental objectives of MozSAKSS are to reduce poverty, hunger and malnutrition in Mozambique, improve the performance of the agriculture sector, and encourage equitable economic growth. The Mozambique SAKSS program is country-driven and country-owned with the overall objective of contributing to strengthening the capacity of national institutions, in particular MINAG/DE, in strategic analysis and knowledge support so that it is able to effectively identify, coordinate and support the planning and implementation of agriculture and rural development strategies in Mozambique. Through a partnership with MINAG and other in-country partners, the program provides strategic analysis to help fill knowledge gaps and undertake synthesis of existing knowledge and information in order to directly inform current and future policy and investment options for agriculture in Mozambique.

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