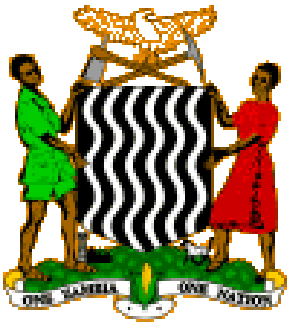

Government of the Republic of Zambia
Ministry of Agriculture and Livestock

Zambia
National Agriculture Investment Plan (NAIP) 2014-2018

Under the Comprehensive Africa Agriculture Development Programme (CAADP)

Final Draft

Ministry of Agriculture and Livestock
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Foreword

Despite the strong macro-economic indicators showing, over the past decade, poverty levels in Zambia have remained alarmingly and stubbornly high, amongst our people, particularly those in the rural areas. This has not only been of concern, but a great shame for anyone of us associated with any level of leadership of our Nation – be it those in government or in the opposition. The dismal impact on poverty reduction inspite of significant economic growth in the past decade, underscores the urgent need for the country to refocus its development agenda in general, and agricultural development, in particular.

For many years, it has been common knowledge that agriculture in Zambia can act as an engine of economic growth and poverty reduction within a relatively short gestation period, but only if it is given the necessary attention that it deserves and resources that it requires. Given that about 80% of the country's population depends on agricultural related livelihoods; it follows that the agricultural sector has the greatest potential to significantly impact the country's poverty reduction agenda. This demands a refocusing of the agricultural sector's development strategies and programmes towards drivers of inclusive agricultural growth. This is what the National Agriculture Investment plan (NAIP) seeks to achieve.

The National Agriculture Investment Plan (NAIP), which was crafted under the CAADP, has been designed to make a difference in the manner in which the agricultural development agenda will be pursued in Zambia, going forward – between 2014 and 2018. The emphasis of of NAIP is pro-poor agricultural led economic development, which approach conforms to the PF manifesto as reflected in section 3, 12 and 14. This will be realized through re-orientation of policy and legislative framework, which support a pro-poor agricultural development agenda that meets our Government's poverty reduction aspirations. In addition, the NAIP has been deliberately designed to focus on those areas that are most critical to be fastest in propelling growth.

The key areas of support include;

(I) Sustainable use of the natural resource base;
(II) Infrastructure and market access;
(III) Food security and disaster management; and
(IV) Research and technology

These focus areas although reflected in different sections of this document are all interlinked, complimentary and require strong synergies to ensure they remain sound.

The NAIP has been designed following a strong and elaborate stakeholder consultative process at National, Provincial, District and Community levels. NAIP implementation will be led by the government through MAL with strong private sector participation which is expected to progressively grow focusing on the provision of an enabling environment that facilitates and promotes private sector. Government will gradually give way and facilitate the private sector to assume an increasingly greater role. At the various levels from National to Community, NAIP will be coordinated, supervised, monitored and evaluated by appropriate existing structures, namely the Agricultural Sector Advisory Group (Ag-SAG), the Provincial Agriculture and

Environment Sub-committee (PAES) of the Provincial Development and Coordination Committee (PDCC); the District Agriculture and Environment Sub-committee (DAES) of the District Development and Coordination Committee (DDCC) as well as the Community Agriculture Committee (CAC).

Fellow Citizens, esteemed Cooperating Partners and all stakeholders, let me make an earnest appeal to each one of us seriously to resist the temptation of treating this as "**business as usual.**" We need to quickly change from that mentality as we set ourselves to implement the NAIP. With concerted efforts, I believe we can make a difference through the effective implementation of NAIP. This programme can in turn contribute uniquely and significantly, towards the goal of poverty reduction. Let us all put our hands to the plough and push forward. Together, I am certain we can achieve much more. Infact I dare say that failure is not even an option. Success of this programme is a compelling imperative that we must all contribute to. May I commend all those who have tirelessly worked, sofar, in contributing to the preparation of this programme.

May I ask God Almighty to bless the labours of our hands and minds. May I also appeal that each one of us involved, pray for God's wisdom in implementing this great work which is before us.

Robert K.K. Sichinga, MP
Minister of Agriculture and Livestock
Republic of Zambia

Acknowledgements

The Ministry of Agriculture and Livestock (MAL) would like to sincerely thank the various stakeholders who participated in the formulation of this National Agriculture Investment Plan (NAIP). We would like to express our special appreciation to the Minister of Agriculture and Livestock for his supportive role throughout the process. From time to time, the Minister engaged those involved in the formulation process to ensure that the Plan was on course. To the Directors, I wish to extend special thanks for providing valuable technical and moral leadership throughout the formulation process. The Agriculture Sector Advisory Group (Ag SAG) is appreciated for providing leadership through special meetings that were called to provide feedback to the formulation process.

We would like to salute the various provincial, district and community level stakeholders who provided valuable information during the provincial visits. The information collected provided an important contribution to the NAIP. The line ministries, private sector, the civil society, farmer organizations and individual farmers were at hand to provide various inputs into the formulation process of the NAIP. The agricultural Cooperating Partners took special interest in the formulation of the NAIP by providing critical information as well as engaging the NAIP Formulation Team through various fora including their monthly meetings.

The Ministry of Agriculture and Livestock would like to further extend its heart-felt appreciation to the Indaba Agricultural Policy and Research Institute (IAPRI) for providing useful and up to date situation analysis on the various components of the agricultural sector.

Lastly, we would like to extend our appreciation to the NAIP formulation team for putting the document together. The Team was made up of staff from the ten (10) Departments in the Ministry of Agriculture and Livestock, eight (8) local experts as well as three (3) FAO Technical experts under the Investment Centre. The Team worked tirelessly in engaging stakeholders at all levels and putting together various submissions that have given rise to this document.

Siazongo D. Siakalenge
Permanent Secretary
Ministry of Agriculture and Livestock

Abbreviations and Acronyms

ABD	Agricultural Business Department
ACF	Agriculture Consultative Forum
AgSAG	Agricultural Sector Advisory Group
AMIC	Agricultural Marketing Information Centre
APRM	Africa Peer Review Mechanism
AUC	African Union Commission
CAADP	Comprehensive Africa Agriculture Development Programme
CDI	Capacity Development Initiative
CDSF	Capacity Development Strategic Framework
CMT	Change Management Team
COMESA	Common Market for Eastern and Southern Africa
CP	Cooperating Partner
CSO	Central Statistics Office
DACO	District Agricultural Coordinator
DCUs	District Cooperative Unions
DMC	Department of Marketing and Cooperatives
EOs	Executive Officers
EU	European Union
GDP	Growth Domestic Product
JSRs	Joint Sector Reviews
FAO	Food Agricultural Organization of the United Nations
FEWSNet	Famine Early Warning Systems Network
FISP	Fertiliser Input Support Programme
FMU	Financial Management Unit
FRA	Food Reserve Agency
FRP	Food Reserve Programme
FSPP	Food Security Pack Programme
FSRP	Food Security Research Project
GRZ	Government of the Republic of Zambia
HR	Human Resources
HR&AM	Human Resources and Administration Department
HRM	Human resources management
IFAD	International Fund for Agricultural Development
IFMIS	International Financial Management Information System
IFPRI	International Food Policy Research Institute
IAPRI	Indaba Agricultural Policy Research Institute
JASZ	Joint Assistance Strategy for Zambia
JCTR	Jesuit Centre for Theological Reflection
KPIs	Key Performance Indicators
LCMS	Living Conditions Monitoring Survey
MAL	Ministry of Agriculture and Livestock
MAL HQ	Ministry of Agriculture and Livestock Head Quarters
MAL M&E	Ministry of Agriculture and Livestock Monitoring and Evaluation
MCDMCH	Ministry of Community Development, Mother and Child Health
MDG	Millenium Development Goal
MIS	Management and Information System
M & E	Monitoring and Evaluation
MoF	Ministry of Finance
NAIP	National Agricultural Investment Plan
NAIS	National Agricultural Information System
NAMBoard	National Agriculture Marketing Board

NAP	National Agricultural Policy
NCDP	National Cooperatives Development Policy
NDP	National Development Plan
NEPAD	New African Partnership for Africa's Development
NEWU	National Early Warning Unit
NGO	Non-Governmental Organization
NRDC	Natural Resource Development College
PACO	Provincial Agricultural Coordinator
PAF	Performance Assessment Framework
PCS	Primary Cooperative Society
PCU	Provincial Cooperative Union
PEFA	Public Expenditure and Financial Accountability
PEMFA	Public Expenditure
PEP	Performance Enhancement Programme
PER	Public Expenditure Review
PFM	Public Financial Management
PLARD	Programme for Luapula Agriculture and Rural Development
PPD	Policy and Planning Department
PPP	Public Private Partnership
PRBS	Poverty Reduction Budget Support
PSC	Programme Steering Committee
PSMD	Public Service Management Division
PSPF	Public Service Pension Fund
REC	Regional Economic Community
SADC	Southern Africa Development Coordination
SAPP	Smallholder Agricultural Productivity Programme
SIDA	Swedish International Development Authority
SMC	Stock Monitoring Committee
SNDP	Sixth National Development Plan
SWOT	Strengths, Weaknesses, Opportunities and Threats
TWG	Technical Working Group
UIN	Unique Identification Number
UNZA	University of Zambia
WB	World Bank
ZCA	Zambia College of Agriculture
ZCC	Zambia CAADP Compact
ZCF	Zambia Cooperative Federation Limited
ZIAH	Zambia Institute for Animal Health Institute
ZNFU	Zambia National Farmers 'Union

Executive Summary

Introduction

Evidence from around the world suggests that agrarian based economies such as Zambia require major productivity growth in agriculture for them to achieve the integrated goals of poverty reduction, national food security and broad-based economic growth. This in turn requires a well developed, coordinated and focused investment plan that facilitates public, private sector, farmer organizations and individual farmer participation. In this regard, the National Agricultural Investment Plan (NAIP) under the Comprehensive Africa Agriculture Development Programme (CAADP) seeks to identify and prioritize key investment and policy changes in Zambia that are critical to enhancing the desired agricultural productivity growth. CAADP is a framework that seeks to facilitate the achievement of an annual agricultural growth rate of at least 6% in African countries triggered by an annual national budgetary allocation of at least 10%.

The CAADP processes are facilitated by Regional Economic Communities (RECs). The Zambia CAADP Compact was signed in January 2011, facilitated by the Common Market for Eastern and Southern Africa (COMESA) as a framework to accelerate the country's realization of the Vision 2030 through the medium term five year National Development Plans (NDPs). Consequently, the NAIP has been fully aligned to the Zambia CAADP Compact and the Sixth National Development Plan (SDNP) and seeks to operationalize the National Agriculture Policy (NAP 2012).

The NAIP is organized in four (4) interrelated programmes: (i) Sustainable natural resources management; (ii) Agricultural production and productivity improvement; (iii) Market access and services development, and; (iv) Food and nutrition security and disaster risk management. Key Support Services (KSS) are dealt with separately and have been split into two broad categories: KSS – Knowledge support systems and KSS – Institutional Development. Crosscutting issues are an integral part of the whole NAIP. NAIP implementation emphasizes private sector (corporate private sector) led agricultural growth with government providing the necessary facilitatory enabling environment.

The preparation of the NAIP was undertaken with a wide stakeholder consultation process at national, provincial, district and community levels. All major stakeholder categories (including government line ministries and the Ministry of Agriculture – MAL; the corporate private sector, international and local Non-Governmental Organizations – NGOs; farmer associations and groups, individual farmers) were consulted.

Situation Analysis

Country context

Over the past decade (2001 – 2011), Zambia's economy has been growing at an annual average of 6% GDP, rising from -2% in 1975 and 1995. The positive rate has been triggered by high global copper prices and robust investments in sectors such as telecommunication, construction, retail and manufacturing. During the same period, the country has exhibited significant improved positive macro-economic indicators including inflation rate which has remained in the single digits, thereby significantly contributing to a reduction in the cost of public and commercial borrowing.

Despite these encouraging positive signs, poverty rates have remained persistently high at more than 60% since 1991. The situation with rural poverty is worse as rural poverty rates have been stuck at 77% for the past decade, thereby negatively affecting the majority of the country's population that lives in rural areas. In this regard, NAIP seeks to identify priority investment and policy changes that would result in robust agricultural growth that lessens the incidences of rural poverty.

There is a general agreement on the nature of investment and policy changes that are needed for a sustained agricultural growth. These fall into two categories. First, those that raise farmers' productive capacity. These include: Research and development of new technologies; Rural extension; Credit systems; Agricultural education; Accumulation of farm assets (labor, land and financial); Investments in quality upgrading of existing assets (education, health, social capital, soil fertility); Improved input supply systems, and; Investments in road and irrigation infrastructure. Second, those investment and policy changes that improve the farmers' incentives and depend on: Input and output prices; Perceived risk, including price and weather related risks; Transportation costs and communication infrastructure; and the effectiveness of institutions governing land tenure, markets and natural resource management.

Agricultural sector context

Despite the stagnant rural poverty, the growth rate of agriculture, fisheries and forestry since 2009 has been robust at more than 10%, exceeding the minimum recommended CAADP growth rate of 6%. Over the past decade, Zambia's agricultural growth has been highly volatile. For instance, in 2005 and 2007, the growth rate was negative. This high level of volatility is as a result of poor rainfall in the two years which in turn depicts the high level of Zambia's dependence on rain-fed agriculture. The positive agricultural growth in the three years under review are as a result of four major factors: Favourable weather conditions in most of the major agricultural regions of Zambia; Increased fertilizer use among smallholders, primarily caused by increased distribution of fertilizer under the government's Farmer Input Support Programme (FISP); Increased hybrid seed use, and; All other factors.

Between 2007 and 2012, the Government of Zambia's (GRZ) spending on agricultural and rural development exceeded the recommended CAADP minimum of 10%. However, this was as a result of supplementary spending for maize marketing through the Food Reserve Agency (FRA). Government's spending on agriculture exhibits a recurrent pattern. In most years, more than 60% of the expenditure on agriculture goes towards two programmes, the Farmer Input Support Programme (FISP) and the FRA.

The high government spending on agriculture, the robust agricultural growth rate over the past four years and the persistent high levels of rural poverty represent a paradox. The issue at hand is why have the high spending on agriculture and the robust growth rate not resulted in a significant impact on rural poverty reduction? This is on account of the fact that the 72% of all small scale farm households cultivate less than 2 hectares of land annually and are incapable to produce enough surplus for sell in order to benefit from government spending on agriculture. Besides, less than one third of this category of farmers received inputs through FISP in 2010 and a majority of these did not anticipate to selling maize. On the other hand, a minority of small holder farmers who constitute 3.8% of the total small scale farm households and cultivate 5 hectares annually are the ones whose majority received input support through FISP in 2010. Hence small sizes of cultivated land is an issue contributing to persistent rural poverty apart from low productivity levels.

A poverty reduction agricultural-led growth requires an appropriate supportive policy environment that stimulates the participation of all actors including the private sector. The NAIP has highlighted areas where policy reviews, adjustments and refinements may be beneficial. For instance, there is a need to re-align policy and increase budget allocations to production and productivity and commercialization initiatives. Policy challenges needed for Zambia's agricultural development include the passing and implementation of a market-based legislation including the Agriculture Marketing Bill and the Agriculture Credit Act, as well as fertilizer distribution program reform and an increased private sector role in agriculture, that would allow the value chain efficiency enhancement for priority commodities. Furthermore, general institutional weaknesses need to be addressed within a programme-based approach to facilitate implementation of a well-structured and prioritized investment framework.

Investment Programmes

NAIP's overall objective is "to facilitate and support the development of a sustainable, dynamic, diversified and a competitive agricultural sector that assures food security at household and national levels and maximizes the sector's contribution to GDP" (NAP, 2012). To achieve this objective, the following five impact indicators will be tracked between the current (2011) and five years time from now (2018): (i) reduction of rural poverty from 77% to 50%; (ii) increase in agricultural exports as a percentage of non-traditional exports from 41% in 2011 to 55%; (iii) reduction in chronic malnutrition of children under five from 45% to 30%; (iv) reduce soil erosion per hectare from 20tonnes to 10 tonnes, and; (v) increase cereals production from the 3.2 million tonnes to 6.0 million tonnes.

The above overall goal will be realized through the implementation of four inter-related programmes and Key Support Services (KSS). The programmes and their respective components are briefly highlighted as follows: (1) Sustainable Natural Resources Management [(i) Land-use Planning, Administration and Management; (ii) Ensure efficient water-use and irrigation; (iii) Forestry Management; (iv) Energy Efficiency Promotion, and; (v) Capture fisheries management]; (2) Agricultural Production and Productivity Improvement [(i) Livestock; (ii) Crops; (iii) Aquaculture development]; (3) Market Access and Services Development [(i) Institutional market arrangements and performance; (ii) Increasing access to rural and market infrastructure; (iii) Increasing access to rural finance; (iv) Promote value chain integration], and; (4) Food and Nutrition Security and Disaster Risk Management [(i) Food security; (ii) Nutrition security; (iii) Disaster risk management and mitigation].

The two categories of Key Support Services (KSS) and their respective components/ subcomponents are as follows: (1) Knowledge support systems [(i) Research; (ii) Seed; (iii) Extension; (iv) Agricultural education and training institutions)], and; (2) Institutional Strengthening [(i) Policy dialogue; (ii) Planning, M&E; (iii) Financial Management (and Procurement); (iv) Human resources management)]. The cross-cutting issues have been embedded into all the four NAIP programmes as well as the KSS components. The cross-cutting issues include; (i) Gender; (ii) Environment; (iii) Other sector policies & on-going plans; (iv) decentralization.

Sustainable Natural Resources Management Programme

This programme has two major objectives: (i) To sustain increased agricultural production, productivity and value addition of major crops, livestock, forest and fisheries by comparative advantage in different agro-ecological regions in the country, and; (ii) To create and enhance the sustainable use and maintenance of the existing agricultural resource base to be able to efficiently support vibrant and resilient agricultural production systems. Selected strategic objectives by component are as follows: (a) Land-use Planning, Administration and Management component will focus on: (i) Improving Land Use Planning, and; (ii) Reducing land degradation in priority catchments. (b) The strategic objective of the Water-use and Flood Control component will be to increase availability of water for multi-purpose use. (c) Forestry Management will target reduction in deforestation due to shifting cultivation and agriculture extensification, and (d) Capture fisheries management will be concerned with promoting sustainable exploitation of capture fisheries resources. To implement these components and their respective strategic objectives will require a budget of US$ 280.80 million over the five year NAIP implementation period.

Agricultural Production and Productivity Improvement Programme

This will have three major components; livestock, crops and aquaculture, discussed in succession. Due to its nature, the capture fisheries has been dealt with under the sustainable natural resources management programme.

Livestock Component

The Livestock component's overall policy objective is "to improve the sustainable and efficient production, productivity and value-addition of diversified livestock sub-sector". The strategic objectives by component are briefly discussed. The component on ensuring Animal Health and Disease Control will focus on increasing Livestock population as well as improving vaccination coverage while the one on promoting increased Livestock productivity and Production will be concerned with increasing the quantity of livestock products. Ensuring adequate Livestock Infrastructure component will target increasing livestock productivity. Lastly but not the least, two strategic objectives: Conserve important local livestock strains and develop appropriate livestock production technologies will be under the Support Applied Livestock Research component. The total budget for the whole five year period is US$ 354.25 million.

Crops Component

The component's policy objective is "to increase sustainable crop production, productivity and value addition for a diversified range of competitive crops apart from maize". This will need the implementation of the following four sub-components and their respective objectives. The sub-

component on promoting increased productivity will seek to increase crop production and productivity, in order to meet national needs and promote exports as its main strategic objective. The promote access to inputs sub-component will be concerned with improving access to inputs (seed and fertilizer) through better targeting of FISP. Two other strategic objectives will be implemented under the Crops component: Promote Good Agricultural Practices (GAP), and; Promote mechanization of crop production systems (animal draught, etc) under the good agricultural practices and mechanization of crop systems sub-components. The total budget for the five year period is US$ 852.68 million.

Aquaculture Component

The policy objective for the Aquaculture Component is "to increase fish production, productivity and value-addition through sustainable and efficient management of aquaculture". Under the Fish seed Development and Pond and Dam Aquaculture promotion sub-components, the respective strategic objectives will be: To produce quality fingerlings of right species in sufficient quantities and To establish pond and dam Aqua-parks on the appropriate areas by conducting an Environmental Impact Assessment (EIA). The last two strategic objectives of aquaculture will be to restock the depleting capture fisheries through Aquaculture and to establish an early warning and planning system. These will be realized through the implementation of Enhancement of Capture fisheries production and Climate change and climate variability sub-components. The total budget is US$ 51.57 million.

Market Access and Services Development

This has two main policy objectives: (i) To create an enabling environment that will facilitate an efficient supply of agricultural inputs, increase private sector participation and improve the functioning of markets", and; (ii) "To improve the quality and enhance the competitiveness of potential agricultural exports in order to fully utilize markets (regional and international) thereby increasing agricultural contribution to foreign exchange earnings". The four components and their respective strategic objectives are as follows. First, the component on Supporting Institutional Market Arrangement Performance has three strategic objectives under it: Strengthen and revitalize cooperatives movement; Establish agricultural marketing and trade information, and; Enhance quality of commodities marketed. Second, Increase Access to Rural and Market Infrastructure will focus on enhancing storage facilities for surplus production for sale as well as enhancing farmers access to local and national markets. Third, Increase Access to Rural Finance will focus on improving access to banking services and credit in rural areas. Lastly Promote Value Chain Integration will target the improvement in value addition of commodities and that of the warehouse systems for high yields commodities. The total budget over the five year period is US$ 257.21 million.

Food and Nutrition Security and Disaster Risk Management

Three components will be implemented. Food security will target two strategic objectives, improving food security at national level and reducing household level post harvest losses. Nutrition component will address the nutrition security for households through education as well as promote adequate food utilization at household level. Lastly, Disaster Risk Management will enhance farmers' protection to disaster as well as strengthen information systems. The total five year budget is US$ 659.86 million.

Key Support Services – Knowledge Systems

This has four components: research, seed, extension and agricultural education and training. The four respective strategic objectives for each of the four are: (i) Enhance service delivery systems to ensure adequate funding of research and extension through alternative financing options; (ii) Enhance the extension service delivery systems; (iii) Enhance Seed extension, seed testing, and variety testing, registration, and protection, and (iv) Develop and implement appropriate training programs. The total five year budget is US$ 254.48 million.

Key Support Services – Institutional Strengthening

The five components are: Policy Dialogue and Analysis; Financial Management; Human Resources Management; Planning, Monitoring and Evaluation (M&E), and; stakeholder institutional capacity building. Their respective strategic objectives are: Build capacity in policy analysis and impact assessment in Policy Planning Department (PPD); Improve budget delivery (efficiency) and effectiveness of public spending; Improve planning management and evaluation of Human Resources at all levels; Improve planning, monitoring and reporting of MAL activities and results, as well as sector performance, and undertake general capacity building of partner institutions (government, private sector, civil society organizations and farmer organizations) that will be involved in NAIP implementation. The total cost for institutional strengthening over the next five years is US$ 19.86.

Summary NAIP Budget

The total budget for NAIP over the 5 year implementation period is US$ 2,730.69 million. This is broken down as follows: 78.4% or US$ 2,141.33 million will come from Government and the Cooperating partners; 14.4% or US$ 391.67 million is expected to be contributed by farmers, and; 7.2% or US$ 197.70 million will come from the corporate private sector. This budget does not include investments going on at farm level nor those by the corporate private sector. On-going and planned interventions total US$ 457 million of which US$ 308 is on budget. The financing gap is estimated at just over US$ 651 million.

Implementation Arrangements

The private sector, local governments, central government communities and community groups will all have specific roles and functions, with government confining itself to primarily creating an enabling environment to facilitate effective implementation performance. The private sector is expected to lead the NAIP implementation. An elaborate Monitoring and Evaluation (M&E) system will be developed that allows for periodic Annual Impact Assessments that will culminate in annual reviews. The annual impact assessments will feed into the Annual Work Plan and Budget preparation for the following year through evidence based results.

A combination of financing arrangements will be permissible that promote alignment to government's financial management, procurement and monitoring and evaluation procedures.

1 INTRODUCTION

1.1 Background

Zambia is a landlocked country located in Southern Africa, lying between latitudes 8° and 18° South of the Equator and longitudes 22° and 34° East of the Greenwich Meridian. Zambia shares a common border with 8 other countries: Tanzania and the Democratic Republic of Congo (DRC) in the north; Angola in the west; Namibia, Botswana and Zimbabwe in the south, and Mozambique and Malawi in the east. The country has a total land surface area of 752,616 km², lying between 1,000 and 1,600 m above sea level. Zambia's main drainage systems are the Zambezi, Kafue, Luangwa and Chambeshi-Luapula rivers. The country has five major lakes: Kariba (man-made), Bangweulu, Mweru, Mweru-Wantipa and Tanganyika. The rivers and lakes provide the country's most important water, fisheries and tourism resources. The annual rainfall ranges between 500 mm and 1,500 mm from November to March, varying with latitude and altitude.

Evidence from around the world suggests that in largely agrarian societies, such as Zambia, achieving the interrelated goals of rapid poverty reduction, national food security, and broad-based income growth requires major productivity growth in agriculture (Johnston and Kilby 1975; Mellor 1995). This in turn requires sustained and well-targeted investments from the public and private sectors, as well as from individual farmers. Triggering the sorts of investments (and particularly Foreign Direct Investment) needed to attain significant increases in agricultural productivity requires both a well-developed and coordinated investment plan aimed at increasing funding for the known drivers of inclusive agricultural growth, as well as a policy environment that encourages investments from both farmers and private enterprises. The purpose of this National Agricultural Investment Plan (NAIP) under the Comprehensive Africa Agriculture Development Programme (CAADP) is to identify and prioritize key investments and policy changes needed to enhance agricultural productivity growth in Zambia in ways that will contribute to poverty reduction and inclusive economic growth.

CAADP is a framework that emphasizes and recognizes that Agriculture has a critical role in Africa's development agenda to reduce poverty, food insecurity and increase household income. The African Union (AU) and the New Partnership for Africa's Development (NEPAD) launched CAADP in 2003 through the African Heads of State and Government summit held in Maputo, Mozambique. At this Summit, the African Heads of State and Government agreed to prioritize agriculture as a leading sector to champion Africa's economic growth path. CAADP is an initiative that aims to accelerate agriculture development in African countries through a minimum annual agricultural sector growth of 6%. This would be realized through the allocation of at least 10% of the national budget to the agricultural sector.

The promotion of the CAADP agenda by AU/NEPAD in African countries is undertaken primarily through the Regional Economic Communities (RECs). In case of Zambia, CAADP processes have been facilitated by the Common Market for Eastern and Southern Africa (COMESA). The Zambia CAADP Compact was signed in January 2011, as a framework to accelerate the country's development agenda under the umbrella of the Agriculture Chapter of the Sixth National Development Plan (SNDP) and the Patriotic Front (PF) Manifesto, particularly sections

3 and 12 on Agriculture and Land respectively. The Compact brings together all major players and actors in the sector, i.e. Government, the Financing Partners (Cooperating Partners), the Private Sector, Civil Society Organizations (CSOs) and Farmer Representatives.

Following the signing of the CAADP Compact, Zambia has identified the need to develop a comprehensive Agriculture Development Plan, which should provide an appropriate strategic framework for CAADP for the period from 2013 to 2017.

This NAIP is organized in four interlinked Programmes: (i) Sustainable natural resources management; (ii) Agricultural production and productivity improvement; (iii) Market access and services development, and; (iv) Food and nutrition security and disaster risk management. Support services are dealt with separately while crosscutting issues have been embedded in the whole NAIP (see Chapter 4 for details). The private sector (i.e. corporate private sector) will be key in driving the agenda for Zambia's agricultural development and economic growth, with government providing the necessary facilitatory environment.

1.2 Approach and Methodology

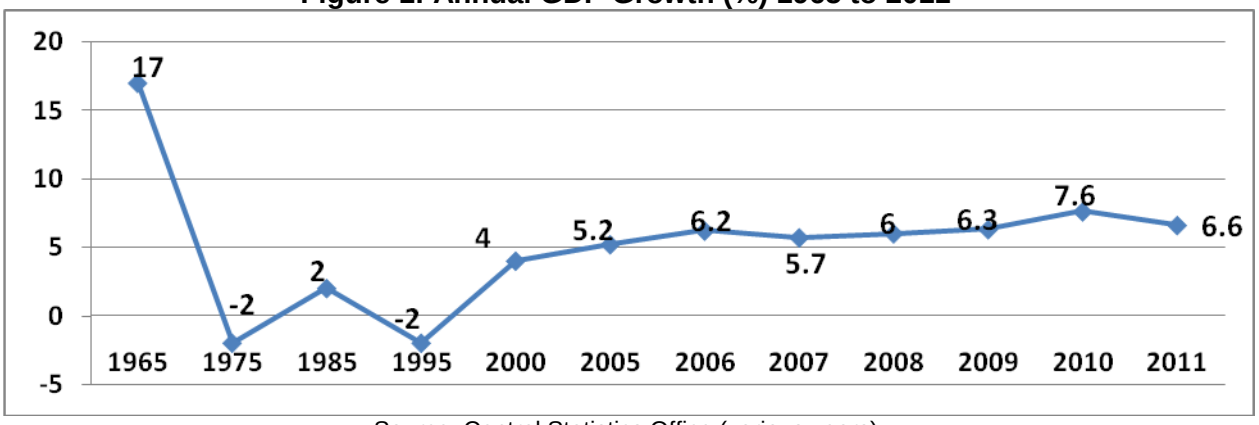
The preparation of this National Agriculture Investment Plan (NAIP) was anchored in the existing country development strategies and was done through a four-phased approach (see **Appendix 1** for detailed approach and methodology): (a) situation analysis/mapping of gaps, challenges and issues; (b) synthesis of mapped gaps, challenges and issues; (c) development of strategic focus (vision, mission, objectives) and strategies formulation/updating, and; (d) development of implementation framework, including review of policy, legal, institutional and Monitoring and Evaluation (M&E) frameworks, as well as costing of programme strategies and activities (see Appendix 4 for Results Framework Summary and Costings). A wide range of stakeholders was consulted at various levels, from national to community (see Appendix 5 for a list of stakeholders consulted). NAIP under CAADP framework is meant to animate the implementation of the country's strategies and policies, including Sections 3 and 14 of the PF manifesto relating to Agriculture and Land governance.

2 SITUATION ANALYSIS

2.1 Zambia's Economic Development Context: Successes and Challenges

Over the last decade (2001-2011) Zambia has achieved significant GDP growth of over 6 percent, rising from -2 in 1975 and 1995 (see **Figure 1** below). The positive growth in the last decade has been driven primarily by high global copper prices and robust investments in sectors such as construction, telecommunications, retail, and manufacturing (CSO, various years). At the same time, Zambia has exhibited significant improvement in several key macro-economic indicators; inflation rates in Zambia have been in the single digits since 2009, which has contributed to a significant decline in the cost of public and commercial borrowing (Bank of Zambia).

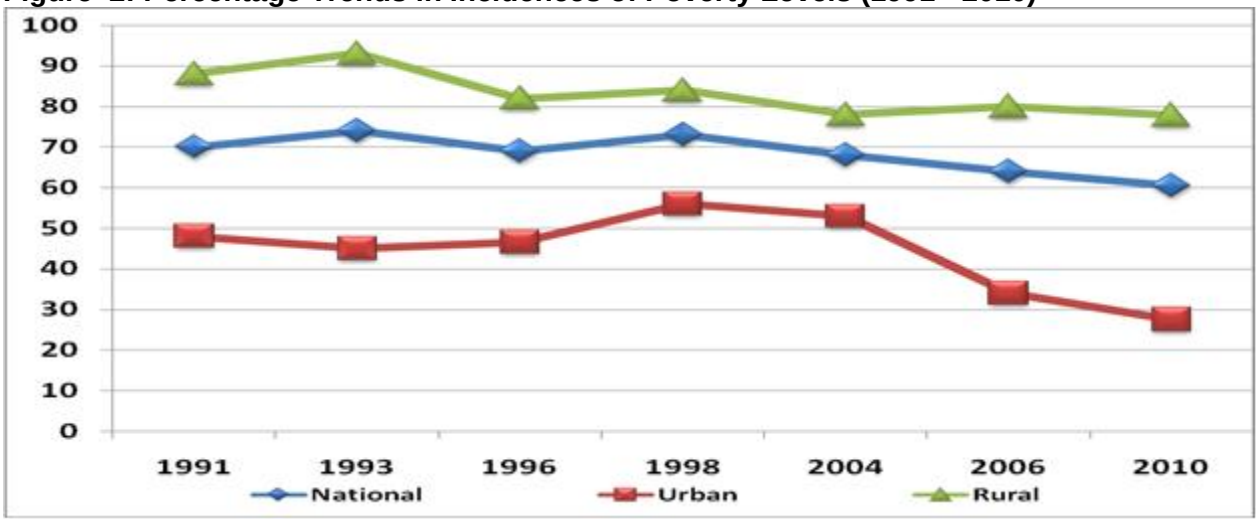
Figure 1: Annual GDP Growth (%) 1965 to 2011



Source: Central Statistics Office (various years)

Despite these encouraging signs, poverty rates have remained persistently high. As shown in **Figure 2**, poverty rates have remained above 60 percent since 1991. Although significant improvements have been made in reducing urban poverty rates, poverty remains an acute problem for rural people in Zambia, with poverty rates stuck at over 77 percent for more than a decade. Persistently high levels of rural poverty suggest that rural people, who make up the majority of Zambia's population, have not effectively captured the overall improvement in Zambia's economic performance. This NAIP seeks to identify spending priorities and policy changes to lessen the incidence of rural poverty through robust agricultural-led growth.

Figure 2: Percentage Trends in Incidences of Poverty Levels (1991 - 2010)[1]



Source: Living Conditions Monitoring Surveys, various years.

Causes and Consequences of Broad-Based Rural Poverty Reduction: Lessons Learned

Stagnant levels of rural poverty pose a major challenge for Zambia. Effectively addressing rural poverty will unlock a dramatic transformation in the overall structure of the Zambian economy. Experiences from other countries suggest that increasing rural incomes through sustained agricultural productivity growth provides the most effective way of improving rural livelihoods and triggering sweeping transformations in the overall structure of the economy in predominantly agrarian societies. How does this agricultural-led economic transformation work?

The process of agricultural transformation involves a shift from low-productivity, subsistence farming to high-productivity, commercial agriculture. These changes in agriculture, in turn, enable two distinctive structural changes in the broader economy: a) economic diversification into services and manufacturing and b) spatial concentration of population and economic activity in urban centres.

Rising agricultural labor productivity provides the initial spark for this broad structural transformation (Timmer 1988). As per capita incomes increase in agriculture, farmers diversify consumption into non-foods (Engel's Law). Additionally, in order to continue raising on-farm productivity, farm households simultaneously increase demand for purchased inputs such as fertilizer, pumps, improved seeds, fuel, transport, processing and repair services. Both sources of increased farm household demand stimulate demand-led economic diversification into manufacturing and services. Because of economies of scale in production, infrastructure and power supply, many of these nonfarm businesses cluster in rural towns and urban centres thereby providing a ready market for agricultural produce. As a result, agricultural productivity gains contribute directly to broad sectoral and spatial transformations (Chapoto et al 2012).

There is general agreement on the sorts of investments and polices needed to trigger the agricultural productivity gains necessary to sustain this structural transformation (Mosher 1966; Timmer 1988; World Bank 2008; Haggblade, Hazell and Gabre-Madhin 2010). These fall into two general categories:

1) Those that raise farmers' productive capacity. These include amongst others:
- Research and development of new technologies;
- Rural extension;
- Credit systems;
- Agricultural education;
- Accumulation of farm assets (labor, land and financial);
- Investments in quality upgrading of existing assets (education, health, social capital, soil fertility);
- Improved input supply systems ;
- Investments in road and irrigation infrastructure; and
- Collective efforts to manage watersheds or other natural resources and to control pests and diseases

2) Those that improve farmer incentives. These depend on:
- Input and output prices;
- Perceived risk, including price and weather related risks;
- Transportation costs and communication infrastructure; and
- The effectiveness of institutions governing land tenure, markets and natural resource management.

Achieving these objectives of structural transformation requires a well-targeted combination of public and private investments that take into account the stage of agricultural/market development and how these affect each farmer category in Zambia, coupled with an enabling policy environment. There is also need to understand the constraints to market participation and adoption of improved technologies facing the country's farmers and address these systematically, if the above objectives are to be realized under NAIP. Studies of Asian economies that have achieved sustained improvements in agricultural productivity, poverty reduction, and food security help to prioritize the relative importance of policy changes and specific investments. While there are significant differences between the Asian experience and Zambia, the lessons learned are instructive. In the six countries examined by the Economic Intelligence Unit (2008), policy and institutional reform, particularly in terms of improvements in trade liberalization, privatization, and clarification of property rights, yielded the greatest improvements both in terms of agricultural productivity growth and poverty reduction. This was followed by public investment in agricultural research and natural resource management. An important finding from this study is the relatively poor returns to investments in subsidies for fertilizer, seeds, and agricultural chemicals, both in terms of agricultural productivity growth and poverty reduction(See GISAMA Policy Synthesis #1).

Two broad conclusions regarding policy and investment priorities for Zambia emerge from these two studies:

1. Zambia must commit to significant policy and institutional reform in order to reap the benefits of its investments in agriculture. The specific policy reforms will vary by sub-sector, but broadly speaking Zambia's agricultural policies must create an enabling environment for private sector investment in the sector. In particular, institutional strengthening aimed at

improving the predictability of government action in agricultural markets is critical (Jayne et al 2010).

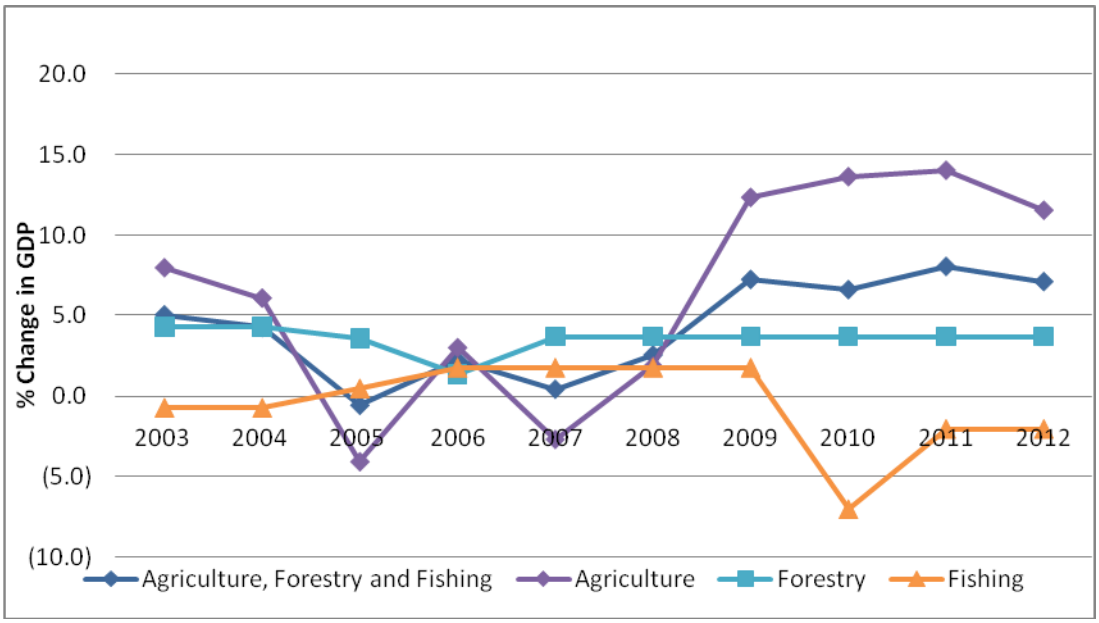
2. Productivity improvements in cereals, root and tubers, livestock, and high-value export crops may have significant effects on poverty reduction and economic growth. However, increasing productivity is better achieved through investments in agricultural research, roads, farm credit, and irrigation than through input and output subsidies.

2.2 Agricultural Sector Context

Despite the stagnant rural poverty levels in Zambia, the overall growth of the sector has been robust for several years. As shown in Figure 1, the overall growth rate of the agriculture, forestry, and fisheries sector in constant 1994 kwacha terms has exceeded the CAADP target of 6 percent since 2009. This has been primarily driven by significant growth from agriculture, which has grown at a rate of over 10 percent during the same period. On the other hand, the fisheries sub-sector has recorded negative growth over the same period, which has exerted downward pressure on the overall growth of the agriculture, fisheries, and forestry sector.

Another important insight from **Figure 3** is the high level of volatility in the growth rate for the agricultural sector. For example, in 2005 and 2007 Zambia recorded negative growth rate for agriculture. This volatility is primarily the result of unfavourable weather conditions in those years. This, in turn, is closely related to Zambia's over-dependence on rain-fed agriculture. Estimates from FAO suggest that of the 2.75 million hectares of land with potential for irrigation development, only 155,912 ha is currently under some form of irrigation (FAO AquaStat).

Figure 3: Agricultural Sector Growth Rate (% change in constant 1994 kwacha terms) 2003-2012



Source: CSO, various years

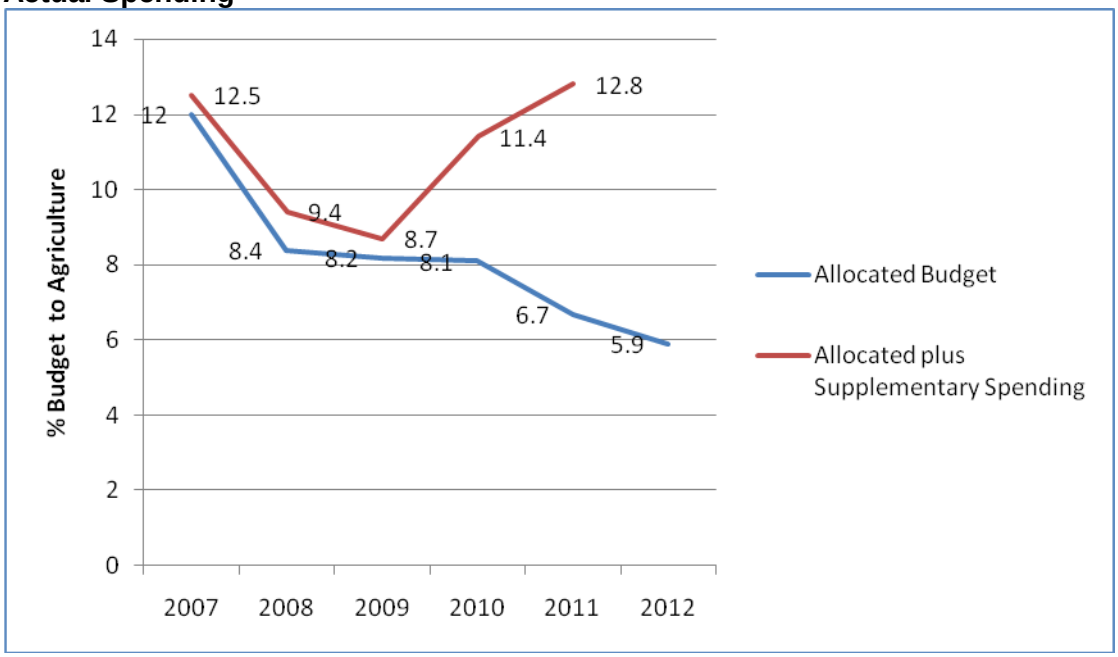
Several factors have contributed to the significant growth of the agricultural sector since 2009. Over that period Zambia has recorded three consecutive years of maize bumper harvests, with

surplus maize production exceeding one million tons in 2010, 2011, and 2012. In terms of the magnitude of their effect, the contributing factors to the 2010 bumper harvests were: 1) Favourable weather conditions in most of the major agricultural regions of Zambia; 2) Increased fertilizer use among smallholders, primarily caused by increased distribution of fertilizer under the government's Farmer Input Support Programme (FISP); 3) Increased hybrid seed use, and 4) All other factors (Burke *et al* 2010). The magnitude of favourable weather conditions on Zambia's maize bumper crop and the under-development of its irrigation potential suggest that Zambia remains highly vulnerable to weather pattern changes.

2.2.1 Agriculture spending trend analysis

The Zambian Government has demonstrated strong commitment to agriculture and rural development through allocations of more than 10 per cent of the total budget goal laid out in the Maputo 2003 Declaration. **Figure 4** shows the share of the total national budget devoted to the agricultural sector between 2007 and 2012. During that period, the actual spending on agriculture has exceeded the 10 percent spending. However, Zambia has achieved this spending goal primarily through supplemental funding for agriculture resulting from the government's response to the consecutive years of bumper harvests. In the bumper harvest years the Government of Zambia has provided the Food Reserve Agency with supplemental funds to procure the majority of the nation's surplus maize production at above market rates (Jayne *et al* 2011). Without this supplemental funding, spending for agriculture would have been below the 10 percent goal since 2008.

Figure 4: Percent of National Budget Spent on Agriculture 2007-2012: Allocated and Actual Spending

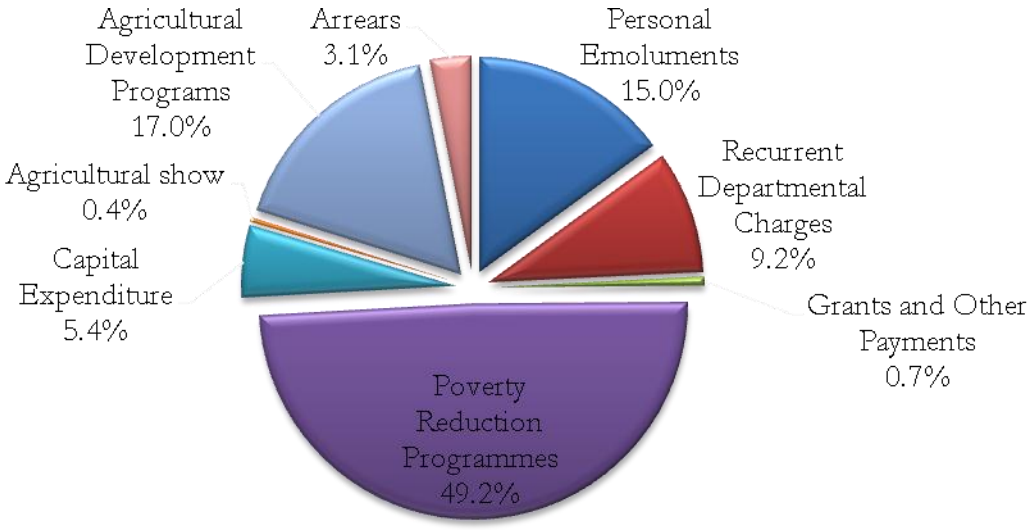


Source: Kuteya 2012

The Government of Zambia's spending on agriculture exhibits a recurrent pattern. In most years the majority of the total spending goes to two programs, maize purchases through the FRA and input subsidies under the FISP. These programmes are budgeted for under the Poverty

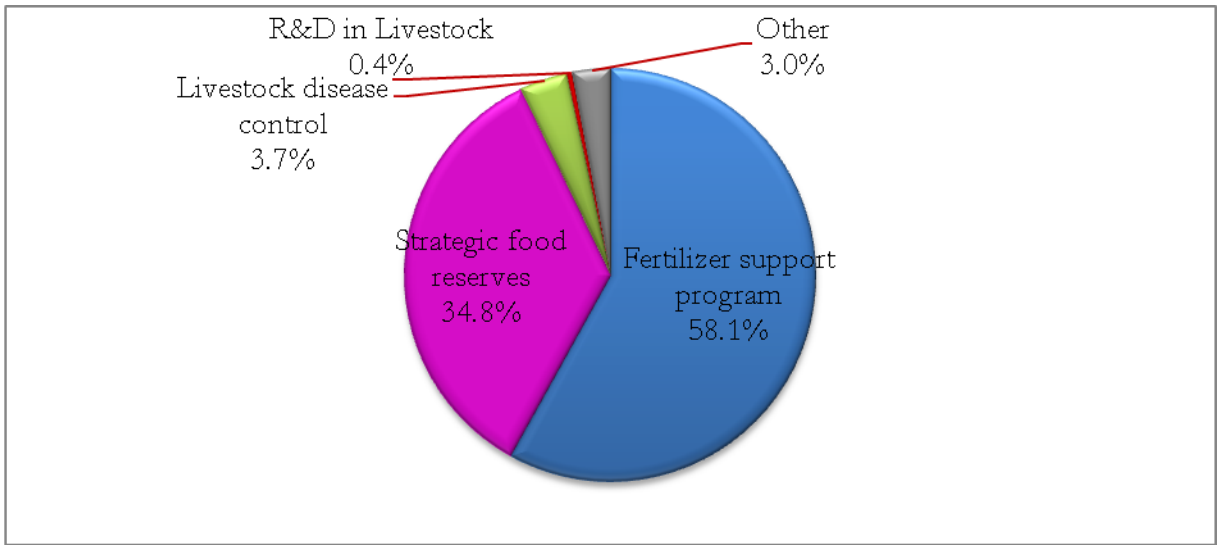
Reduction Programmes budget line in the Ministry of Finance (MoF). **Figures 5** and **6** present the breakdown of the agricultural budget and the Poverty Reduction Programme budget for 2013.

Figure 5: 2013 Budget Allocations to Agriculture



Source: Kuteya, 2012

Figure 6: Distribution of Poverty Reduction Programme Spending 2013



Source: Kuteya 2012

2.2.2 Agriculture growth and poverty reduction options

Given the high levels of spending on agriculture and the robust agricultural growth rates recorded in Zambia over the last four years, the persistence of rural poverty represents a

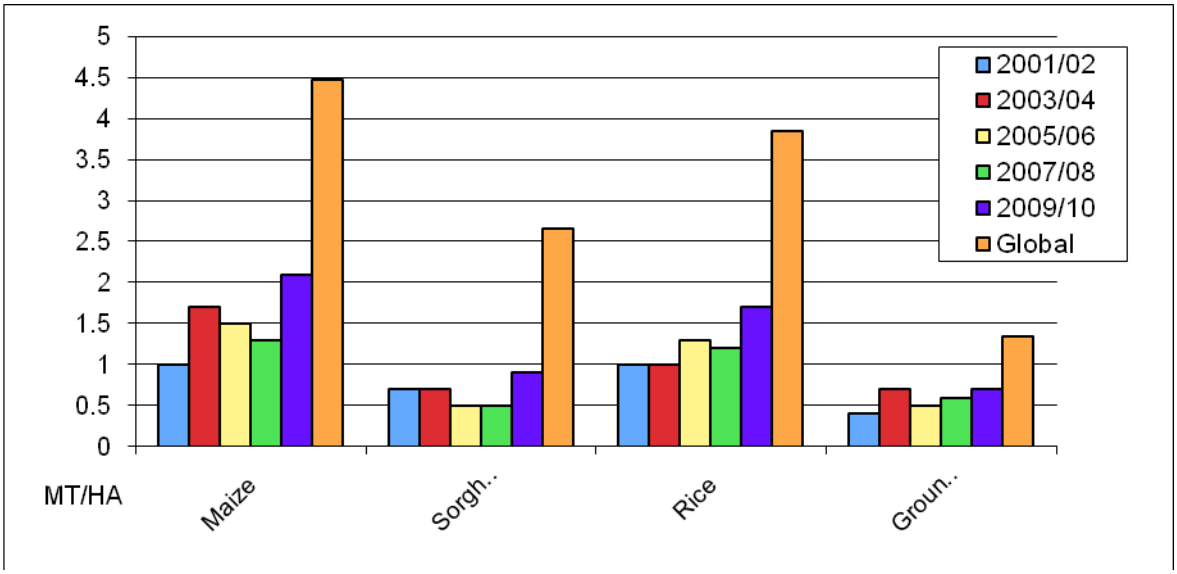
paradox. Why has the significant growth and spending for agriculture failed to have a measurable impact on rural poverty? Part of the answer lies in the capacity of the rural poor to benefit from the current spending priorities of the government.

The Central Statistical Office estimates that 72.7 percent of all small-scale farm households cultivate less than two hectares of crops. These small farmers tend to be the poorest segment of the rural population. Of this majority, less than a third received FISP inputs in 2010 and a majority did not anticipate selling maize. Of those very small farmers that anticipated selling maize, the quantities they anticipated selling were small. This implies that they are not benefiting from government maize-buying policies because they do not have surplus to sell. Conversely, among the minority of farmers cultivating 5 hectares or more, which makes up only 3.8 percent of all smallholder households, the majority received FISP inputs and their anticipated sales were high. This same group of farmers buy their own fertilizer and they do not need subsidies. As this suggests it tends to be the relatively wealthy rural minority who disproportionately benefits from current government spending patterns for agriculture, rather than the target group, the most vulnerable

Small landholding among small-scale farmers is frequently attributed to labor and capital constraints; because Zambia is often considered a land abundant country, land access is rarely considered a binding constraint for small-scale farmers. However, while labor and capital constraints certainly limit the size of farmers' fields, increasing evidence suggests that land constraints are a real problem in many customary land areas in Zambia. Nationally representative survey data from 2001 and 2012 shows that roughly 56 percent of small-scale farmers believe that there is no land in their village that has not been allocated to someone (Sitko and Jayne 2012). The lack of unallocated land leads to land fragmentation and decreasing farm sizes as farmers sub-divide their land for future generations. This has worrying implications. As Hichaambwa and Jayne (2012) show, land size is closely correlated to a farmers' capacity to effectively commercialize production. An increase in 1 hectare of land for farmers with less than 2 hectares contributes to an increase in agricultural sales of 330-550 percent, while gains in land access among those with 5 hectares or more have only a minimal effect on levels of commercialization (Hichaambwa and Jayne 2012).

Another important and interrelated factor contributing to the persistence of poverty in rural Zambia is the consistently low yields farmers achieve for most agricultural crops. As shown in **Figure 7**, for most major food crops in Zambia yield remain well below global averages.

Figure 7: Average yields of key commodities compared to global average



Source: CFS datasets, various years with Global figures obtained from COMESA

As these data suggest, the majority of rural Zambians operate under conditions of relatively severe land constraints and low yields, which makes it extremely difficult for them to effectively benefit from the Government of Zambia's current spending priorities for agriculture. Improving agricultural productivity and farm incomes, in the context of land constraints for the majority of small-scale farmers, is therefore a priority for GRZ.

A Computable general equilibrium (CGE) model was used to analyze the growth potential of agriculture sector and the results showed that Zambia can reach the six percent agricultural growth if additional growth in all crops and sub-sectors is realized (IFPRI, 2008). The model further indicated that Zambia couldn't rely only on maize or higher-value export crops to achieve this growth target. Rather, broader-based agricultural growth, including increases in diversified crops, fisheries and livestock production, will be important. Even if Zambia is already committing more than 10 percent of the national budget to the agriculture sector, the current expenditures have not proved effective at reducing poverty or increasing agricultural growth. CAADP targets include expenditures in research and development and key agricultural expenditures in other sub-sectors. In order to meet the CAADP target, the Government of Zambia must increase its spending on agriculture in real value terms by about 17–27 percent per year between 2006 and 2015, and spend about 8–18 percent of its total expenditure on the sector by 2015. Moreover the expenditures should also be diverted to other crops and agriculture subsectors.

The government has been engaged in defining a framework that will give an opportunity to revisit, in a comprehensive manner, the issues the agriculture sector is facing, identifying strategic options and strategies for poverty reducing growth including diversification of the agricultural sector, which will be central in improving resilience of the food system to future challenges such as climate change. GRZ felt critical the development in a coherent and harmonized manner of a long term framework to guide the planning and implementation of current and future policies, NDPs, and other development initiatives and providing a framework for increased investments in particular in critical programmes that would stimulate growth and private sector involvement. SNDP also calls for integration of climate change into major development sectors.

2.2.3 The agriculture policy environment prior to CAADP

Zambia experienced several phases of policy changes that affected the agriculture sector starting from market economy from independence in 1964 to the early 1970s, then a state-controlled economy from the early 1970s to the mid-1980s, followed by structural adjustment programs before returning to an introduction of neo-liberal policies in the 1990s (Kodamaya, 2011).

After 1991, Government of the Republic of Zambia (GRZ) implemented economic liberalization and de-regulation policies such as the privatization of state enterprises and liberalization of agricultural markets and trade. The trade balance for cereals recorded a deficit for all years in the 1990s. That decade is known as very difficult for the rural dwellers who became impoverished as the result of lack of Government support towards the agricultural sector.

From 2001 to 2008 the "New Deal" administration recorded economic growth with agriculture as the centre of Zambia's development and poverty reduction as the main goal. The policies implemented were based on the PRSP 2002–2004 where the principal interventions in the agricultural sector included "Targeted Support System for Food Security" in order to "promote the use of low-input and conservation farming technologies" and encourage low-input agriculture utilizing conservation farming rather than providing inputs such as fertilizer. However, some policy changes were later introduced including the government involvement in maize marketing and re-introducing fertilizer subsidies. The government expanded the role of the Food Reserve Agency (FRA) by making it a *de facto* marketing board and playing the role of importing fertilizer and distributing supplies to smallholder farmers until 2002, when the Fertilizer Support Program was launched (World Bank, 2010).

Sixth National Development Programme (SNDP)

The current major guiding document of the agriculture sector in Zambia is the Sixth National Development Plan (SNDP) 2011–2015 that is the successor of the Fifth National Development Plan (FNDP). The SNDP's main objective is to renew the Vision 2030's goal for "a prosperous middle-income nation by 2030". The main theme of the SNDP is "sustained economic growth and poverty reduction". The SNDP amongst others defines Agriculture, Livestock and Fisheries as main priority growth sectors together with Mining, Tourism, Manufacturing and Commerce and Trade. The SNDP planned important investments in infrastructures that will support the sector's development. The SNDP has eight objectives focusing on Crops, Livestock and Fisheries. The eight objectives are intended to achieve food security in an environmentally sustainable manner. Agriculture commercialization is a key objective that would be attained through the promotion of competitive, efficient and transparent public and private sector driven marketing system for agricultural inputs and outputs and also increase market access both national and international.

National Agricultural Policy (NAP)

The Zambia National Agricultural Policy 2004–2015 is aimed at achieving five main objectives that would help to ensure national and household food security through all-year-round production and post-harvest management of adequate supplies of basic foodstuffs at competitive costs" (Zambia, 2004). Concerns being raised by some stakeholders in the sector including the heavy support given to the agriculture system through specific commodities and

the current political environment have necessitated the review of the NAP (2004-2015). The revised NAP aims at achieving "An efficient, dynamic, competitive, sustainable and value-adding export led agricultural sector that assures income, food and nutrition security for vulnerable rural households while ensuring competiveness for the agriculture industry." The policy measures that will be implemented to achieve the vision of the NAP include amongst others promoting diversification of agricultural production, productivity and utilization, through strengthen research and agriculture extension delivery, improve both input and output marketing and stakeholders involvement, foster investments and infrastructure development as well as strengthen capacity.

2.2.4 Zambian CAADP Compact

The Comprehensive Africa Agriculture Development Programme (CAADP) is an initiative by African governments under the African Union/New Partnership for Africa's Development (AU/NEPAD) to accelerate growth and eliminate poverty and hunger among African countries. The main goal of CAADP is to help African countries reach a higher path of economic growth and achieve Millennium Development Goals (MDGs) through agriculturally-led development which eliminates hunger, reduces poverty and food and nutrition insecurity, and enables expansion of agricultural exports.

As a continental framework for food security and agriculture development, CAADP has been designed and is fully owned and led by African governments. The Common Market for Eastern and Southern Africa (COMESA) has been mandated to coordinate and harmonize CAADP implementation at national and regional levels in collaboration with the Department of Rural Economy and Agriculture (DREA) of the African Union Commission (AUC), the NEPAD Planning and Coordinating Agency (NPCA) and Development Partners (DPs) and in close consultation with the Southern African Development Community (SADC). COMESA in its coordination and leadership role in CAADP implementation has guided in conformity with the broader principles of experience sharing and dialogue, mutual accountability, and partnership.

In principle, CAADP seeks to achieve a 6 per cent average annual growth rate for the agricultural sector with the already stated allocation of at least 10 per cent of the national budget to the sector.

The Zambia CAADP Compact (ZCC)[2] is intended to strengthen, support and facilitate effective implementation of the National Agriculture Policy (NAP) and the Vision 2030 through five-year phases of National Development Plans (NDPs), and is aligned to the four CAADP pillars (see **Table 3**):

- Pillar I: Sustainable land and water management
- Pillar II: Rural infrastructure and markets
- Pillar III: Food supply and hunger
- Pillar IV: Agriculture research and technology dissemination

The Government of Zambia embarked on preparing a CAADP Compact with a National ownership as the entire process is 'driven' by the national side. The Ministry of Agriculture and Livestock (MAL) took the Political leadership with other sector line and coordinating Ministries

[2] This is neither an international treaty nor a legally binding instrument.

under the strategic guidance (coordination, oversight) of the 'Agricultural Sector Working Group and Ag sector Advisory Group – AgSAG). There was not a 'CAADP-specific WG' established, although the use of all departments of MAL technical expertise was facilitated and also the strengthening of existing platforms improved 'inclusiveness' especially with regard to the private and associative sectors, as well as academia. This level was the stakeholder forum.

The CAADP compact was prepared following the standard process that starts with a strong analysis of the sector with a stocktaking exercise, that consists of a review of the country's past agricultural performance, current trends, future outlook, and strategies and policies. Some modelling was also done to determine the extent of growth and poverty reduction that could be achieved if various options were to be focused on. The stocktaking also assessed the extent to which Zambia was in the right direction to achieve CAADP targets and what would be the main requirements to reach those targets (IFPRI, 2008).

The Government through its Ministries of Finance and National Planning (MFNP), Agriculture and Cooperatives (MACO), Livestock and Fisheries (MLF), and other relevant stakeholders on 18 January 2011 signed the Zambia CAADP Compact. These relevant stakeholders include Development Partners, Civil Society (ACF), Farmers Organizations (ZNFU), Private Sector (Zambia Association of Manufacturers), COMESA, the African Union and NEPAD.

Subsequently, the recently elected Government of Zambia launched the preparation of the Zambia National Agricultural Investment Plan (NAIP), on 26 July 2012, with the aim of preparing a strategic framework for the prioritization, and planning of investments that will drive Zambia's agricultural growth and development. NAIP is designed to operationalize the CAADP compact. The NAIP is a 5-year road map for agricultural and rural development that identifies priority areas for investment and estimates the financing needs to be provided by Government and its development partners (including the private sector). It is anchored to, and aligned with, the national vision of becoming a middle-income country by 2030 together with a number of key policy and strategic instruments including the National Agricultural Policy (NAP), the Sixth National Development Programme (SNDP), and the signed Zambia CAADP Compact.

The CAADP process including Compact and NAIP development is timely as both NAP and SNDP are currently under revision to incorporate Patriotic Front Manifesto priorities (see Table 3). Those revisions also give an opportunity for a complete alignment and harmonization of the strategic documents guiding the actions of the GRZ for the agriculture sector development.

There are other policies influencing the agriculture sector development that need to be acknowledged:

- National Food and Nutrition Policy
- National Water Policy
- National Policy on Environment

Also impacting the agriculture sector development potential is the fact that agriculture is the most climate-sensitive sector and climate change (CC) is expected to negatively affect food security in most sub-saharan countries (IFPRI, Lobell...). This is reflected in the World Bank PPCR project in Zambia, which includes addressing climate resilience in the agriculture sector. In national development and environment instruments, climate change features prominently as does agriculture in this context. National environment instruments dealing with climate change include agriculture (NAPA, NCCRS..). A national climate change programme to coordinate CC

activities is being prepared. It will be led by the MoF, and MAL will be expected to play a part. NEPAD has also organized workshops on integrating climate change adaptation and mitigation into national agriculture and food security investment plans within the context of CAADP. It seems increasingly certain that the achievement of agricultural development and food security goals will require climate change adaptation, which should be taken into account in any future investment plan.

Clearly, the achievement of agricultural development and food security goals will require climate change adaptation. In this regard, NAIP has been developed in such a way that it addresses CC issues. Addressing climate change in the context of agriculture will need to form part of a Zambian long-term framework guiding planning and implementation of current and future policies. Floods, droughts, heavy rainfall and other extreme events in Zambia are expected to increase in intensity and frequency. Already, recurrent droughts and floods are intensifying, resulting in adverse and significant impacts on lives and livelihoods, and damage to key infrastructure. If left unaddressed, it is estimated that climate change and variability could reduce GDP growth by 0.9% a year, costing Zambia US$4.3 billion in lost GDP over the next decade, and place the achievement of national development goals at risk. Thus, climate change issues are increasingly intertwined with the nation's development goals and will require integrated and adaptive strategies at national, regional and local levels.(source: Zambia: Strategic Program for Climate Resilience (SPCR) 2011).

For the above reasons, institutional strengthening would need to include better integrated and aligned policy making and planning between Ministries of Agriculture and Environment and other key stakeholders. The CSA project (FAO, 2013) will use policy dialogues and participatory scenario building tools to increase awareness of and develop policy options for a more holistic approach to national agriculture, food security and climate change goals.

The components of the NAIP also have key benefits but also trade-offs for climate change. These need to be taken into account in identifying specific activities. SLM practices can increase productivity but also have adaptation and mitigation benefits. Irrigation will increase resilience to recurrent droughts. More efficient use of fertilizers can limit nitrous oxide emissions while organic fertilizers may improve water retention and soil carbon sequestration. Diversification will need to take into consideration climatic uncertainty and risks. The CSA project (FAO, 2013) may help with understanding and overcoming barriers to adoption of conservation agriculture. It can also help in building capacity in Ministries of Agriculture to understand and integrate climate change into agricultural policy and planning.

The CAADP and NAIP processes have highlighted areas where policy reviews, adjustments and refinements may be beneficial. First, there is a need to re-align policy and increase budget allocations to production and productivity and commercialization initiatives; as the need for food aid and other forms of food security related development assistance declines. Attracting private investment is key to successful rural commercialization along with attention to other dimensions of the enabling environment for rural commercial development. In addition, general institutional weaknesses need to be addressed within a programme-based approach to facilitate implementation of a well-structured and prioritized investment framework.

Some policy challenges of Zambia's agricultural development include the passing and implementation of a market-based legislation including the Agriculture Marketing Bill and the Agriculture Credit Act, as well as fertilizer distribution program reform and an increased private sector role in agriculture, that would allow the value chain efficiency enhancement for priority

commodities, Land use planning and Land administration have been identified as important issues in a number of documents and the need is to improve land use planning and land administration in order to achieve sustainable land management by enhancing security of tenure of smallholder farmers, through efficient and effective land policies, legislation, certification and administration. There is a lack of focus on livestock development policy including small ruminants. There is need to give attention to related policy issues of production and productivity as well as animal health. The National Water Supply and Sanitation Policy needs to be developed in order to ensure the protection of water and sanitation infrastructure against disasters and natural hazards.

Based on the previous discussion, this will require, among other things:

1. Prioritizing investment in agricultural research, aimed particularly at identifying crop varieties, input application recommendations, and animal husbandry techniques that are well suited for small farming systems operating under rain-fed conditions. Moreover, investments in extension services to disseminate research findings and overcoming barriers to adoption of innovative practices are necessary;
2. Increasing investments in road systems to better link farmers to markets and to lower transaction costs. These investments may also stimulate voluntary migration to currently under populated regions, which would help to ease some of the land constraints being experienced in some small-scale farming areas;
3. Developing strategies for increasing the investments in irrigation;
4. Redirecting funding away from low return subsidy programmes will be necessary to increase spending in the known drivers of agricultural productivity growth, and;
5. The effectiveness of these investments will ultimately depend on improving the predictability of government action in agricultural markets, particularly in terms of the behaviour of FRA's buying and selling practices and regulations over cross border trade.

2.3 Sub-sectoral Analysis

2.3.1 Food Security and Nutrition

2.3.1.1 Context

Food and nutrition security focuses on a number of issues including: affordable food prices, steady food availability, knowledge and skills in processing and preservation of diverse foods, stability of sources of income and the general education for male and female parents and guardians. This component of the NAIP focuses on the chronically food insecure as well as populations vulnerable to and affected by various emergencies and crises linked to the Millennium Development Goal targets of extreme poverty and hunger http://www.nepad-caadp.net/pillar-3.php. Despite its rich agricultural resources, Zambia has continued to experience chronic food and nutrition security problems. Stunting rates in Zambia stand at 45 percent, with 21 percent being severe. Stunting remains the most common nutritional disorder affecting under five years children in Zambia, above the sub-Saharan Africa average of 42 percent; and (ZDHS 2007).

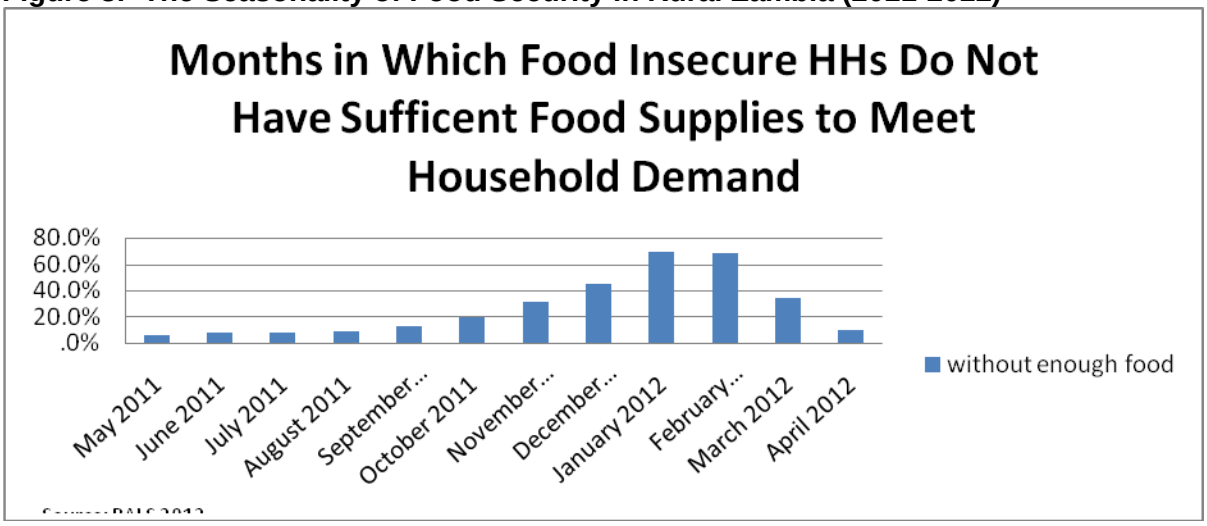
The best available direct measure of food insecurity is an estimate of daily energy intake manifesting in high stunting rates for children and low BMI for adults. Nearly half of the country's

rural population, 45 percent have daily caloric intakes below 1,750 (an average for individuals of all age groups) per day (FAO food balance sheet calculation) while their families spend nearly 80 percent of their incomes on food. Calorie consumption ranges from 1,185 in Luapula province and 2,103 in Lusaka compared with an estimated average daily requirement of 2, 750 and 2, 600 for men and women respectively. The FAO food balance sheet calculation also indicates that, on average, only two percent of calories consumed by Zambians are from pulses, vegetables, and nuts highlighting the dire need for dietary diversity. Shortage of nutrients in diets limit growth, weakens immunity, cause xerophthalmia (an irreversible eye disorder leading to blindness), and increase mortality.

Results from the nationally representative Rural Agricultural Livelihoods Survey (RALS)[3] conducted between May 2011 and April 2012 show that 42% of rural households expereinced food shortages during that time, while 52% had sufficent food access (see **Figure 8**). The period under consideration coincided with a major bumper harvest in Zambia. During normal prodcution years the number of food insecure households would in all likelihood be higher.

Of the 42% food insecure agricultural households, the average number of months that they went without sufficent food access was 3.2 months. As shown in **Figure 8**, most household food deficits in rural Zambia occur during the months of Decemeber, January, and February. This suggests that food security in rural Zambia has a distinctly seasonal dimension, which coincides with Zambia's production and marketing season. Between Decemeber and February, food stocks from agricultural household's own prodcution begin to diminish, while at the same time the prices of food in retail market begin to rise. As a result many rural households are forced to forego meals or decrease the quantities of food served per meal.

Figure 8: The Seasonality of Food Security in Rural Zambia (2011-2012)



2.3.1.2 Challenges

Low energy intake: Zambia has low energy intake (the best proxy indicator for food insecurity). The estimated average daily requirement for men and women (FAO) is 2,750 and 2,600 respectively. However, 45% of Zambia's population have daily caloric intakes that are

[3] The Survey was jointly conducted by CSO, MAL, and IAPRI

below 1,750 (average for all age groups – FAO Food Balance Sheet calculation). Calorie consumption ranges from 1,185 in Luapula province to 2,103 in Lusaka.

Serious stunting levels: Stunting remains the most common nutritional disorder affecting under five year children. Stunting rates stand at 45% and are above the Sub-Saharan Africa average of 42% (ZDHS 2007) and in rural areas are commonly at 53%. Of the 45% stunting rates, 21% are severe.

Dominance of mono cropping: In terms of cropping characteristics, small-scale farming systems are overwhelmingly dominated by a single crop, maize. For instance, about 82% of all smallholders grew maize in 2009/10. This presents a nutrition challenge where maize accounts for 57% of daily caloric consumption (FAOstat). The FAO Food Balance Sheet calculation indicates that, on average, only two percent of calories consumed by Zambians are from pulses, vegetables, and nuts highlighting the dire need for dietary diversity.

Poor coordination among key players dealing with food and nutrition: The persistence of malnutrition as a public health concern despite increasing agricultural production belies any notion that the malnutrition and under nutrition problem can be solved entirely from the supply side by increasing production. Nutrition is intrinsically multi-sectoral, and strategies to improve nutrition outcomes should seek to purposefully integrate the contribution of relevant disciplines. Multi-sectoral efforts intended to simultaneously address agriculture and nutrition have often been hindered by institutional barriers and insufficient resources.

Poor food storage at household level: emphasis of food security should be at household level. Presently, inadequate food is stored at this level due to low production and productivity (as noted in section 4.1.3 – Production and Productivity Improvement) as well as an absence of appropriate storage technologies. These challenges have led to the situation highlighted in the Market Access and Services Development programme (Section 4.1.4) which states that only 21% of the small scale farmers sold maize in 2008 while 36% were actually net-buyers of maize.

Inadequate nutrition education: this includes education/information on preparation of locally based/produced nutritious foods. There is need to rationalize the food production time for our farmers and that of food preparation and nutrition. It is not only important to produce the food but to rationalize the role of household food production, food preparation time and Nutrition. Women play dual roles in both agricultural production and nutrition (food preparation), and interventions that consider trade-offs between their respective roles and their time and labor constraints are more likely to lead to positive outcomes.

Inadequate mechanisms to deal with disaster risk management: the country has notable gaps in mechanisms calculated to deal with disaster risk management including inadequate and poor functioning weather related insurance; weak information systems (e.g. early warning systems) targeting disaster management, and weak vulnerability assessment institutions.

2.3.1.3 Lessons Learnt

Women need to be appropriately facilitated to enhance household food and nutrition security: Agriculture in Zambia supports the livelihoods of over 70 percent of the population. At least 78 percent of women in Zambia are engaged in agriculture, compared with 69 percent men. Consequently if facilitated with appropriate support services, women have the potential to

significantly contribute to food and nutrition security and given their dual roles highlighted above, those related to both agricultural production and nutrition (food preparation).

Need for an all-inclusive growth: Zambia's economy has grown steadily in real terms since 2001. However, the percentage contribution of the agricultural sector to GDP declined from 16 percent in 2001 to 12.6 percent in 2009. Though the overall poverty rate in Zambia has declined over time, poverty rates in rural Zambia remain stubbornly high, with 80 percent of the rural population living in poverty. This underscores the dire need for an all-inclusive economic growth that includes the majority of the small-scale farmers scattered across different parts of rural Zambia. It is this nature of economic growth that would have the desired positive impact on reducing food and nutrition insecurity.

Low agricultural production partly as a result of poor technology update: While input use has trended upward since 2001, 60 percent of Zambia's farmers still do not use fertilizer on their fields, while more and among those that use fertilizers only 27 percent have access to it when they need it. More than 60 percent do not use hybrid maize seeds even though a maize seed subsidy programme has been under implementation for more than a decade. These are key contributing factors to low small-scale farmer production and productivity that inevitably leads to poor food and nutrition security. These challenges become even more important under climate change as unpredictable rainfall and temperature patterns make the timing of fertilizer use and the use of suitable seeds more critical to the production process.

Food and nutrition security is a cross-cutting issue and may be addressed through the "Farming as a Business" approach: Food and nutrition concerns cut across all the other three key programmes under this NAIP: Sustainable Natural Resources Management; Production and Productivity Improvement, and; Market Access and Services Development. At the core of efforts aimed at addressing food and nutrition insecurity is the promotion of the ethos of "Farming as a Business". The Sida/Government supported Agricultural Support Programme (ASP 2003-2008) whose emphasis was capacity building on "Farming as a Business" in four provinces of the country[4] had remarkable results among participating households and communities (ASP End of Programme Impact Evaluation, 2011). These results included: (1) Heightened household assets acquisition (improved houses, oxen/cattle, light trucks, etc.) and community (dip-tanks, dams/weirs) asset for a considerable proportion of participating households. (2) More than 90% of participating households did not face food and nutrition insecurity problem. The participating households were involved in a variety of enterprises and had enough financial capacity to procure food throughout the year (FGD, NAIP Mbala Community Consultations, 2012).

[4] Southern, Central, Northern and Eastern

2.3.2 Natural Resources Base

2.3.2.1 Land

2.3.2.1.1 Context

Zambia covers 752 610 km2 land area with a total mass of 75 million hectares. Land administration in Zambia has been a subject of wide spread interest due to competing needs that include housing, investment, mining, forests and agriculture. Land access and acquisition has posed societal and developmental challenges in the country. Mean land access among small and medium farmers is roughly 3 hectares. There are large variations among provinces (see **Table 1**), within provinces and, most importantly, within villages. Western, North-western and Lusaka provinces have the smallest mean household access, less than 2 hectares (World Bank, Social Analysis paper,2005).

Table 1: Population, land area, population density, and land access per household

Province	Population	Land Area (km2)	Population Density per Land Area (km2)	Ha/Household
Central	1006766	94394	10.7	3.23
Copperbelt	1657646	31328	52.9	3.18
Eastern	1300973	69106	18.8	2.20
Luapula	784613	50567	15.5	2.61
Lusaka	1432401	21896	65.4	1.98
Northern	1407088	147826	9.5	6.54
N-Western	610975	125826	4.9	1.70
Southern	1302660	85283	15.3	2.40
Western	782509	126386	6.2	1.75
Zambia	**10285631**	**752612**	**13.7**	**3.05**

Source: CSO 2001.

While the 1995 Land Act vests all land in Zambia in the President, who holds it in perpetuity for and on behalf of the people of Zambia, the Zambian land tenure system consists of two systems: customary rights applying to the old Reserve and Trust land, now referred to as customary land, and statutory tenure applying to state (was Crown) land. Because of the significant differences between them, there has been discrepancies in the agricultural production and productivity of the two areas and occupancy (Mulolwa, 1998).

Customary tenure covers an estimated 94 per cent of the Zambian area. The recognition of customary tenure does not bring about the registration of ownership rights, but rather only the protection of use and occupancy rights. Customary land is controlled by the chiefs and their headmen but supposedly act with consent of their people. The role of the chief in most Zambia is as regulator of the acquisition and use of land but there are important variations in the tribes between the distribution of the interests of control and interests of benefit. Thus the use of these pieces of land are controlled by chiefs and headmen.

Statutory tenure covers an estimated 6 per cent of the Zambian area. The formal registration of land ownership is arranged in the lands and Registry Act. In this arrangement, once the President has given his consent to an application of ownership of land, a certificate of title, which is conclusive evidence of title (Mulolwa,1998) is headed over. Registration does not cure

defects in documents but the registered proprietor of a certificate of title is protected against ejection, or adverse possession. Pieces of land obtained in this manner usually can or may be used as collateral in case of obtaining a loan from lending institutions as compared to the customary tenure.

With respect to agriculture production and productivity, approximately 16.35 million ha of Zambian total mass area is arable land and 5.3 million hectares (28% of total area) is cultivated and of this, 29,000 ha is under permanent crops.

2.3.2.1.2 Challenges

Land Administration - If a conflict arises over land, it will generally be resolved by a village chief with help of a group of elders. The security of these rights might be based on the state of mind of the chief, or a concrete fact. Conflicts of interests in land do not have a formal procedure. These issues have important links to property rights, investment and economic opportunities for both urban and rural development. It is also clear that the system governing land administration, forestry and environmental management in the country is fragmented. This fragmentation contributes to inadequate collaboration, coordination among government institutions as well as stakeholders that deal with land administration.

Land Management - Zambia's land base is environmentally fragile and easily degraded. A variety of different land degradation processes are at work through natural factors (water and wind erosion, soil fertility decline, pollution, salinization, vegetation loss and climate variability) and human induced factors (inappropriate management practices; poor management of natural forest and tree plantation/woodlot; removal and degradation; overgrazing; poor management of surface and groundwater resources; forest fires; and population growth). There is strong evidence that large areas of the croplands, grasslands, woodlands and forests are already seriously degraded. Soil nutrient depletion in the fields of small-scale farmers is severe with inadequate replenishment of the nutrients lost due to soil erosion, leaching and removal in harvested products.

2.3.2.2 Water and Irrigation

2.3.2.2.1 Context

Water - Among the Southern African countries, Zambia is taunted as the most endowed with surface and ground water supplies. According to the Government of the Republic of Zambia, the country has about 45% of the water supplies of the total water resources of Southern Africa. The mean annual runoff is around 100 billion cubic meters while 60 billion cubic meters is stored in rivers, lakes, streams and swamps.

There are about 1,700 dams. The total capacity is about 106 km^3, but this includes 50 percent of Lake Kariba on the Zambezi River, which is shared between Zambia and Zimbabwe and which accounts for 94 km^3 of this capacity. Not taking into consideration this shared dam, the total capacity is thus about 12 km^3. However, this figure probably also includes small dams with a height of less than 15 meters.

Zambia lies entirely within two large river basins, the Zambezi River basin and the Congo River basins. Below are three major river systems within the Zambezi River basin and two within the Congo River basin (Water Sources and Use, Source:FAO,2012);

Wetlands, including dambos, which cover about 3.6 million hectares or 4.8 percent of the total land area, are a source of livelihood for the majority of small-scale farmers in Zambia. Dambos are used for grazing animals in the dry season when upland vegetation is dry and with little nutritive value. They are also important for fishing, livestock-watering, hunting of small animals, collection of thatching grass, and most importantly, for dry season vegetable growing. Seepage zones and shallow wells are used as sources of water. Sometimes water storage needs for irrigation may dictate the construction of a low-cost earth dam. This type of use at small-scale does not entail the use of heavy machinery for cultivation or draining water.

Total water withdrawal was 1.737 km^3 in 2000, with agriculture use accounting for 1.320 km^3 (77 percent), or more than three-quarters of the total domestic water use claiming 0.286 km^3 and industries taking 0.131 km^3. Future water use was estimated to reach 1.922 km^3/year by 2012, assuming that land under irrigation would continue to expand at the rate of 1,200-1,500 ha/yr, industrial use would increase by 10 percent (FAO, 2012).

Irrigation - Zambia's irrigation potential is estimated at 2.75 million hectares. It is believed that 523 000 ha can be economically developed, but the variance on figure presentation of the potential by different authors indicate the need for a systematic assessment to determine the correctness of the findings (FAO 2012). The following categories of irrigated farming are found in the country: a) Informal irrigation by small-scale farmers; b) Smallholder irrigation schemes; c) Former quasi-government schemes; d) Private or commercial irrigation schemes;

The total estimated area equipped for irrigation is 155,912 ha, broken down as follows: (i) 55,387 ha under full or partial control irrigation (surface 32,189 ha; sprinkler 17,570 ha, and; localized irrigation 5,628 ha); (ii) equipped lowlands (wetlands, flood plains, mangroves), 100,525 ha, and; (iii) spate irrigation, zero. Adding (iv) non-equipped wetlands and inland valley bottoms, and (v) non-equipped recession area gives a total water-managed area of 255,992 ha, with the later two contributing 100,000 ha and 10 ha respectively (FAO Aquastat Data, 2005).
Zambia with more water resources only had 0.9% of its arable land irrigated between 1995 and 1997 (GRZ, 2006). Most of the irrigated land lies along the line of rail, above karstic areas for ground water, adjacent to standing water bodies such as rivers and dams, and in dambos and wetlands for smallholders and emergent farmers (GRZ, 2004).

Irrigated agriculture has shown to increase yield two-fold to four-fold when compared with rain-fed agriculture. Rain-fed wheat yields between 1.5 and 2 ton/ha compared to the national figure of 6 ton/ha when irrigated. Similarly rain-fed maize yields 1.5 ton/ha using conventional methods compared to 3 ton/ha under conservation farming and/or water harvesting conditions and 9 ton/ha under irrigation. The main irrigated crops are sugar cane (18,418 ha), wheat (12,200 ha) and rice (8,000 ha). Other irrigated crops include vegetables (3,000 ha) and maize (1,500 ha). All these are annual crops. The major permanent crops under irrigation are coffee (5,160 ha), bananas (3,000 ha) and citrus fruits (2,210 ha). Cotton irrigation has virtually collapsed in the country due to commercial farmers opting for high-value irrigated crops like paprika. About 88 percent of the area equipped for full or partial control irrigation draws its water from surface water and 12 percent from groundwater.

2.3.2.2.2 Challenges

The Government has developed and managed smallholder irrigation schemes with external financing and GRZ own resources. But most of these schemes were poorly managed as a result most of them are in deplorable infrastructure state. Until recently the majority of Zambians

shunned irrigation with a view that it entailed huge investments requiring pump sets and pipe networks. However, frequent and disastrous droughts, which led to the failure of rain-fed crops, forced farmers to go into some form of irrigation using available surface water resource (FAO 2012). The challenge seems to identify suitable sites, and also the type of crops that can be grown economically, allowing scheme operators to make a return, so that operations and maintenance costs can be covered. Institutional aspects are also a key factor influencing the success of irrigation schemes, and the establishment and training of Water Users Associations is seen as a sine qua non condition for the successful operation of irrigation schemes.

2.3.2.3 Forestry

2.3.2.3.1 Context

The Integrated Land Use Assessment - ILUA (2005-2008) has prepared the following country's forestry status: (i) The forestry cover is estimated at 49.9 million hectares or 66% of the country's total land cover. Most recent estimates (2009-2010) put the forestry cover at 55%, quite a significant drop from the 66%; (ii) The total growing stock in volume across all land uses in Zambia stands at 2.9 billion cubic meters; (iii) The national biomass is estimated at 5.6 billion tones. There are 2.8 billion tons of carbon stored in the country's forests.

2.3.2.3.2 Challenges

Agricultural land covering about 20 percent of the land area is the largest contributor to loss of forest in Zambia. The rate of deforestation is estimated at 250 000 to 300 000 hectares per annum. The forest sector has the potential to contribute significantly towards economic growth. However, the main challenge is with the increasing demand for food and energy as a threat on forest resources and biodiversity. Forests play an important role in protecting river basins and watersheds. To improve forestry contribution to national development, the country's forestry policy and legislation promotes broad-based participatory approaches of management and utilization of the forestry resources. Agriculture being a major cause of deforestation in Zambia, policies should be put in place to promote agro-forestry, non-wood products and sustainable forest management.

2.3.2.4 Capture Fisheries

2.3.2.4.1 Context

Zambia has within its boundaries the sources and large parts of two of the largest river systems of Africa; the Congo and Zambezi. The lakes, swamps and floodplains of these river systems together with part of lake Tanganyika form the greater part of the fisheries of Zambia (WorldFish Centre 2004). Although water is abundant, access and use is limited by human, institutional and financial resources. The fisheries subsector contributes around 1.24 percent of the gross domestic product (GDP) or 3 percent of agriculture GDP from its meager annual national budget allocation of 0.12 percent (Musumali et al, 2009). This relatively small contribution at macro level masks important contribution of fish production to the rural economy through employment, earnings and as a source of food.

According to the latest statistics (MTR 2009, MoFNP), fish production under capture fisheries increased by 20%, from 65,927 Mt in 2006 to 79,403 Mt in 2008, though it's not clear whether

this increase was as a result of the use of recommended fishing methods and gear. Kapenta production grew by 90% over the same period, from 6,251 Mt to 11,890 Mt.

Current annual catch is estimated at 70,000 tones, but the country has the capacity to produce about 150,000 metric tons of fish annually on a sustainable basis. The average annual per-capita consumption of fish is estimated at 6.4 kg, which accounts for more than 40% of the animal protein intake of an average Zambian diet.

2.3.2.4.2 Challenges

The increasing demand for fish has resulted in increasing the fishing pressure on nearly all important fish stocks. This situation calls for the need to improve the management of capture fisheries if they are to continue to contribute positively to economic development. By the year 2015, Zambia's population forecast is at 15.2 million requiring per capital fish consumption levels of around 10 kg per year or 152,000 tons of food fish per annum. Recommended maximum food fish export allowable for Zambia is 120,000 tons per year. By 2015, the country will require 140,000 tons of fish to meet both domestic consumption at current levels and export requirements. This implies invariably an increase of 82,000 tones in fish production over and above the current levels of 70,000 tones will be necessary by the year 2015. However, the lack of fisheries data and statistics availability in the last decade and the general decline in availability of such data over years has provided unreliable statistics as regards the actual fish available for consumption (WorldFish Center). This calls for establishment of a good Research and Development section in the Fisheries department.

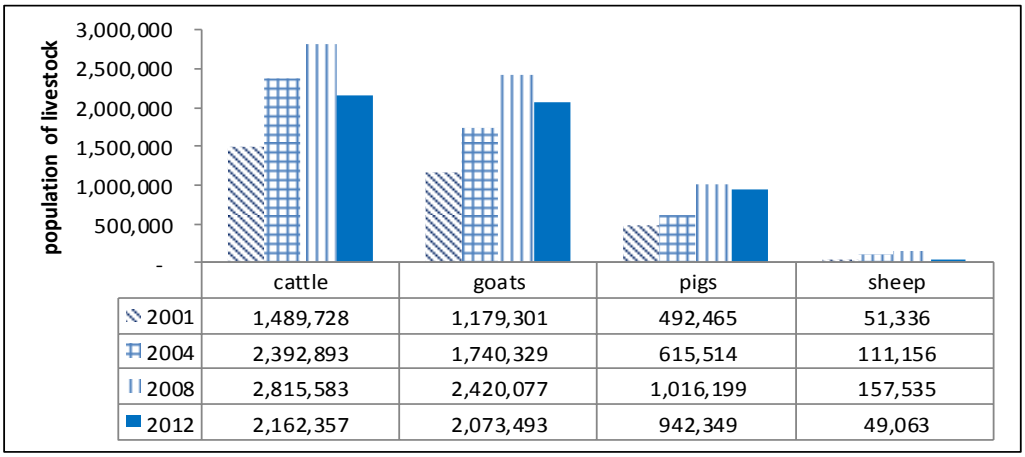
2.3.3 Production and Productivity

2.3.3.1 Livestock

2.3.3.1.1 Context

Livestock is an important agricultural sub-sector, contributing about 3.2 percent to the overall national GDP, 42 percent to the agricultural GDP and 45 percent to the poorest household's income (MAL et al., 2012). The sector is segmented into commercial, emergent and smallholder (traditional) farmers. The smallholder farmers, however, own about 80 percent of the total livestock. The population of livestock within the smallholder sector is currently estimated at 2.2 million cattle, 2.1 million goats, 1 million pigs, and 50,000 sheep (IAPRI, 2012). However, between 2008 and 2012, there was a decline in the livestock population as shown in **Figure 9**. Of 1,417,992 smallholder households, about 21 percent own cattle, 25 percent own goats, 14 percent own pigs, less than 1 percent own sheep about 80 percent own poultry (IAPRI, 2012).

Figure 9: Smallholder Livestock Population by Year



	cattle	goats	pigs	sheep
2001	1,489,728	1,179,301	492,465	51,336
2004	2,392,893	1,740,329	615,514	111,156
2008	2,815,583	2,420,077	1,016,199	157,535
2012	2,162,357	2,073,493	942,349	49,063

Source: IAPRI, 2012

Productivity in the sub-sector is low especially among the smallholder farmers. Population growth rates for cattle are estimated at 2 percent; calving rates at 55 percent; calf mortality rates at 20 percent; adult mortality rates at 5 percent and milk yield of 2 litres per day (World Bank and UKaid, 2011; MAL et al., 2012). The average number of cattle owned is 9 compared to 17 and 66 cattle among emergent and commercial farmers respectively (World Bank and UKaid, 2011). Similarly, the average ownership of goats, pigs and sheep among the majority (more than 50 percent) smallholder farmers is less than 9 (MAL et al., 2012; IAPRI, 2012).

Demand for meat and milk within the country outstrips production. Currently, annual production of meat (beef, goats, pork, and broiler chicken) and milk are estimated at 133,000 tons carcass equivalent and 306 million litres respectively (MAL et al, 2012). Given high growth rate of the per capita income, fast urbanization and high-income elasticity of meat and milk, projections show huge gap between supply and demand for meat and milk in 2027. The production deficit is projected at 434,000 tons of meat and 940 million litres of milk (MAL et al, 2012).

2.3.3.1.2 Challenges

Under Funding of the Sub-sector

The livestock share of total agricultural budget is only 17 percent, which is not in line with the 42 percent contribution to the agricultural GDP (MAL et al., 2012).

High Disease Prevalence

High disease prevalence in the livestock sector is a major hindrance in the production and exportation of live animals and animal products. Over 60 percent of smallholder farmers have their animals affected by diseases yearly (IAPRI, 2012). The most important livestock diseases are Contagious Bovine Pleural Pneumonia (CBPP) and Foot and Mouth Disease (FMD) (MAL et al., 2012). Currently, Zambia cannot export to the European Markets not even South Africa due to failure to meet the sanctioned livestock standards. As such, livestock exports of both carcasses and live animals go mainly to Democratic Republic of Congo and Angola. Thus there

is need to improve market access both domestic and international through establishment of disease free zone areas.

Poor Grassland Management

Most of the livestock in Zambia depend on natural grasslands and browse for feed with the exception of commercial herd, which receive supplementary feed. Compared to other countries within the region, Zambia is well endowed with grazing land. She has 20.3 million hectares of grazing land and supporting only less than 3 million cattle (World Bank and UKaid, 2011). Moreover, of the total annual production of 18.4 million tons of dry matter, consumable folder and grass, only 6 million tons (33 percent) is required in ruminants (cattle, sheep, goats) production. However, there is poor management of pasture among smallholder farmers, which leads to overgrazing, and loss of animal weight during the dry season.

High cost of feed

On the other hand, poultry and pigs require concentrate feed and it's estimated that 40 percent of the total requirements comes from cereals and the rest from agro-industrial by-products. And of the total 2.7 million tons of cereals, only 84,000 tons (3.8 percent) is needed in monogastric (pigs and poultry) production (MAL et al., 2012). Thus feed resource should not be a constraint to livestock development.

Lack of breeding stock

Zambia lacks well functioning breeding centres for the production of appropriate breeding stock for various types of animals. This has negatively impacted the required level of restocking as well as production and productivity in the sub-sector.

2.3.3.1.3 Lessons Learned

Good management of pasture: can lead to increased livestock production, improved soil fertility, reduction in soil erosion and helps to conserve water. In addition, over grazed areas can become more productive and extend the grazing season. An added benefit of improved pasture management would be a decrease in Green House Gas (GHG) emissions that would at the same time contribute to goals of the National Policy on Climate Change.
Livestock sub-sector is prominent as smallholder farmer income source: Though livestock sub-sector has not been given the prominence it deserves in terms of overall national budget resource allocation, it is the preferred sector by farmers with regards to source of funds to meet school, health and other needs. Farmers made this point clear during a field day (GART 2012).

Low female-headed households' access to assets includes livestock: PLARD II baseline (2012) noted a significant gap in livestock ownership between male and female-headed households. Among male-headed households, 58% said they kept livestock (close to 60%) while the corresponding figure for their female counterparts was 36.4%. The major reason cited for low ownership was lack of financial resources to procure animals. This has tended to perpetuate female-headed households' poverty cycle.

Control of diseases

To help combat FMD and CBPP, the following would assist if put in place;

- organized veterinary services,
- vaccination of animals,
- livestock movement control,
- livestock traceability and identification,
- disease surveillance,
- zoning and fencing,
- animal health training.

2.3.3.2 Crops

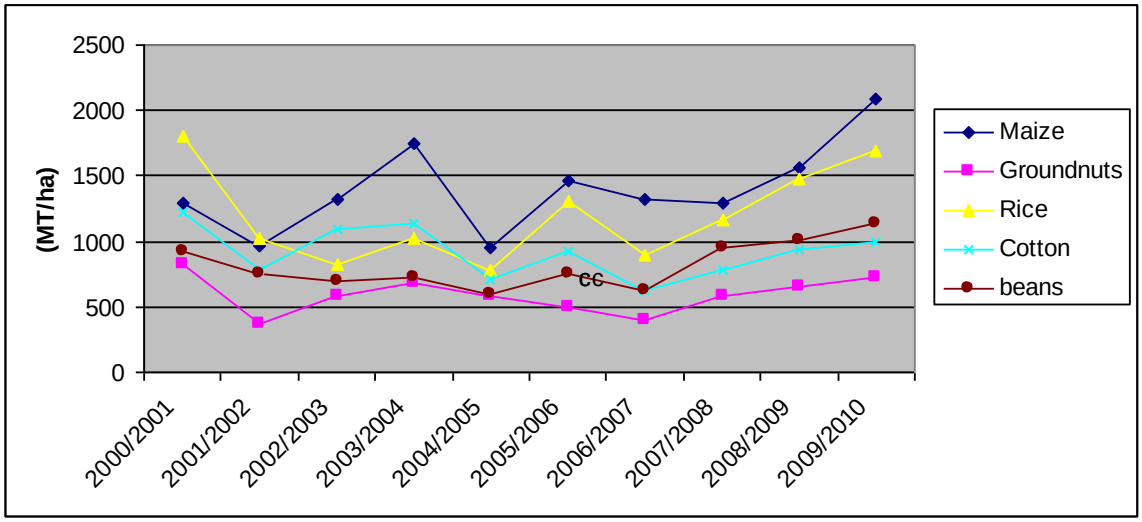
2.3.3.2.1 Context

Small-scale farming systems in Zambia are characterized by low yields and limited levels of diversification. Overwhelmingly, farming systems are dedicated to the production of maize. As of 2010, 82 percent of small-scale farmers grew maize, covering a total area of over 1 million hectares (Sitko et al 2011). The predominance of maize production is the result of both its position as the national staple food and the government's spending support for maize output and input markets.

Other important food crops in Zambia are: 1) Cassava, which was grown by 37.9 percent of farmers in 2010, is the third most common grown crop in Zambia. Most of this production was concentrated in the Northern and North-western Provinces, where it serves as the regions staple food; 2) Groundnuts were grown by nearly 50 percent of Zambian smallholders in 2010, making it the second most widely grown crop behind maize, and; 3) Sweet potatoes, which were grown by almost 20 percent of farmers are the fourth most commonly grown crop (Sitko et al 2011). Cotton is Zambia's most important cash crop. As of 2010, roughly 7 percent of farmers grew cotton, with the greatest production recorded in Eastern Province. Given their predominance in existing farming systems, these crops should be considered priority investment crops for improving productivity.

While yields have improved since 2007 (See **Figure 10**) for many major food crops, much of this has been driven by favourable weather conditions. Overall, yields for all food and cash crops remain low, hovering at roughly one-third the global average.

Figure 10: Yield (MT/ha) Trends for Selected Crops in Zambia

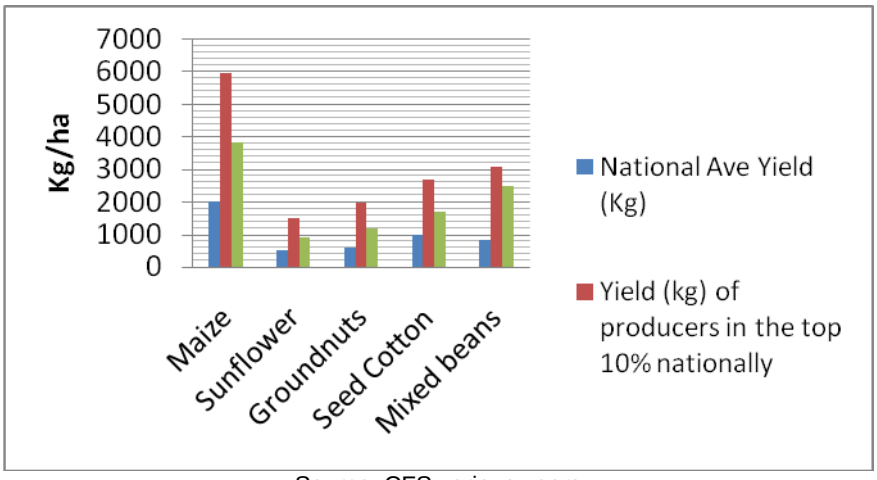


Source: GRZ CSO Crop Forecast Surveys 2001-2010

As a result of these low yields, combined with limited land holding sizes, very few smallholder farmers are able to produce sufficient crop surpluses to sell. Indeed, in most years roughly 30 percent of all Zambian smallholders were actually net buyers of maize (Sitko et al 2010).

However, while national average yields for most food crops are low, there are a sub-segment of Zambian smallholders who are capable of achieving high levels of productivity. As shown in **Figure 11**, the top 10 percent of producers in terms of yields are able to produce 1 to nearly 4 MT/ha more than the national average, depending on the crop. These production levels are indicative of the productivity potential for Zambian smallholders, given the right combination of investments and policy incentives.

Figure 11: Five-Year Yield Average: National versus Top 10%, 2005-2010



Source: CFS various years

2.3.3.2.2 Challenges

1. **Low levels of improved input adoption:** Less than 40% of maize farmers in 2009/10 used fertilizer or hybrid seed (Sitko et al 2010). For other crops improved input use is significantly lower.
2. **Poor price incentives to increase production:** Due to a number of factors, including under investment in road infrastructure, unpredictable trade policies (Jayne et al 2010), market interventions that undermine private investment in crop markets and storage (Chapoto and Jayne 2011), and limited public investment in market information systems (Gage 2011), farm gate prices for agricultural products in Zambia tend to be low and highly volatile. This limits producer incentives to invest in technologies to improve farm productivity (Barrett 2008).
3. **Poor returns to fertilizer application:** Research has shown that Zambia's soils tend to be highly acidic. Under these acidic soil conditions, response rates to Compound D fertilizer applications tend to be extremely low. Analysis by Burke et al (2012), suggest that 51 percent of Zambian soils have a pH of 3.1-4.3. Under these conditions, farmers in Zambia only obtain a maize yield response of 2.1 kg of maize for every kg of Compound D fertilizer applied. These returns are not commercially viable, yet Compound D remains a centrepiece of the Government's FISP programme.
4. **Limited funding for crop research**: In the 2013 Zambian budget for agriculture only 3.62 billion kwacha is dedicated to strengthening agricultural research. This is a significant decline in real terms from the spending on agricultural research in the 1990s, where spending exceeded 18 billion kwacha (Flaherty and Mwala 2010). Agricultural research has been shown to yield significant results in terms of improving productivity and reducing poverty, yet it remains a low priority in the Zambian national budget.
5. **Low adoption of improved tillage methods and intercropping:** Conservation farming methods, including minimum tillage and intercropping of leguminous plants with maize or other field crops, has been promoted as a means to improve soil fertility, limit erosion, and cut labor time for planting, all of which should improve productivity. Despite being promoted by MAL and the Conservation Farming Unit, adoption rates remain low. Low adoption rates suggest that the promoted activities may not be suitable across the board. Extension services need to be revised to take the differences in the climate change impacts and agro-ecological constraints into account in order to tailor the promotion of improved tillage methods to the recipients.
6. **Limited extension services:** As of March 2011, the Principle Methodology Extension Officer estimated that the extension officer to farmer ratio in Zambia is only 1:900. This far exceeds the recommended level of 1:400. Moreover, a World Bank report (2010) estimated that Agricultural Officers spend 75 to 80percent of their time dealing with FISP logistics between August and January. This leaves very little time for them to dedicate to their core work of providing extension advice to farmers.
7. **Poor targeting of input subsidy programmes:** Zambia's FISP system provides limited choices in terms of seed and fertilizer types to farmers, thereby contributing to an overdependence on maize production and limited adoption of appropriate seeds and fertilizers for specific agro-ecological and soil conditions. Moreover, poor farmers struggle to access FISP inputs relative to the better off (Jayne et al 2011).

2.3.3.2.3 Lessons Learned

1. **Increasing improved input adoption rates:** In Kenya, the rates of fertilizer use among small-scale farmers have risen considerably over the last decade. In the maize production regions of Western Kenya, 90 percent of farmers use fertilizer on their maize (Sheehan *et al* 2012). Increased adoption has been facilitated by increased liberalization of the fertilizer market and the legalization of private sector repackaging of fertilizer, which has allowed farmers to acquire smaller quantities of fertilizer (Agria *et al*2006). These policies have been coupled with significant public investments in roads and other infrastructure, which has allowed for an expansion of input retailers into more and more areas of Kenya.
2. **Addressing low returns to fertilizer application:** Acidity mitigating measures could be taken to improve yields in a meaningful way. This may be through tailored application methods, the use of supplementary inputs such as lime and phosphorus enhancers, or some combination of pH mitigation and management practices. Moreover, investments aimed at identifying the appropriate types of fertilizers for the various soil conditions and farming systems in Zambia will be necessary. For soil acidity mitigation systems, a combination of investment in agricultural research and promotion programmes will be needed in order to achieve these goals. . This offers significant potential for public/private partnership.
3. **Increasing funding for public agricultural research:** Studies from other countries suggest that investment in agricultural research yields the greatest returns in terms of increased agricultural productivity growth and poverty reduction (EIU 2008). However, returns to research can be slow, which makes them less politically palatable than more visible investments such as input subsidies.
4. **Improved input targeting:** Research in other countries has shown that input subsidies tend to yield the lowest returns in terms of poverty reduction and productivity growth of any public investment (EUI 2008). Part of this is related to the challenges associated with appropriately targeting the right farmers with the right inputs. New types of “smart subsidies” may offer some room for addressing these challenges. Yet, as Minot and Benson (2009) show, input subsidies do not offer the sorts of long-term benefits to productivity improvement that investments in crop science can yield. Moreover, subsidies tend to place a great deal of pressure on national budgets.
5. **Improving price incentive for farmers:** improving farm gate prices requires investments in infrastructure, market information, and improved linkages to global and regional markets. Improving trade relationships will require improvements in the quality of produce, the capacity to meet global SPS standards, and predictable trade policies.

2.3.3.3 Aquaculture

2.3.3.3.1 Context

Zambia’s rich endowment of water resources accounting for approximately 145 194 km2 (19 percent of total territory) provides the foundation for supporting significant economic growth and development (FAO, 2004). Although water is abundant, human, institutional and financial resources limit access and use. The fisheries component contributes around 1.24 percent of the gross domestic product (GDP) or 3 percent of agriculture GDP from its meagre annual national budget allocation of 0.12 percent (Musumali et al, 2009). This relatively small contribution at

macro level masks important contribution of fish production to the rural economy through employment, earnings and as a source of food. The potential contribution of the component is high, given the unutilized and underutilized potential particularly in the aquaculture sub-component.

The average annual per-capita consumption of fish is estimated at 6.4 kg, which accounts for more than 40% of the animal protein intake of an average Zambian diet. The increasing demand for fish has resulted in increasing the fishing pressure on nearly all important fish stocks. This situation calls for the need to improve the management of capture fisheries if they are to continue to contribute positively to economic development.

2.3.3.3.2 Challenges

Decline in fish supply: Over the years, there has been an overall decline in the average per capital fish supply from over 11.4 kilograms in the 1970s to approximately 6.4 kilograms in the 2000s (FAO, 2006), a reduction of nearly half. This reduction may be due to a number of factors including population growth, which averaged 2.9% per annum in the same period under review (CSO, 2012) as well as poor management of the fishery.

Poor water management and access for aquaculture and capture fisheries: this is on account of a number of parameters including: an absence of water disposal checking points; lack of water quality assessment equipment; lack of water disposal standards for aquaculture, and; non existence of aqua-parks on lakes and rivers for cage and pen aquaculture as well as water fronts entry points and land base for cage culture support services to aqua-parks.

Low fish research: there are limited stock densities and fish integrated production systems with livestock; there is inadequate knowledge on manure application rate of each type of manure per unit area of pond or dam as well as inorganic fertilizer application rate per unit pond area. These challenges have resulted in low water fertility for aquaculture.

High water catchment degradation for capture fisheries and aquaculture because most of these catchment areas are exposed to environmental negative impacts.

Low access to land for aquaculture and capture fisheries resulting in low number of fish farmers and fishers, leading to further overall low production and productivity.

2.3.3.3.3 Lessons Learned

Community participation in fishery management yields considerable benefits: The establishment of Zonal Management Committees on Lake Kariba has gone a long way in realizing important benefits (World Fish Centre Policy Brief 1913).[5] The Committees are constituted by all major stakeholders including: Department of Fisheries (DoF); Fishers; Traditional Authorities; District Council; NGOs, and representatives from business persons. The positive outcomes of these include: relocation and establishment of new settlement achieved; Reduction in fishing camps from 278 (1993) to 67 (1995); Decline in total number of fishers thereby reducing pressure on the fishery, and Traditional leaders reclaimed some authority.

[5] Fisheries in Zambia: An undervalued Contributor to Poverty Reduction.

Link between low per capita supply of fish and increase in number of fishers: PLARD II Baseline Survey Report (2012) provides a clear link between the decline in average per capita fish supply observed in the country over the past years and the increase in number of boats/fishers per unit area of fishery which further necessitates the increase in number of days per month when fishers go out fishing as a coping mechanism to compensate for low catches. The Report observes, *"The main factors that negatively affected the type of catch in the fisheries were the increment in the number of fishers and fishing assets in Mweru Luapula and Bangweulu fishery. This inevitably increased the number of days per month when fishers go out fishing*".

Fishing areas do not have any advantage with regards to fish consumption over the country's none fishing areas: The demand/supply equation facilitates effective supply of fish to various parts of the country in line with fish protein demand. Production of fish through natural fisheries and aquaculture in areas of high potential will inevitably benefit the whole country. PLARD II baseline report observes that the total amount of fish that was traded out of the total caught was close to three quarters "*the total quantity of traded fish in 2011 was 70% (estimated at 5,707,100 Kg) of total fish production*."

Necessity for well-managed breeding grounds: Breeding grounds play an important role in sustainable fishery management. The extent to which these areas are protected from fishing has a direct link to fish production in the fisheries. However, the majority of fishers often ignore this fact and hence the need to institute effective fishery management measures. For instance, of the fishing households interviewed in Luapula province during PLARD II Baseline, 79% confirmed that fishers caught fish from the breeding grounds in their communities in 2011.

2.3.4 Market Access

2.3.4.1 Context

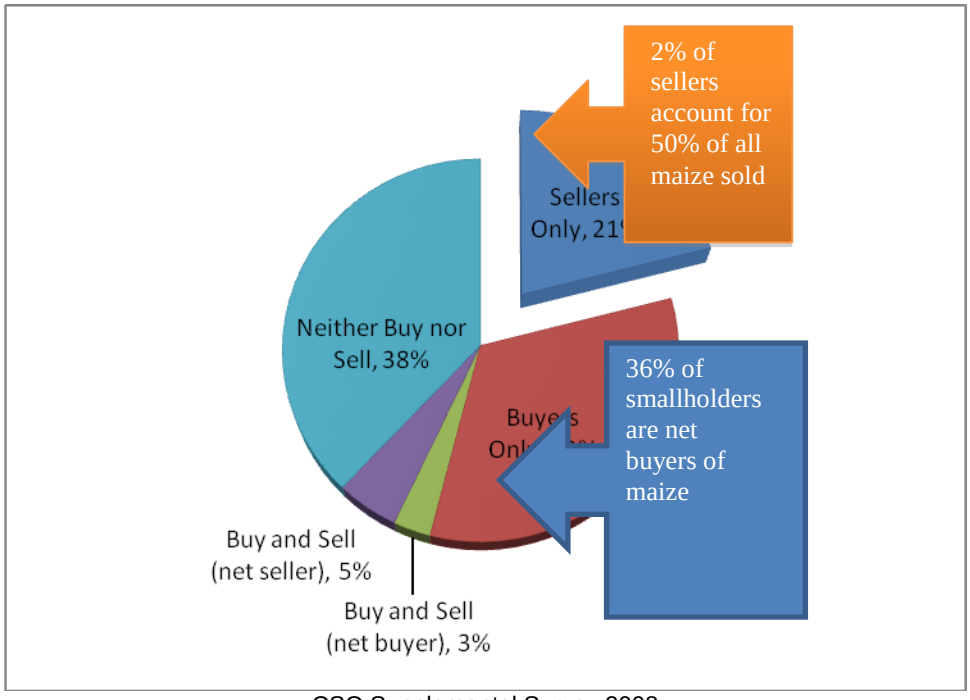
Market access and services development covers a wide range of investment possibilities, from input and output market access to financial services development. These are critical components of a successful transition from low-productivity, semi-subsistence production to more commercialized production systems.

Input and output market support has been a mainstay of the Government's approach to agricultural development since independence. This support has primarily been in the form of providing pan-territorial maize prices to farmers through parastatal marketing boards and subsidies for seed and fertilizer, primarily for maize. In its current form, Government provides these market supports through the Food Reserve Agency (FRA) and the Farmer Input Support Programme (FISP). Budget allocations for these programmes routinely account for well over 50 percent of the total budget for agriculture. Yet, major challenges exist.

In terms of output markets only a minority of small-scale producers in Zambia are actually able to produce a marketable surplus. As **Figure 12** shows, in a normal year, such as 2008, only 21 percent of small-scale farmers sold maize, while 36 percent were actually net buyers. This suggests that output market support for maize can only be captured by a relative minority of smallholders. Moreover, one justification for the continued activity of FRA is that farmers in Zambia operate under fairly dismal output market access conditions. Yet, recent research suggests that this may not actually be the case. Analyses of the 2010 Crop Forecast Survey show that over 60% of maize sales in Zambia occurred at the farm gate, while an additional

20% occurred within 3 kilometres of the home (Chapoto and Jayne 2011). Only 10% of farmers in Zambia transported maize over 30 kilometres.

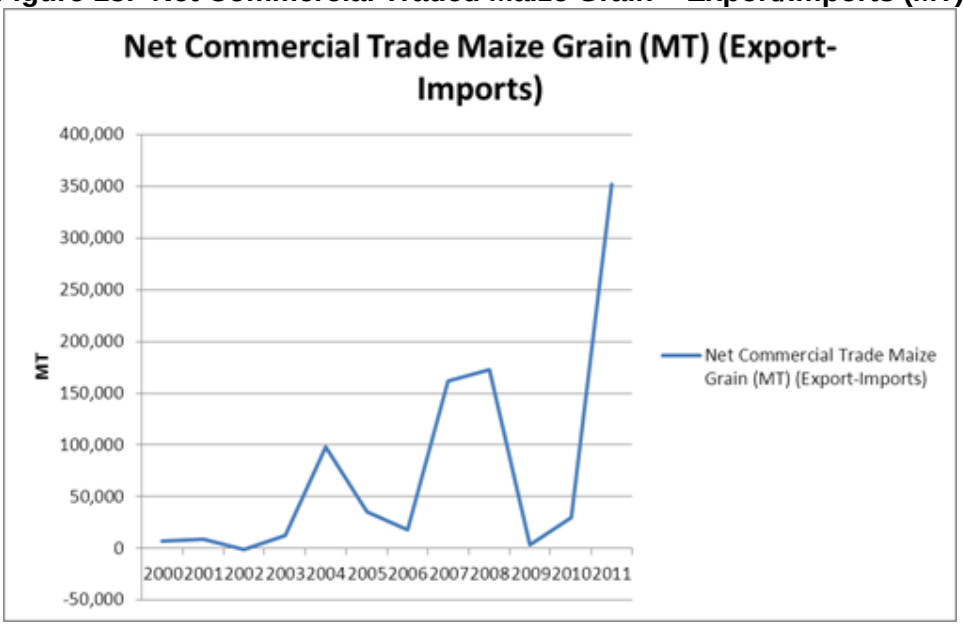
Figure 12: Distribution of the Small-Scale Farmer Population According to Their Position in the Staple Grain Market, Zambia 2008



CSO Supplemental Survey 2008

The vast majority of these were farmers with larger lots of grain who were selling directly to processors or the FRA (Chapoto and Jayne 2011). Thus, long distance travel to markets appears to be a deliberate strategy of farmers with sufficient economies of scale who are seeking out more remunerative markets. This appears not to be an act of desperation caused by a lack of local markets. Such farmers if sufficiently facilitated to allow an increase in number and capacity would easily participate in regional markets given the strategic position of Zambia. **Figure 13** is illustrative of the potential the country has in expanding its portfolio in the regional market if a conducive policy framework was to obtain. From 2004, there was a notable increase in grain trade from less than 10,000 MT in 2000 to 100,000 MT. This more than tripled from 100,000 MT in 2004 to 350,000 MT in 2011.

Figure 13: Net Commercial Traded Maize Grain – Export/Imports (MT)



Source: IAPRI 2012

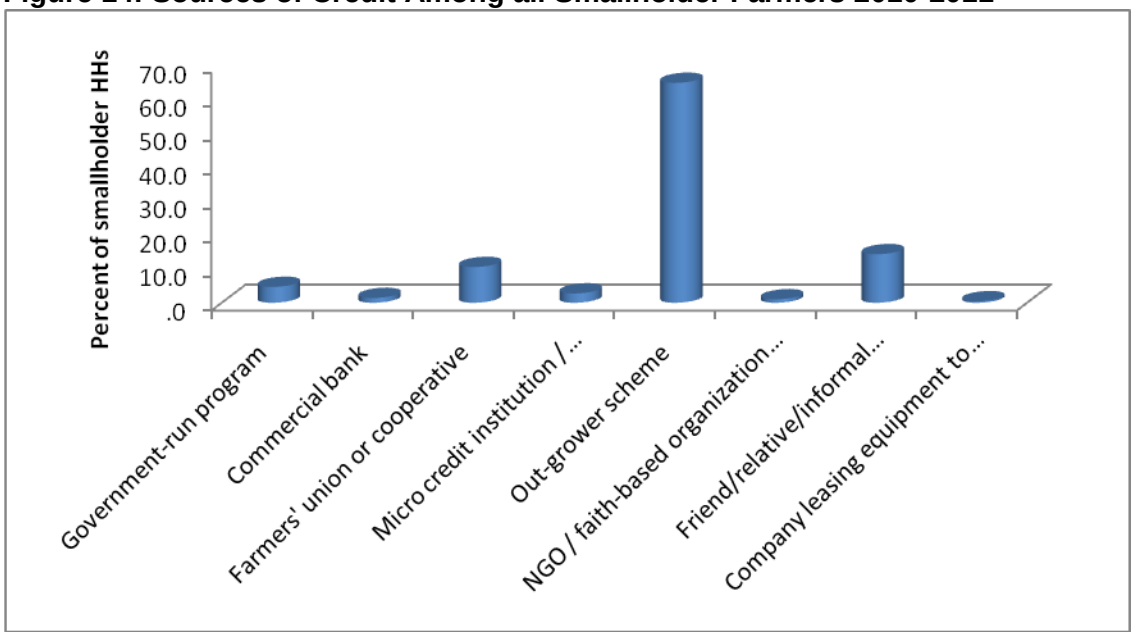
These data suggest three interrelated areas for investment and policy change. The first is to move policy and investment efforts away from parastatal marketing boards aimed at improving "access" to markets, and begin engaging in investments and training that help farmers to improve their capacity to participate in the markets that already exist. This comes down to investments in marketing training, market information access, and strategies to aggregate crops. Second, is that strategies aimed at improving smallholder productivity in ways that allows them to produce a marketable surplus is a necessary first step toward engaging more farmers in output markets. Finally, devising strategies to further develop village food markets, which ensure reliable access to staple foods at tolerable prices, is essential for improving the incidence of poverty and hunger among net staple food buyers. Moreover, reliable markets for staple foods may be a necessary precondition for facilitating diversification away from low-value staple food production toward higher value produce, which is an important strategy for improving household incomes among land constrained households.

In terms of the Government's input subsidy programme, FISP, nationally representative household data suggests that only a fraction of smallholder households receive inputs under the programme, and these tend to be the already better off producers. For example in 2010/11, only 28.6% of Zambian smallholders received FISP, with the majority of recipients being the minority of larger, better capitalized farmers. Of those farmers cultivating more than 5 hectares of land, which is less than 4 percent of the rural population, the average recipient received over 300 kg of fertilizer through FISP, which far exceeds the 200 kg that are supposed to be allocated to farmers (Jayne et al 2011). This suggests that the programme is not well-targeted to vulnerable producers without the means to acquire inputs at commercial rates. As a result, research has shown that FISP tends to crowd out private sector fertilizer distribution. One analysis shows that for every kg of subsidized fertilizer distributed, commercial sales decline by .14 to .33 kg (Mason and Jayne 2012). This in turn limits private sector's willingness to invest in more robust fertilizer distribution system. As a result, access to fertilizer in many rural districts remains a challenge.

Conversely, Zambia's seed sector is highly competitive, in part because of the Government's seed certification policies. Currently there are nine private seed companies selling maize seed in Zambia. Of those, three are breeding new varieties in Zambia, three are testing existing varieties for Zambia's conditions, and three are using publicly available germplasm (Sitko et al 2010). Zambian seed is exported regionally and district level seed supply systems appear well developed.

Access to farm credit is another critical, yet underdeveloped, aspect of improving farm productivity. According to the nationally representative Rural Agricultural Livelihoods Survey, in 2011 only 13 percent of Zambian smallholders had access to credit. As shown in **Figure 14**, the vast majority of this credit was acquired throughout grower schemes, primarily for cotton. Commercial bank credit remains low, in part because of a lack of collateral to access credit among farmers operating under customary land tenure systems. However, some important strides have been made by ZNFU, in partnership with Cooperatives and commercial banks, to facilitate credit access through the Lima Credit Scheme. Under this scheme, good standing membership in the farmers' union acts as a form of collateral to support farmers' access to credit.

Figure 14: Sources of Credit Among all Smallholder Farmers 2010-2011



Source: RALS 2012; Note HH=household

2.3.4.2 Challenges

1. **Crowding out of private sector:** As mentioned above, a key challenge to improving market access conditions in Zambia is the crowding out effect of current subsidy programmes on the private sector. Addressing this will require reforming FRA and FISP in ways that better enrols private sector actors.
2. **Policy unpredictability:** Unpredictability related to import or export restrictions, timing and pricing of subsidized grains being released on the market, and uncertainty over the scale of government's activities in maize markets raises the risk of private sector participation in Zambian agricultural markets. Developing institutions and legislation to enhance predictability is critical for encouraging investment and enhancing returns on these

investments. Enactment of the Agricultural Marketing Act may provide an effective means for addressing this uncertainty.

3. **Poorly developed infrastructure:** In many parts of Zambia road networks remain poorly developed. This leads to elevated transaction costs, which in turn, lowers returns to farmers and makes Zambian agricultural exports costly.
4. **Poor grades and standards:** In Zambia, there is limited enforcement of quality standards or price incentives for producers or traders to improve quality. As a result, Zambia is unable to export many crop or livestock products to important markets, both regionally or further afield. For example, in 2012 the World Food Programme was unable to fulfil a contract in Kenya for Zambian maize because they were unable to acquire sufficient maize that met Kenya's quality standards.
5. **Poorly developed storage:** Adequate, high quality storage facilities are critical for improving market conditions. In Zambia, private sector has underinvested in storage facilities due to the unpredictability of government's actions in food markets. As a result the government controls the bulk of the storage in the country. Yet this is not sufficient to handle bumper harvest years, such as 2010 or 2011. As a result, there is a great deal of crop loss.

2.3.4.3 Lessons Learned

1. **Out-grower schemes:** Encouraging the development of out-grower schemes in Zambia may provide an effective means for addressing the various constraints faced by farmers in terms of input credit and output markets. However, experiences in Zambia and abroad, suggest the contractual terms of the relationships between farmers and out grower companies must be clearly defined in order to avoid exploitation of producers (Glover 1990).
2. **Market-Based Food Reserve Management:** Market-based strategies, such as the use of call options offered through SAFEX, are a potentially cost effective way of decreasing the government's involvement in local food markets, without jeopardizing national food security interests. In 2005, Malawi successfully purchased a call option on SAFEX in order to lock in maize price and supply commitment to resolve the domestic supply shortfall caused by drought. As a result, Malawi was able to import during the lean season at prices lower than existing market prices by 50-90 USD /metric ton. Finding cost effective and market based solutions to managing the FRA will allow scarce Treasury resources to be freed up for other critical market access challenges, including investment in road infrastructure and market information systems.
3. **Warehouse Receipt Systems:** Warehouse receipts allow farmers to use stored stocks as collateral, while delaying the timing of their sales to coincide with seasonal price rises (Coulter and Onumah 2002). Warehouse receipts have achieved some success in Malawi, Madagascar, and Tanzania (Coulter 2009). Key challenges include: enrolling financial institutions, developing accepted price discovery mechanisms, and providing adequate quality storage facilities capable of ensuring industry accepted quality standards. Zambia has in place many of the preconditions for implementing a warehouse receipt system, including the enactment of the Agricultural Credit Act and the existence of the Zambian Agricultural Commodity Exchange (ZAMACE). Key challenges that remain include the designation of a warehouse licensing authority and the enrolment of financial institutions so that they accept warehouse receipts as collateral on loans.
4. **E-vouchers:** E-voucher based systems for distributing input subsidies for farmers has proven effective in Zambia. Under an FAO/MAL conservation-farming programme e-vouchers have been piloted in 37 Districts, with 107 agro-dealers, reaching 55,812 farmers (Sitko et al 2012). E-vouchers can act to leverage private sector capacity to provide a wide range of inputs to farmers at a lower cost to government. However, as mentioned above,

input subsidies in general do not offer the sorts of long-term benefits to productivity improvement that investments in crop science can yield.

5. **Farmer marketing training:** Farmer training on agricultural marketing may provide an effective means for improving farmers' ability to interact with existing village-level markets. These training can focus on aggregation strategies, price negotiation, market identification, etc.… Research from Kenya shows that farmers who received marketing training received on average nearly 10 percent higher farm gate prices than farmers in the same village that did not receive training (Kirimi *et al* 2011).

2.3.5 Service Delivery Systems and Institutional Capacity

These have been dealt with differently by focusing on two elements; (i) Situation analysis, and; (ii) key challenges. Consequently, lessons learnt is not part of the diagnostic with regards to service delivery systems and institutional capacity.

Research and extension

Context

Some interventions by Zambia's research and extension system have been successful in the past for a number of reasons. One of the key factors for the success in the interventions has to do with the strategic re-orientation of the focus of the research system. In the 1970s and 1980s, agricultural research was heavily biased towards the needs of the large commercial farming sector and towards maize production. According to a study by ASTI (2010), the most researched crops in Zambia in 2008 were maize and sorghum, accounting for 24 and16 full-time equivalent (FTE) researchers, or 15 and 11 percent of the total crop and livestock researchers, respectively. Other important crops included fruit, cassava, and vegetables, each accounting for between 7 and 9 percent of researchers. The country's livestock researchers concentrated primarily on issues relating to dairy (5 percent), beef (4 percent), and poultry (4 percent).

During the last two decades, the emphasis of research has slightly shifted to support other crops. This has mainly been through donor funded research projects such as Zambia's Agricultural Consultative Forum (ACF) which initiated an Acceleration of Cassava Utilization (ACU) Task Force, beginning in August 2005. At a regional level, efforts such as the Cassava Transformation in Southern Africa (CATISA) project aimed to complement national efforts and help facilitate regional spillovers, so that new products, new technologies or new lessons could help to accelerate cassava-based commercial growth throughout the region (Haggblade and Nyembe, 2008).

Challenges

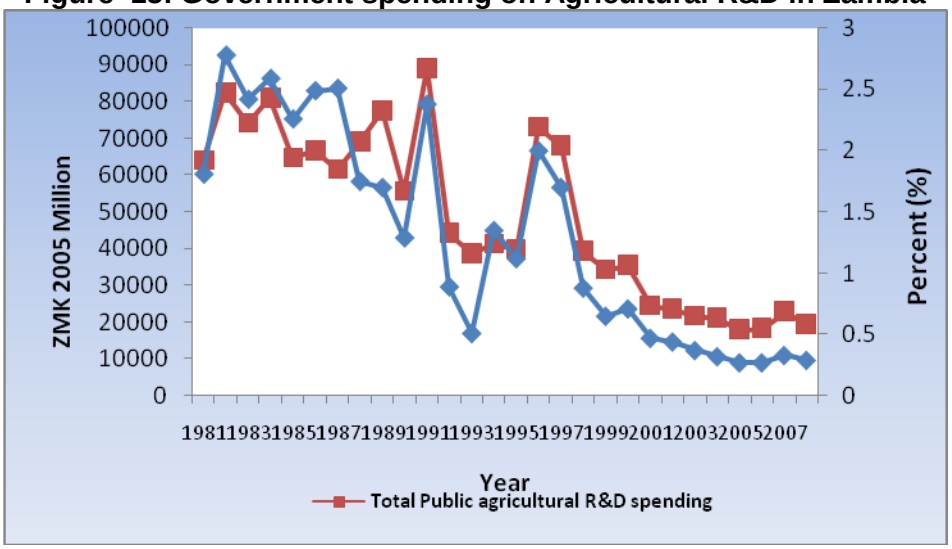
There are three major challenges that have affected National Agricultural Research and Extension: (i) Inadequate public expenditure in agricultural research and extension; (ii) Inadequate Contribution of Research (Soils, Livestock, Fisheries and Crops), and; (iii) Underutilized Extension Services.

The most pressing challenge has been inadequate public expenditure in agricultural research and extension whose major result has been low performance as evidenced by a drought in the release of new technologies. As can be seen in **Figure 15**, R&D expenditure as a percentage of AgGDP has been on the decline. The downward trend of investment accelerated during 2001–

08. For instance, in 2008, Zambia spent the equivalent of 0.29 percent of AgGDP on R&D. This is less than the African average of 0.5–0.6 percent, as well as the one percent recommended by the World Bank (Thurlow, et al., 2008; ASTI, 2010; Flaherty and Mwala, 2010).

The other two challenges (i.e. inadequate contribution of research and under-utilization of extension services) are direct consequences of the first challenge. On account of poor funding to research, no new improved technologies have been generated. This has in turn led to under-utilization of the extension services as extension staff have not only found themselves with insufficient knowledge and skills to extend, but have had no resources to do so.

Figure 15: Government spending on Agricultural R&D in Zambia



Source: ASTI (Agricultural Science and Technology Indicators). 2010–11. ASTI database

Public financial management system

Context

The strength of the financial management and procurement capacity of MAL HQ lies in the fact that there is a sound financial management legislation and policy, qualified staff in key positions as well as the establishment of an Audit Committee. The HQ personnel of the MAL in the Financial Management Unit (FMU), internal audit and procurement sections are trained in the procedures relevant to their areas. If well guided and managed, they are capable of managing sound financial management, internal audit, and procurement systems. Procedures for procurement or for payment voucher authorization are quite strong as laid down, with valuable controls. External audit is well regarded and rated well by the Public Expenditure Management and Financial Accountability (PEMFA). From January 2012, the government has been implementing the IFMIS programme whose advantages include: Audit Committee in place; program in place for staff training in FMU, Internal Audit and procurement and funds allocated every year; Financial management system (IFMIS) used for processing payments and takes account of double entry at national level; IFMIS can be reconciled back to a bank statement for accuracy, and; Good procedures for procurement and for payment voucher authorization at all levels

Challenges

Despite the positive benefits brought by the implementation of the Integrated Financial Management Information System (IFMIS) by government since January 2012, some weaknesses exist in the public financial management system, which need addressing. These include: Government does not prioritize financial management and control since the PFM Unit is not placed at directorate level; Weak functionality of the audit committee (not sitting very often); Inadequate staffing levels at provincial and district levels (Provincial Internal Auditors and District Accountants), and; Poor internal control where often procurement and payment is managed by the same individual at provincial and district levels, among others.

Policy analysis and dialogue

Context

Currently, Zambia has a weak agricultural policy framework characterized by weak market institutions. If NAIP is to perform to expectation, there is need for a policy set that promotes greater reliance on market related institutions and market-based risk management instruments. This transition requires strong policy analysis and tracking capacity in order to build confidence for government to commit a rule-based system of intervention that does not undermine private sector investment and at the same time increases government confidence in the private sector to deliver against the set NAIP objectives. This would be the basis for facilitation of a continuous policy dialogue among stakeholders. Such capacity is absent in PPD.

Monitoring and evaluation and management information systems

Context and Challenges

MAL's Monitoring and Evaluation system has some positive elements, including: existence of information systems which can be strengthened and improved upon, and; widespread availability of qualified staff (university graduates) who can easily be trained. Notwithstanding these positives, M&E has a number of areas needing attention. MAL has an uncoordinated, disintegrated, insufficient, inefficient M&E/MIS system which is not result-based. There is a serious lack of sufficient and timely market information on the prices of most of the agricultural products, and on the supply and demand thereof. There are parallel systems of information collection and dissemination which exist both within the MAL and outside MAL. Given the complex nature of the interactions between adaptation, food security and mitigation, the selection of appropriate indicators is essential for the establishment of a baseline that captures all relevant information related to Climate Change (CC).

Specific challenges

No specific legal, policy and institutional set-up for M&E/MIS Systems: There is no specific M&E policy and comprehensive plan to guide the M&E activities including the M&E institutional set up, and there is no specific document with integrated guidelines for M&E. M&E information is dotted in various planning and operational guidelines. There are no M&E specific positions in the Ministry. M&E activities are embedded within the planning functions of the ministry at only the national and provincial level. Yet the MAL is vertically managed with representation at National, Provincial, District, Block and Camp levels such that the technical supervision, resource flows, and reporting tend to follow the same path.

Limited number of M&E staff: Although the M&E system is principally coordinated by a unit within the Policy and Planning Department (PPD), it has limited M&E staff. It also has a high staff turnover and this is viewed to have contributed to delays and in some cases discontinuity of efforts to improve the M&E system. Most of the work is ad hoc and not necessarily core M&E work. In terms of skills, only few have had short training in M&E**.**

Absence of a structured M&E System: Due to its large size, the Ministry of Agriculture and Livestock needs a well structured M&E system with a presence at all levels (national, provincial and district). It needs to have staff at all these levels dedicated to undertaking M&E functions.

Absence of M&E Indicator Plan and Strategy: There is no sector M&E indicator plan and strategy on which real sector performance could be monitored and measured. The main information source for daily planning is from the administration system but the sector programmes and activities implemented in various departments are not well connected for M&E purposes. Each MAL directorate collects some form of information on its own such that these systems are not interlinked.

Lack of harmonization in indicators, data collection and reporting: Reports are expected to be generated quarterly, mid-year and annually but in reality there are too many reports generated at the provincial and district levels. The data collection methodology (forms) and reporting flow is not harmonized. Most of the indicators are set at input, activity and output levels i.e. indicators are not result-based. For the most part, there is no baseline information and indicators are not linked to data sources. The routine M&E activities of various departments tend not to be tailored to any demand and use beforehand

Inadequate information dissemination: The National Agricultural Information System (NAIS) exists with a responsibility of collecting and disseminating information through electronic and print media. The hindrance is that most provinces and districts have no equipment. Similarly, AMIC is not fully computerized at provincial and district levels. There is also an established website for the purpose of disseminating information but information is not up to date. The challenge with all these systems is that they operate independent of the other resulting in some duplication and overlaps.

Existence of other M&E Systems outside MAL: Alongside the MAL M&E system, donors manage separate Monitoring and Evaluation (M&E) systems for their supported projects. There is little evidence of the fact that information from donors' own independent M&E is fed into the national system. Other institutions which collect agricultural statistics data include the Central Statistical Office (CSO), Jesuit Centre for Theological Reflection (JCTR); Famine Early Warning Systems Network (FEWSNet); Zambia Agricultural Marketing Commdity Exchange (ZAMACE); World Food Programme (WFP) the United Nations; the Zambia National Farmers' Union (ZNFU); the Food Reserve Agency (FRA); and the Food Security Research Project (FSRP), now called Indaba Agricultural Policy and Research Institute (IAPRI)

Human resources management

Context

The HR&A Department is charged with carrying out a number of activities which include the following: Recruitment, Selection and Placement which involves recruiting potential candidates into the Civil Service and identifying candidates within the system for promotion and transfers on a quarterly basis; Payroll Management which is meant to facilitate and effect employee entitlements and ensure that the payroll is clean on a monthly basis, and; capacity building by

routinely identifying specific training needs for each employee in the departments and suitable programmes to address those training needs. However, the performance of this department has not been smooth on account of the following challenges.

Challenges

Low quality of human capital: Low quality of human capital is evidenced by increased scarcity of skilled manpower at all levels, inadequate knowledge and skills amongst Camp Extension Officers (CEOs), lack of and/or limited access to higher, tertiary, and In-Service education and training.

Inadequate staffing levels: The MAL has a human resources establishment of 11,349 comprised of both technical and administrative staff. Out of those, only 6,114 positions are filled as per the PMEC Payroll System. This indicates a need to recruit more staff. The need to recruit more staff also arises from the creation of 15 new districts in addition to the 72 districts on which the establishment of 11,349 was based. MAL has to review its strategic plan to take into account the newly established districts to make them operational.

Low staff morale and lack of incentives: There are great disparities in the emoluments offered to staff under MAL and those under programmes which are funded through MAL like the Food Reserve Programme (FRP) administered by the FRA. For instance, the provincial coordinators under the FRA who are funded through MAL get about three times more the salaries of MAL Provincial Agricultural Coordinators (PACOs). This brings about de-motivation of staff. In addition, there are no incentives that can encourage innovation and creativity. For instance, researchers are not incentivized for them to venture into new research work which will bring about new technologies to spearhead the envisaged growth in the sector.

Ineffective succession plan: MAL has had a generic challenge of not having a staff succession plan. For instance, in 2008 it was found that there were 302 people who had reached a retirement age (between 56 and 67 years) for whom plans to have them retired and replaced were not in place. This and other challenges have resulted in the MAL having three payrolls which are not harmonized and coordinated.

Staff confirmations lag behind: The Human Resources and Administration Department (HR&AD) does not have an effective system for confirmation of staff such that MAL lags behind where confirmations are concerned. In addition, the performance appraisal system which is in place is not well understood by supervisors.

Inadequate communication strategy: MAL does not have a communication system in place. In all departments, there is a weak system of communication from the headquarters to the lower levels (provinces, districts and communities) and vice-versa. There is need to develop an effective two-way communication system at all levels of the MAL structure if results are to be achieved in the sector.

Agricultural training

Context

MAL has 10 agricultural institutions which provide training in various areas of agriculture, namely: Natural Resource Development College (NRDC), Zambia College of Agriculture (ZCA) - Mpika, Zambia College of Agriculture - Monze, Katete College of Agriculture, Palabana Dairy Institute, Zambia Institute for Animal Health (ZIAH), Zambia Centre for Horticultural Training -

Chapula, Popota Tobacco Institute, Kasaka Fisheries Institute, and Cooperative College. Their purpose is to equip the agricultural sector with the needed human skills base for increased sectoral production and productivity.

Challenges

Most of these institutions have never undergone infrastructure upgrading from the time they were established yet they have been able to increase student in-take and expand on the number of courses they offer over the years. In addition, they are also faced with low staffing levels and some of their curricula will need to be re-visited in the context of the role they have to play in spurring the envisaged growth of the sector. There is a disconnect between the skills of the graduates of these institutions with what the agricultural labour market needs. All these challenges exist in different magnitudes in each of the institutions, a situation which calls for a detailed assessment of capacity needs for each institution so that each of them is supported accordingly for their effective contribution to sector growth.

Farm Training Institutes and Farmer Training Centres

Context

The country has 9 Farm Training Institutes (FTIs), one in each of the old provinces (except the new Muchinga Province), and 43 Farmers' Training Centres (FTCs) located in different districts with none in the new Province. Both categories of institutions were established to provide training to farmers, with FTIs having a focus at provincial level while FTCs were an arm of the FTIs at district level. These institutions were established by Government and they have been dependent on government funding for their existence.

Challenges

Due to inadequate government funding, almost all of the Institutes and Centres have dilapidated infrastructure in terms of offices, classrooms and staff houses. They also lack farm equipment for them to effectively carry out the necessary trainings. Such infrastructural support will need to be accompanied by the necessary capacity building of the resource persons to provide management and training functions.

The Cooperative Movement

Context

A classical definition of a cooperative is "*An autonomous association of persons united voluntarily to meet their economic, social and cultural needs, through jointly owned, and democratically controlled enterprises*". This makes cooperatives to be unique in nature and their activities can be at each and every level in the agricultural sub-sector value chains. Therefore, their participation in the agricultural sector cannot be ignored. In fact lessons from other countries like Kenya show that the cooperative movement has the ability to form the back-bone of the agricultural sector if left to operate with the autonomy with which they are intended to operate without political interference. There are about 27,000 Primary Cooperative Societies (PCSs), each with a minimum of 100 members, who contribute shares towards capitalization. The estimated total membership ranges from 2.7 to 3.5 million cooperators. Most PCSs have remained active mainly as agents of the FISP to assist members to access subsidized inputs.

PCSs have also helped to mobilize crop marketing through FRA depots and collection points. Some PCSs have maintained economic activities in retailing, milling, out grower farming and livestock rearing and dairy.

Challenges

The cooperative movement in Zambia has not been able to reach their autonomy in terms of operations due to their history such that there is need to facilitate their revitalization in a cautious manner that will not allow for dependence again. Other challenges include: Dominance by a few members; Low level of commitment and morale Weak incentives for members; Sub-optimal pricing for services and products; High cost of operations Lack of business understanding by members, and; Weak financial base at all levels.

3 INVESTMENT PROGRAMMES

3.1 Overall Objective of the NAIP

The overall objective of the National Agricultural Investment Plan (NAIP) is "to facilitate and support the development of a sustainable, dynamic, diversified and a competitive agricultural sector that assures food security at household and national levels and maximizes the sector's contribution to GDP" (NAP, 2012). NAIP will contribute towards the attainment of the impact indicators in **Table 2** below. Consequently, NAIP is one multi-faceted entity, with each individual programme contributing towards the overall objective.

There are five main impact indicators, some of which are included in GRZ Development Policy Documents, such as the Sixth National Development Plan (SNDP) and other Policy documents of the Ministry of Agriculture (MAL) or the Ministry of Lands Natural Resources, and Environment Protection. In addition, the CAADP Compact also makes reference to continental targets of achieving 6 percent growth in the Agricultural sector, and allocating at least 10 percent of public expenditure to Agriculture.

Table 2: NAIP Impact Indicators

Impact indicator	Baseline (2011)	Target (2018)
Rural poverty	77%	50%
Agricultural exports as % of non-traditional exports	41%	55%
Chronic malnutrition children < 5 years	45%	30%
Soil erosion rate (ton/ha/year)	20	10
Cereals production (million tons)	3.26	6.0

Source: SNDP (2011), MAL and MLNREP

3.2 Proposed Structure of NAIP

NAIP will have a total of four (4) main investment programmes: (i) Sustainable Natural resources management; (ii) Agricultural production and productivity improvement; (iii) Market access, and; (iv) Food and nutrition security and Disaster Risk Management. The identification of the four programmes has been strategic in ensuring a focus on those areas deemed most critical to driving the country's agricultural development agenda. These priority Investment Programmes (IPs) seek to address issues related to the natural resource base; the actual production and productivity; input and output marketing, storage and value addition and the impact of all these on food and nutrition security (see **Table 3**).

In addition, NAIP has identified two categories of support services; those related to knowledge support systems such as research, seed and extension systems as well as those related with institutional strengthening. Crosscutting issues are embedded in all the four programmes and key support services.

Table 3: Overview of the NAIP Structure

Program	Title	Component
# 1	Sustainable Natural Resources Management	(i) Land-use Planning, Administration and Management; (ii) Ensure efficient water-use and irrigation; (iii) Forestry Management; (iv) Energy Efficiency Promotion, and; (v) Capture fisheries management
# 2	Agricultural Production and Productivity Improvement A Crops B Livestock C Aquaculture	A (i) Improved crops productivity; (ii) Access to inputs; (iii) Good Agricultural Practices; (iv) Mechanization B (i) Increased livestock production and productivity (ii) Animal Health and Disease Control, (iii) Applied Livestock Research C (i) Aquaculture Production and productivity; Enabling environment for Aquaculture development
# 3	Market Access and Services Development	(i) Institutional market arrangements and performance; (ii) Increasing access to rural and market infrastructure; (iii) Increasing access to rural finance; (iv) Promote value chain integration
# 4	Food and Nutrition Security and Disaster Risk Management	(i) Food security; (ii) Nutrition security; (iii) Disaster risk management and mitigation
Key Support Services	Knowledge support systems	(i) Research; (ii) Seed; (iii) Extension; (iv) Agricultural education and training institutions
Key Support Services	Institutional Strengthening	(i) Policy dialogue; (ii) Planning, M&E; (iii) Financial Management (and Procurement); (iv) Human resources management
Cross-cutting issues	(i) Gender; (ii) Environment; (iii) Other sector policies & on-going plans; (iv) decentralization;	These are not stand-alone hence have no budgets of their own. They are fully integrated into the 4 programmes and Key Support Services

For each of the above programs, the main strategic objectives have been identified, along with their outcome indicators, including targets to be achieved by 2018.

Outcome indicators, and their respective baseline and target values are presented in a summary table. For each program, the various interventions contributing to these outcomes are then presented by component and sub-components.

Key interventions, with their associated outputs, and the targets that are expected to be achieved by the end of the NAIP are then described for each component, under each program.

Table 4 below shows the Investment Programmes (IPs) of NAIP and how they link to the CAADP Pillars, the Sixth National Development Plan (SNDP 2011-2015) and the PF Manifesto. This NAIP is based on the Zambia CAADP Compact and is thus designed to operationalize it. In this regard, the CAADP Compact is an integral part of the SNDP and hence should not be treated separately.

Table 4: Structure of the NAIP, link with CAADP pillars, Compact profiles and SNDP

Investment Programmes		Link to CAADP	CAADP Compact Investment profiles	Link to the revised SNDP (2011 - 2015)
1	Sustainable natural resources management	Pillar 1	• Sustainable Land Management Program	• Part 5: Natural Resources; • Part 3: Water and Sanitation • Land development • Water resources development
2	Agricultural production and productivity improvement	Pillar 4 Pillar 3 Pillar 2	• Agricultural Productivity Improvement Program • Agriculture Investment Promotion Program	• Part 4: Agriculture, Livestock and Fisheries • Crop diversification
3	Market access and services development	Pillar 2 Pillar 3	• Agricultural Marketing Program • Agriculture Investment Promotion Program (part)	• Part 1: Financing • Part 2: Infrastructure • Part 4: Agriculture, Livestock and Fisheries; Manufacturing; Commerce and Trade.
4	Food and nutrition security and disaster risk management	Pillar 3 Pillar 2	• Food and Nutrition Security Program	• Part 1: Cross-cutting issues; Financing • Part 2: Infrastructure • Part 4: Agriculture, Livestock and Fisheries
5	Key support services	Pillar 1,2,3,4	• Research and Extension Enhancement Program	• Part 1: Macroeconomic Policies and Structural Reforms • Part 3: Education and Skills Development • Part 5: Science, Technology and Innovation; Information and Communications Technology • Agricultural Research
6	Cross-cutting issues	Pillar 1,2,3,4	•	• Part 1: Cross-cutting issues; • Part 5: Social Protection • Part 6: Regional Development

The section that follows discusses in more detail each of the Investment Programmes as well as the Key Support Services. The first program is about Sustainable Natural Resources Management, considering that it the foundation for the development and growth of the Agriculture, Livestock and Fisheries sectors.

A summary overview is presented for each programme, followed by a table with main outcome indicators, with baseline and targets if available, and divided by components. A more detailed presentation of each component follows, including mention of the main outputs where available, and quantified wherever possible. A summary budget table provides funding required for each programme, by component, and identifies the possible source of financing.

3.3 Sustainable Natural Resources Management Programme

Overview

There are two major policy objectives relating to the Sustainable Natural Resources Management Programme:[6] (i) To sustain increased agricultural production, productivity and value addition of major crops, livestock, forest and fisheries by comparative advantage in different agro-ecological regions in the country, and; (ii) To create and enhance the sustainable use and maintenance of the existing agricultural resource base to be able to efficiently support vibrant and resilient agricultural production systems. The two objectives will be realized through the implementation of the following five (5) components: (i) Land-use Planning, Administration and Management; (ii) Water-use and irrigation; (iii) Forestry Management; (iv) Energy Efficiency Promotion, and; (v) Capture fisheries management. The total cost of the Sustainable Natural Resources Management Programme over the next five years is US $ 280.80 million. An overview of each of the components is provided below. **Table 5** presents an overview of selected components, highlighting their strategic objectives, outcome indicators and respective indicator targets at baseline and after 5 years of NAIP implementation.

Table 5: Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Land-use Planning, Administration and Management	Improve Land Use Planning	Area targeted under detailed land use planning	Ha	0	10,000
	Reduce land degradation in priority catchments	Improved land quality (% of soil organic matter)	%	1	2
		% of small-scale farmers that have adopted conservation agriculture	%	10	25
Ensure efficient water-use & irrigation	Increase availability of water for multi-purpose use	% of farmers with access to irrigation for high value crops Area brought under irrigation	% Ha	10 170,000	20 188,000
Forestry Management	Reduce deforestation due to shifting cultivation and agriculture extensification	Area lost to deforestation (ha/year)	Ha	250,000	
Capture fisheries management	To promote sustainable management of capture fisheries resources	% of established fisheries management committees that enforce fisheries regulations	%	20	70
		Number of established Village Management Committees	#	200	600
		Fish capture data (MT)	MT	70,000	90,000

Key components

Promote Land-use Planning, Administration and Management: This component will have three sub-components: Land-use planning; Land administration and Land management. This component will address two of the above four key identified challenges: climate change, and; inadequate land resources management.

[6] Draft National Agriculture Policy 2012

Land-use planning: it has two main strategic objectives, to improve land-use planning and enhance community participation in integrated land-use systems. One of the key interventions will include updating inventory of land and water resources at all levels. Among the outputs will be; 20 districts with detailed land and soil resource maps, updated agricultural suitability maps, and detailed water resources maps. One detailed land and soil database and another one targeting water resources will be developed. The sub-component will also focus on initiating and strengthening Community Based Sustainable Land Management (CBSLM) initiatives. A total of 300 communities will be targeted for this purpose.

Land administration: has two main strategic objectives: to improve land administration, and; to increase access to land. This sub-component will be strongly linked to the second Investment Programme (i.e. Production and Productivity Improvement - PPI). According to the contextual analysis for PPI, it is crucially important to increase minimum land owned by Small Scale Farmers to at least 5 ha if they are to significantly contribute to poverty reduction. One of the key interventions will be to improve the ease and speed of land titling where a total of 1,200 title deeds are expected to be issued during the implementation period. Women will be encouraged to request for land titles. Other interventions will include carrying out a study to streamline procedures to ease access to land and water as well as strengthen capacity in land administration, which is expected to train a total of 200 land administration staff. The sub-component will also promote enactment of policies that prevent land grabbing from small scale farmers while satisfying external demands of farmland by other investors.

Land management: will be concerned with reducing degradation in priority areas which in turn will be expected to result in improved land quality and a reduction in sediment load from selected catchments. Many SLM practices can also generate climate change adaptation and mitigation benefits. Interventions will include undertaking assessments of economic value of land resources which will target a total of 95 evaluations; promote land and water improvement technologies and techniques in upper catchments aimed at bringing a total of 3,600 ha under soil and water management techniques, and; carry out prevention of river banks degradation which will involve bringing a total of 7,500 km of stream/river banks under sustainable land management practices. The sub-component will also promote adoption of conservation agriculture (including; minimum soil disturbance, cover crops, crop rotations) and use of organic fertilizers (compost, animal and green manure) all targeting a total of 29,500 ha. This component will be strongly linked to the crop production and productivity component.

Land-use Planning, Administration and Management Component will cost US$ 37.23 million over the next five years.

Ensure Efficient Water use and Irrigation. This component will, among others, be concerned with increasing irrigated hectarage. The challenges this component will address will include: climate change and inadequate irrigation. This will be through strengthening a total of 750 Water Users Associations and rehabilitating and constructing new irrigation schemes that would result in bringing a total of 18,000 ha under various forms of irrigation (furrow, drip, sprinkler). Under the component, multi-purpose dams (45 small and 2 large) as well as 50 weirs will be constructed during the NAIP implementation period. Area under flood control will also be increased by promoting drainage (in-situ), use of pedal pumps for ground water and use of renewable energy pumps (solar, ram and wind mills). The respective targets for the five years are 5,000 ha, 5,000 pumps and another 1,900 renewable energy pumps. The investments relating to efficient water use and irrigation as well as aquaculture (see **Section 3.4.3**) require the development of national strategies and plans for Agricultural Water Management (AWM)

which NAIP will promote. The capacity building efforts of various stakeholders contained in the NAIP will include aspects of AWM. The total investment for the Water Use and Irrigation component is US $ 169.25 million.

Promote afforestation, community woodlots and agro-forestry This component will address the challenge of poor forestry management. It will have three main sub-components: (i) reduce deforestation due to shifting cultivation and agriculture encroachment whose key focus interventions will include: enforcing forestry management laws and; afforestation/reforestation of upper catchments. At least 22,000 ha will be afforested/reforested. (ii) Increase number of trees on agriculture land through developing and promoting adoption of agro-forestry systems (trees with crops); and creating community woodlots. Not less than 50,000 ha will be brought under agro-forestry; and 8,000 ha under community woodlots. (iii) Improve availability of non-timber forestry products by procuring and distributing 8,000 starter-up equipment kits for beekeepers, and; building capacity of 700 targeted beekeeping groups in management, processing and marketing at community level. Interventions under this Component could be linked with land-use planning for areas where agricultural and forest areas are contiguous. The total investment in the next 5 years for the Forestry management component is US$ 31.97 million.

Promote Efficient Energy Use from Natural Resources This component will in part deal with the climate change challenges by targeting the use of energy efficiency stoves by 4,000 households and developing and piloting use of renewable (bio-energy) options for smallholders such as mini biogas plants using manure targeting 150 households. Interventions under this Component could be linked with avoidance of deforestation driven by fuel-wood/charcoal use. Residues and manure required for biogas may already be employed elsewhere on farm (residues for animals and manure for soils, so these interventions will be piloted in the appropriate environment. The total cost for the Energy Efficiency Promotion component over the 5-year period is US $ 1.23 million.

Ensure Sustainable Capture fisheries management: The policy objective for the Fisheries Component is "to increase fish production, productivity and value-addition through sustainable and efficient management of capture fisheries and aquaculture".[7] Given the nature of challenges faced by aquaculture, which are similar to those of crop and livestock production, aquaculture has been dealt with under the Production and Productivity Improvement programme. In order to realize the above stated policy objective, capture fisheries management component will focus on four (4) sub-components: (i) Fish conservation and surveillance; (ii) Capture fisheries research and information management; (iii) Capture fisheries production enhancement, and; (iv) Climate change and climate variability mitigation strategies for capture fisheries. These are discussed below in succession.

Fish conservation and surveillance: The strategic objective of this sub-component is to promote sustainable exploitation of capture fisheries resources. A number of interventions will be carried out to bring about the cited result, including conducting of 300 patrols per year for the next five years to collect fish production and market statistics. Another 300 patrols per year will be undertaken to enforce fisheries regulations (including fish ban). One of the key challenges that negatively impact fish conservation is the use of inappropriate fishing gear by fishers. To deal with this challenge, a total of 10 appropriate fishing gears will be devised during the next five years. Capacity building efforts under this sub-programme will include stock assessment and

[7] Draft NAIP 2012

fisheries management. This will be coordinated with the subcomponent below, dealing with capture fisheries research and information management.

Capture fisheries research and information management: The strategic objective of this sub-component is to conduct research in order to generate information on which sustainable methods and policies of exploiting fisheries resources can be based. One of the results will be the employment of appropriate strategies to increase the catch per unit of effort (CPUE) from the current 1.7 – 13.8 kg per boat per night to 10 - 80 kg, in five years' time. Key interventions will focus on conducting various vital studies: biodiversity (10 studies for the whole period); limnological (10 studies); frame surveys in all the fisheries (5); catch assessment surveys (10), and disease surveillance (5).

Capture fisheries production enhancement: The strategic objective for this will be to apply regulations and management strategies that will enhance fish recruitment and increased production of fish from a fishery on a sustainable basis. The key result to be achieved is the increase in annual fish capture from the current 70,000 to 90,000 MT. Among the interventions to bring this about will include: demarcating 20 fishery management areas as well as 50 fish breeding grounds, and; carrying out a total of 180 awareness campaign meetings, including culture-based Capture fisheries through restocking of 250 natural water bodies using fingerlings.

Climate change and climate variability mitigation strategies for capture fisheries: The strategic objective is to generate information on climate parameters that can be utilized to advise on preparedness for mitigating the effects of climate change or climate variability in relation to the exploitation of fishery resources. To realize this objective, a number of interventions will be carried out, the key ones being: establishing 60 climate change early warning data collection points as well as 100 water level monitoring points in each fishery. In addition, a total of 15 climate change awareness workshops will be conducted. Given the complex nature of climate change issues, a strategy to develop human and infrastructure predictive and modelling capacity will be part of the key activities under this subcomponent.

The total cost for the capture fisheries management component over the next five years is US$ 41.13 million. The annual and total budget for implementing the Sustainable Nature Resources Management Programme is presented in **Table 6** below.

Table 6: Budget – Sustainable Natural Resource Management Programme (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ/CP	Farmers	Priv Sect
Promote Land-use Planning, Admin & Management	4.89	8.57	10.69	6.48	6.59	37.23	32.20	4.12	0.90
Ensure efficient water-use & irrigation	19.81	38.27	40.18	40.69	30.30	169.25	156.98	12.28	0.00
Promote afforestation, community woodlots and agro-forestry	5.72	6.60	7.02	7.13	5.50	31.97	28.90	2.67	0.40
Ensure sustainable capture fisheries	8.63	8.73	8.56	7.59	7.63	41.13	40.88	0.25	0.00
Promote efficient energy use from natural resources	0.10	0.26	0.32	0.35	0.20	1.23	0.83	0.35	0.05

Total	**39.15**	**62.43**	**66.77**	**62.24**	**50.22**	**280.80**	**259.79**	**19.66**	**1.35**

3.4 Agricultural Production and Productivity Improvement

This Program has three components: livestock, crops and aquaculture. Each of these is presented separately. All components and subcomponents will be designed in such a way that at least 30% of beneficiaries will be women. A deliberate effort will also be made to ensure that youth benefit from all interventions that will be designed and implemented.

3.4.1 Livestock Component

The overall policy objective of the livestock component is "to improve the sustainable and efficient production, productivity and value-addition of diversified livestock sub-sector".[8] This will be achieved through the implementation of the following five (5) main sub-components: (i) Regulations and policy reforms; (ii) Livestock production; (iii) Promotion of livestock health; (iv) Livestock research, and; (v) Construction of appropriate livestock infrastructure. Each of these is briefly dealt with below. The total budget for the Livestock component including infrastructure and capacity building is US $ **354.25** million. Main outcome indicators are provided in **Table 7.**

Table 7: Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Ensure Animal Health and Disease Control	Increase Livestock population	Cattle population	Million	3.5	-
		Goat population	Million	1.1	-
		Pig population	Million	0.7	-
	Improve vaccination coverage	Animals vaccinated for FMD	'000 animals	500	-
		Animals vaccinated for CBPP	'000 animals	400	-
		Animals vaccinated for ECF	'000 animals	33	-
Promote increased Livestock productivity and Production	Increase quantity of livestock products	Quantity of beef produced	'000 MT	60	-
		Quantity of milk produced	'000 litres	90	-
		Quantity of village chicken produced	Million	50	-
		Quantity of broiler chicken produced	Million	-	-
		Quantity of eggs produced	' 000 MT	225	
Ensure adequate Livestock Infrastructure	Increase Livestock Productivity	Percent of livestock herders that have access to functioning dip tanks	%	-	-
		Percent livestock producers that have access to LPCs	%	-	-
		Percent livestock producers that have access to veterinary services, by type (public, private)	%	TBD	-
Support Applied Livestock Research	Conserve important local livestock strains	Number of strains characterized, and conserved	#	10	40
	Develop appropriate livestock production technologies	Number of technologies developed	#	5	30

[8] Draft NAP 2012

Key components

Promote regulations and policy reforms the strategic objective will be to review, formulate and enforce livestock regulations and policy, leading to a well-coordinated livestock industry. A Draft Livestock Development Policy has already been formulated. However, there will be need to engage an estimated 780 stakeholders in 14 consultative meetings countrywide at various levels (the majority being at lower level, i.e. sub-district). Half of the 780 stakeholders will be engaged to finalize the Draft Livestock Development Policy and the other half will finalize the Draft Livestock Development Act. Once in place, the regulations and policy reforms will provide a basis for dealing with all the five challenges identified above (under-funding; high disease prevalence; Poor grassland management; high cost of feed, and; lack of breeding stock). The Regulations and policy reforms sub-component will cost US$ 860,000 over the next 5 years.

Promote Increased Livestock Productivity and Production will deal with the challenge of lack of breeding stock among others, and will focus on increasing the number and quality of various livestock for improved meat production and livestock productivity. Interventions will deliberately target not less than 30% women beneficiaries and will promote value chains that offer immense opportunities to increasing household income levels. The interventions will include: facilitating purchase by small-scale farmers of various genetically superior breeds, namely: 4,000 beef cattle; 4,000 dairy cattle; 8,900 sheep and goats; 4,700 pigs, and 150 million chickens. This component will seek to establish Livestock Service Centres (all 3 levels: L1=200; L2=50; L3=10). Communities will be expected to contribute 15% towards the construction of the centres, which will be community and private sector run once completed. At community level, committees responsible for running the will include at least 30% female representation. Other critical infrastructure to be constructed will include: 10 Livestock Production Centres; 20 Milk Collection Centres (again run by the private sector and communities); and; 16 Artificial Insemination centres. The total budget for Livestock production sub-component over the 5 years of NAIP implementation is US$ 72.88 million.

Ensure Animal health and Disease Control will aim at reducing the incidence of livestock diseases by targeting a number of appropriate interventions including: strengthening the zoonotic and contagious animal disease surveillance resulting in development of surveillance plans and Standard Operating Procedures; registering farms for traceability leading to the development of a farm register, and; providing support to emergency animal disease control fund. There will also be support provided towards the procurement of various vaccines during the NAIP implementation period including: 6 million FMD; 2.5 million CBPP; 350,000 ECF; 100,000 PPR; and 75 million Newcastle vaccines. There will be a deliberate targeting of at least 30% women beneficiaries from all these. Livestock health sub-component will cost 276.23 million over the next five years.

Support Applied Livestock: Research will focus on two major areas, *first* conserve and maintain livestock biodiversity, which will be concerned with supporting the characterization of indigenous breeds. It is expected that 6 suitable breeds each for cattle, goats and pigs and 11 indigenous poultry strains will be characterized. The following germ plasma will also be

supported: 10 cattle; 6 goat, and; 14 chicken. *Second,* livestock research sub-component will focus on developing suitable technologies that are gender sensitive for increased and sustainable livestock productivity. Among others, the development of suitable and appropriate technologies in animal nutrition, breeding, pastures and rangeland management will be undertaken targeting a total of 19 technologies during the NAIP implementation period. This component will include 3 Livestock Breeding Centres and 1 Livestock Gene-bank. The total budget for the Livestock research for the next 5 years is US $ 4.28 million.

The annual and total budget for implementing the Livestock Component is presented in **Table 8** below.

Table 8: Budget – Livestock Component (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ/CP	Farmers	Priv Sect
Promote regulations and policy reform	0.79	0.06	0.01	0.00	0.00	0.86	0.86	0.00	0.00
Promote increased Livestock productivity and Production	11.31	21.76	26.58	10.81	2.43	72.88	52.19	18.69	2.00
Support Applied Livestock Research	2.88	0.68	0.32	0.34	0.04	4.28	4.28	0.00	0.00
Ensure Animal Health and Disease Control	53.53	52.66	54.54	58.81	56.69	276.23	274.73	1.50	0.00
Total	**68.51**	**75.17**	**81.45**	**69.96**	**59.16**	**354.25**	**332.06**	**20.19**	**2.00**

3.4.2 Crops

The policy objective for the Crops component is "to increase sustainable crop production, productivity and value addition for a diversified range of competitive crops apart from maize"[9]. This will be achieved through implementing the following four major sub-components; (i) Promote improved productivity; (ii) Promote access to inputs through better targeting of FISP; (iii) Promote good agricultural practices, and; (iv) Promote mechanization of crop production systems. The total cost of the Crops component over the next five years is US$ **852.68** million of which 37% will be from farmer contribution and 18% from cooperate private sector contribution. The sub-components are briefly discussed below in **Table 9**.

Table 9: Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Promote improved productivity	Increase crop production and productivity, in order to meet national needs, & promote exports	Legume production	'000 MT	230	900
		Area under crop production by smallholders	10^6 Ha	1.8	-
		Average cereals yield increased	MT/ha	1	2.5
		Percentage farmers adopting new	%	-	-

[9] Draft NAP 2012

		varieties			
Promote access to and efficient use of inputs	Improve access to inputs (seed and fertilizer) through better targeting of FISP	Percentage of farmers, by type (according to land holding size), using fertilizer	%	-	-
		Percentage of farmers using improved seed	%	-	-
		Quantity of fertilizer being applied by smallholders in crops other than maize	Kg/ha	2	-
Promote good agricultural practices	Promote GAP such as pest control, fertilizer application, weed management	Percentage of farmers that practice GAP	%	-	-
Promote mechanization of crop systems	Promote mechanization of crop production systems (animal draught, etc)	Area under mechanized agriculture	'000 Ha	375	3000

Key components

Promote improved productivity

Embedded in the promotion of improved productivity is diversification of crops focusing on legumes, oil seed crops, other cereal crops, root and tuber crops and horticultural crops. Interventions under all these will include development of new crop varieties suitable to the country's different agricultural ecological zones, and its changing climate, and their subsequent multiplication and dissemination. In this regard, a total of 28 varieties of different crops mentioned above will be developed. Approximately 20,000 farmers will be trained in seed and tuber multiplication, while Other interventions under diversification will involve extension activities, such as the promotion of 9000 farmer field schools as well as 9000 demonstration plots, and 3200 field days. Total cost of this component is expected to be US$ 6.43 million.

Promote access to inputs through better targeting of FISP: At the core of this components will be the restructuring and improved targeting of FISP, so that it favours the decentralisation agenda. The restructuring will involve supporting 300,000 small-scale farmers under the e-voucher arrangement out of the 700,000 ear-marked for FISP in 2014. In the next two years (2015 and 2016) all the 700,000 farmers will be under the e-voucher, which will be scaled up nation-wide. The last two years (2017 and 2018) will see a decline in those supported under the e-voucher system to 600,000 per year, as some recipients will graduate from the program. The total expenditures allocated to FISP will decrease over the five years and can be re-allocated to other priority areas.. The e-voucher will be value-based rather than input based. Consequently from the facility provided, farmers will have flexibility and make the final choice whether to buy inputs for other crops (rather than maize; leguminous; and; oil crops, etc.); inputs for fish farming (fingerlings, feed), or; livestock (veterinary drugs, feed). That way, the restructured FISP will promote crop, livestock and fish diversification and reduce distortion in input use since a broader set of inputs will be supported under the program, with the potential for improved efficiency. Other expected benefits will include greater private sector participation in input and output marketing, by working with a greater number of local agro-dealers, more efficient payment systems which can reduce costs, particularly if e-vouchers can use mobile money technologies, thereby resulting in increased transparency in the process, and a contribution towards the realization of Food and Nutrition Security objectives.

Farmers and Government are expected to contribute 40% each, of the total cost of the inputs while the private sector will contribute 20% through transportation and other logistical related issues. Notwithstanding the expected diversification, the current levels of maize production by smallholder farmers are likely to be maintained and even increased in the short to medium term

as farmers will be expected to buy their own inputs, having realized the value of fertilizer application. In addition, greater private sector participation in input and output marketing is expected to further motivate farmers to buy own inputs for maize production arising from lower input prices as a result of increased efficiency levels and competition. Total cost for this component will be US$ 825 million.

The ***promotion of Good Agricultural Practices*** (GAP) will be an integral part of land management. This will address a number of challenges highlighted above, including: low levels of improved input adoption; poor response to fertilizer due to high soil acidity, and; low adoption rates of Conservation Agriculture (CA) as these are all embedded in Good Agricultural Practices. This sub-component will be closely linked to the Sustainable Natural Resources Management Programme, particularly with respect to Conservation Agriculture under Land management sub-component. In this regard, a total of 150,000 smallholder farmers will be trained in GAP including; Conservation Agriculture, correct spacing, fertilizer application, liming, early planting and crop rotation, among others. One of the key aspects of GAP is the use of improved seed. For this to be adequately realized among smallholder farmers, there will be need to develop, multiply and distribute improved seed materials, particularly of those crops that are already prominent in the country's farming systems (including maize, groundnuts, cassava, sweet-potatoes, cotton). This will help address the challenge of limited funding to agricultural research highlighted above. During the next five years, new planting seed materials will be developed including: 11 new cereal crop varieties; 6 new legume seed varieties; 7 new oil seed varieties; 8 new tuber varieties, and; 5 new horticultural varieties. A total of 10,000 smallholder farmers will be trained in seed multiplication of various crops in a bid to enhance farmer adoption of improved seed.

Seed multiplication and distribution will be facilitated by Government, Non-Governmental Organizations (NGOs) and the private sector with the first two expected to share 40% of the total cost each and the private sector 20%. Two appropriate technologies that are gender and HIV/AIDS sensitive will also be promoted. Total for this component is foreseen to be US$ 20.73 million.

Mechanization of crop production systems, including the use of animal draught power , *another good agriculture practice,* will primarily address the challenge of low levels of improved input adoption caused by limited cultivated land due to labour constraint. Increasing land under cultivation will invariably increase the demand and adoption of improved inputs. Additionally, mechanization is also expected to address the challenge of poor returns to fertilizer application through timely undertaking of crop husbandry practices following increased efficiency of undertaking such practices. This sub-component will focus on a number of activities including: training of 500 extension staff and 5,000 farmers in farm mechanization (including animal draught power) and promoting of at least two (2) technologies that are gender and HIV/AIDS sensitive during the next five years. Mechanization sub-component will cost US$ 0.52 million over the next 5 years.

The challenge of poor price incentives to increase pricing is dealt with under the Market Access and Services Development Programme.

The annual and total budget for implementing the Crops Component is presented in **Table 10** below.

Table 10: Budget – Crops Component (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ/CP	Farmer	Priv Sect
Promote improved productivity	1.16	1.22	1.39	1.28	1.39	6.43	6.43	0.00	0.00
Promote access to inputs through better targeting of FISP	175.00	175.00	175.00	150.00	150.00	825	356.25	318.75	150.00
Promote good agricultural practices	4.05	4.05	4.05	4.05	4.53	20.73	15.93	0.50	4.30
Promote mechanization of crop production systems	0.10	0.12	0.10	0.12	0.10	0.52	0.52	0.00	0.00
Total	**180.30**	**180.39**	**180.54**	**155.44**	**156.01**	**852.68**	**379.12**	**319.25**	**154.30**

3.4.3 Aquaculture

The policy objective for the Aquaculture Component is "to increase fish production, productivity and value-addition through sustainable and efficient management of aquaculture", thereby contributing to an increase in Fresh water aquaculture production and of per-capita fish consumption as key results.[10] This will be achieved through the implementation of the following two sub-components: (i) improved aquaculture production and productivity, and (ii) Ensure enabling environment for aquaculture development. The first sub-component will have a number of interventions: Fish seed Development; Fish feed Development; Pen and cage culture promotion; Pond and Dam Aquaculture promotion; Enhancement of Capture fisheries production through sustainable fish recruitment using Aquaculture; Improvement of Aquaculture inputs and products marketing and access to services. The second sub-component will include interventions such as Application of Aquaculture regulations to enhance sustainable development, and Climate change and climate variability preparedness for enhancing Aquaculture development. The total budget for the next five years is US$ 51.57 million.

Table 11 presents selected strategic objectives and their respective targets at baseline and after 5 years.

Table 11: Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Improve Aquaculture Production and Productivity	To increase fish production and consumption in Zambia	Fresh-water aquaculture production	MT/ yr	20,000	60,000
		The per-capita fish consumption	Kg/pp/ year	6.2	12
	To produce quality fingerlings of right species in sufficient quantities	Increased quantity of improved quality fingerlings	# million	20	90
	Produce higher quality feed, with higher protein content	Feed conversion ratio (kg of feed to Kg of fish)	#	2	1.3
		% of fish farmers adopting improved seed and feed	%	30	75

[10] Draft NAP 2012

	To establish pond and cage Aqua-parks in appropriate areas	Increased pond and cage fish farming productivity	MT /ha/yr	2 (pond) 10 (cage)	8 (pond) 20 (cage)
Ensure Enabling Environment for Aquaculture Development	To ensure that Aquaculture licensing, certification is carried out according to Aquaculture regulations	Percentage of farmers adopting Aquaculture regulations	%	30	70
	To establish an early warning and planning system.	Adoption rate of climate change or variability mitigation strategies	%	0	75

Key Components

Improved aquaculture production and productivity

Fish seed Development: The major outcome of increasing quantity of improved quality and accessible fingerlings of specific fish seed required for different catchment areas of fish famers will require a number of interventions for it to be realized. The interventions will include engaging in pure line breeding for local breeds that have had proven performance. A total of 17 such pure line local breeds have been earmarked for breeding during the NAIP implementation period. The benefits of this intervention will be heightened through the construction of 13 hatcheries in all high potential aquaculture zones. Additionally, a total of 69 nurseries will be constructed in all high potential aquaculture zones aimed at increasing access to fingerlings.

Fish feed Development: The outcome related to improved fish yield from quality, accessible fingerlings of specific fish feed required for different catchment areas and levels of fish famers will be realized through a number of interventions, the key ones being: Conduct 10 research studies in improved live feed production as well as 17 in local fish feed production. These efforts will be supplemented by the construction of appropriate infrastructure including in all high potential aquaculture zones, namely: 50 pilot demonstration feed plants; 50 feed storage sheds; and 10 fish feed certification laboratories, one per province.

Pen and cage culture promotion: Increased production and productivity through pen and cage operators will be realized through a number of interventions. Key ones will include: acquisition and demarcation of at least 10 aqua-parks and construction of basic support infrastructure to cage/pen sites. Needless to mention that Environmental Impact Assessments will be conducted for each of the 10 sites selected for Aqua-parks aimed at taking on board environmental concerns.

Pond and Dam Aquaculture promotion: Increasing the production and productivity of particularly those areas without capture fisheries by increasing pond and dam farmers will benefit from the interventions highlighted above on pen and cage culture promotion. In addition, 50 community dams will be constructed and stocked. All areas concerned will need basic infrastructure such as access roads (300 km); electricity and water articulation systems.

Enhancement of Capture fisheries production through sustainable fish recruitment using Aquaculture: Sustainable recruitment of juvenile fish in the depleting lakes and provision of aquaculture as alternative livelihoods to the fishers will be realized by establishing/constructing a number of strategic infrastructure as well as its operationalization, including: 8 lake based hatcheries and another 8 based nurseries. It will be critical to facilitate the establishment of 15 co-management committees to take care of the infrastructure that will be put up. Each co-management committee will also run a revolving fund that will have been established.

Improvement of aquaculture inputs and products marketing and access to services: Increase in services and incomes from aquaculture enterprises among aquaculture stakeholders will be realized through a number of interventions most of which will be capacity building related for both fish farmers and extension staff. These will include 50 awareness creation workshops across the targeted areas and another 50 workshops to create linkages with service providers. Another key intervention area will be the establishment and operationalization of the e-voucher input system that will target a total of 13,000 beneficiaries.

Total budget for this component is US$ 31.79 million.

Ensure an enabling environment for aquaculture development

Application of Aquaculture regulations to enhance sustainable development: The main result focus of this sub-component will be increased adoption rate of best and sustainable Aquaculture practices. A number of interventions have been planned to bring this about such as conducting of 200 patrols per year for enforcement of aquaculture licensing and another 200 for facility certification. There will also be another 200 field visits aimed at compiling best aquaculture practices whose use will be promoted and disseminated through extension services.

Climate change and climate variability preparedness for enhancing Aquaculture development: The result related to adoption rate of climate change for variability mitigation strategies will be achieved through the procurement of 50 survey and water quality assessment sets of equipment and setting up 650 water monitoring stations or points. Total budget is USD 14.94 million.

The budget for implementing the aquaculture component is presented in **Table 12** below.

Table 12: Budget – Aquaculture Component (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ/CP	Farmers	Priv Sect
Improve Aquaculture Production and Productivity	9.51	6.78	6.70	6.27	2.49	31.76	27.73	0.63	3.41
Ensure Enabling Environment for Aquaculture Development	3.38	4.79	4.09	3.94	3.60	19.81	17.86	1.30	0.65
Total	**12.89**	**11.57**	**10.79**	**10.21**	**6.09**	**51.565**	**45.58**	**1.93**	**4.06**

3.5 Market Access and Services Development

Two policy objectives are particularly relevant to the Market Access and Services Development Programme: (i) *To create an enabling environment that will facilitate an efficient supply of agricultural inputs, increase private sector participation and improve the functioning of markets"*, and; (ii) "*To improve the quality and enhance the competitiveness of potential agricultural exports in order to fully utilize markets (regional and international) thereby increasing agricultural contribution to foreign exchange earnings"*[11]. These policy objectives will be achieved through the implementation of the following four (4) components: (i) Support

[11] Draft NAP 2012

institutional market arrangements and performance; (ii) Increase access to rural and market infrastructure; (iii) Increase access to rural finance, and; (iv) Promote value chain integration. The total budget over the next five years is US$ **257.21** million.

The main outcomes of this program are described in **Table 13** below.

Table 13: Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Support Institutional Market Arrangement Performance	Strengthen and revitalize cooperatives movement	Percentage of Cooperatives that are deemed sustainable	%	-	-
	Establish agricultural marketing and trade information	Percent of farmers and traders that have access to price and market information	%	-	-
	Enhance quality of commodities marketed	Percentage of commodities that is rejected by buyer/trader	%	-	-
		Volume of agricultural produce traded on ZAMACE			
Increase Access to Rural and Market Infrastructure	Enhance storage facilities for surplus production for sale	private sector storage capacity	'000 MT	200	350
		Value of agricultural exports	Billion USD/Yr	1.8	-
	Enhance farmers access to local and national markets	Percentage of farmers having access to local, national markets	%	-	-
Increase Access to Rural Finance	Improve access to banking services and credit in rural areas	Percentage farmers having access to agricultural finance	%	-	-
		Number of beneficiaries of matching grants	#	0	-
Promote Value Chain Integration	Improve value addition of commodities	Number of farmers involved in primary processing at farm level	# ('000)	28	32
		Farmers accessing agricultural commodity exchange	# ('000)	-	-
	Improve warehouse systems for high yields commodities	Volume sold through a warehouse receipt system	'000 MT	60	-

Key components

Support institutional market arrangements and performance: will have four sub-components: (i) Support Cooperatives, Farmer organisations, agribusiness centres and Trade associations; (ii) Support agricultural marketing and trade information and intelligence including that related to regional markets; (iii) Develop Grades, Standards and Certification, and; (iv) Support Private Sector Agro-Dealers Promotion. Each of these is briefly explained below.

Support to farmer cooperatives and organizations: is critical to increasing smallholder production and productivity, as small-scale farmers constitute more than 70% of the farming community. Input and output marketing arrangements for small scale farmer's cause a great constraint to smallholder agricultural production performance and require farmers to be organized. Consequently cooperatives and farmer organizations are vital for integrating small-scale farmers into the market. A major result area under NAIP will be a revitalized and strengthened cooperative movement. In order to realize this result, new cooperatives will be formed and strengthened as well as the old ones revived. The cooperative legislation will be

reviewed and 10,000 cooperatives trained in various business and organizational issues. Media outreach for the enhancement of the Cooperative movement will be promoted targeting the recapitalization fund. In this regard 1 million outreach materials will be produced during the NAIP implementation period.

Agricultural marketing and trade information and intelligence: this sub-component will address a number of the above identified challenges, the key ones being: crowding out private sector will be minimized on account of availability of critical marketing, trade information and intelligence, and; policy unpredictability related to marketing will also be minimized. The implementation of the Agricultural marketing and trade information and intelligence will draw from market based food reserve management lessons as well as those from farmer marketing training in part.

This sub-component will include crop, livestock and fisheries market centres development and operationalization in strategic potential areas. This will include: 18 Agri-business centres; 180 crops community bulking and marketing centres; 185 livestock marketing and service centres; 20 milk bulking and processing centres; 7 fish landing sites complete with ice plants at provincial level, and; 7 fish bulking and processing centres at the same level. Mechanisms will be established to ensure continuous flow of market and trade information from regional economic community bodies and other relevant regional institutions. For instance, links with the Regional Agricultural and Food Security Investment Programme by COMESA and the Tripartite Agreement between COMESA - SADC - EAC and other relevant regional institutions will be established. This will enable Zambia to take advantage of these regional frameworks (including compacts of the Regional Economic Communities) with regards to regional trade, policy and market facilitation.

Develop grades, standards and certification: the major outcome of this will be enhancement of the quality of products marketed. Interventions to bring about this outcome will include: developing standard operating procedures for fisheries (18), livestock (3). The enforcement of commodity standards will also be enhanced through training of 30 Health Inspectors and 500 farmer groups during the five (5) year implementation period.

Promote private sector agro-dealers: will address a number of the above identified challenges including: crowding out private sector with lessons drawn from out grower schemes; e-vouchers and warehouse receipt systems, among others. The key result area will be enhanced participation of private sector in agro-dealership. A number of interventions will be undertaken to bring about this result, including: establishment of 2,000 agro-dealers across all the country's districts and provision of appropriate entrepreneurship training to close to 3,900 local agro-dealers country wide.

Total budget for this component is USD 25.25 million over five years.

Increase access to rural and market infrastructure: will have seven sub-components: (i) Develop agricultural access roads; (ii) Support energy promotion; (iii) Support development of storage infrastructure; (iv) Support development of crop output market centres; (v) Support development of livestock markets; (vi) Support infrastructure development for fisheries quality, and; (vii) Support development of fishery markets and acquisition of transport. Each of these is briefly explained below.

Under the promotion of the agricultural access roads, 2,500 km of rural access roads will be constructed in all the provinces and another 1,250 maintained. The percentage of farmers

accessing electricity through the Rural Electrification Programme for farming purposes will be increased. In this regard, 10 sites will be established where farmers will be able to access hydro electricity for farming and processing (42,000HH/site). Private sector storage capacity will also be enhanced from the current 200,000 MT per annum to 350,000 MT.

Commercialization of crop marketing will also be emphasized through the establishment and operationalization of 180 crop community bulking and marketing centres across the country's potential areas. Once established, the managers and other key players in all the 180 centres will be trained in processing, standards and marketing issues. Similarly, value addition to the livestock products will be realized through the procurement and establishment of 135 small scale livestock products and by-products processing plants. Among others, this will entail training 290 small-scale farmers in agri-business skills for Livestock.

Similarly, the fishery sub-component will be strengthened through a number of activities, including: construction of 100 landing sites in appropriate locations complete with ice plants at provincial level; Construction of 10 fish bulking and processing centres at provincial centres, and; training of 40,000 fishers in processing and value addition.

Total budget for this component is expected to be US$ 91.16 million.

Increase access to rural finance: the key result for this sub-component will be increased access to banking services and credit in rural areas. The realization of the result area will be through a number of interventions including: training of 300 financial services providers in rural finance, micro-credit etc. at district level; Promotion of village/rural banking services through training and sensitization of 250,000 (of which at least 30% will be women) small scale farmers in rural finance, micro credit, processing and diversification, etc. by trained financial institutions. Those successfully trained will be facilitated to access a matching grant that will have been established, amounting to US$ 2.5 million. The fund will be disbursed through appropriate financing institutions. Total budget for this component is US$ 46.87 million.

Promote value chain integration: the first key result area will be the promotion of the production of commercialized commodities through improved value addition of such commodities that will target at least 30% of female beneficiaries. This result will be realized through a number of interventions, the key ones being the establishment and operationalization of 6 rural agro-processing industries for value addition as well as strengthening the various categories of value chain actors/groups. At least 6 categories of value chain actors will be identified and capacity built following a vigorous value chain analysis of targeted major commodities. Training at least 600 (including women) functional district level staff as well as sensitizing at least 4,000 (of which at least 30% will be women) various stakeholders will also strengthen commodity exchange. The warehouse system will be improved for high value crops through training of another 600 functional district level staff. Total budget here is US$ 93.92 million.

The annual and total budget for implementing the Market Access and Services Development Programme is presented in **Table 14** below.

Table 14: Budget – Market Access and Services Development (US$ million)

Component	Implementation Period (years)	Total	Source of Funding

	2014	2015	2016	2017	2018		GRZ/CP	Farmers	Priv Sect
Support Institutional Market Arrangements and Performance	4.62	5.67	6.05	4.47	4.44	25.25	21.40	2.85	1.00
Increase Access to Rural and Market Infrastructure	12.83	25.14	28.13	13.36	11.71	91.16	74.68	2.59	13.89
Increase Access to Rural Finance	0.79	21.79	21.79	1.75	0.75	46.87	25.37	5.50	16.00
Promote Value Chain Integration	1.38	3.23	43.73	3.70	41.90	93.92	88.28	0.54	5.10
Total	**19.62**	**55.82**	**99.70**	**23.28**	**58.80**	**257.21**	**209.73**	**11.48**	**35.99**

3.6 Food and Nutrition Security and Disaster Risk Management

Food security policy is best understood as an amalgam of policies designed to stimulate agricultural production and productivity, support rural livelihoods, reduce vulnerability through safety nets, and stimulate broad based economic growth. Food reserves have been restricted to the equivalent of three-month imports. FRA will contract private sector actors to procure, store and maintain the food reserves on its behalf. The food stuffs to be bought will be at prevailing market prices. The Food and Nutrition Security and Disaster Risk Management has three major components (see Table 15): food security, nutrition, and disaster risk management and mitigation with a total budget of US$ **659.86** million over the next five years. Of the total budget, close to 3 percent is expected to be financed by farmers.

Table 15: Selected Strategic Objectives and Outcome Indicators by Component

Component	Strategic Objective	Outcome Indicator	Outcome Indicator Value		
			Unit	B/line	Target
Food Security	Improve food security at national level	Number of months food insecure HHs have inadequate food	#	3.2	1.0
		Number of months import in Food Reserve Agency	#	3	3
	Reduce HH level post harvest losses	% losses cereals per annum	%	30	15
Nutrition	Improve nutrition security for HH through education	% of targeted households with nutrition knowledge and methods improved	%	-	-
	Promote adequate food utilization at HH level	Diet diversity score (in collaboration with Food Nutrition Commission)	#	?	-
Risk management and Disaster Mitigation capability	Enhance farmers protection to disaster	Number of smallholder farmers having access to a crop insurance scheme	#	0	100,000
	Strengthen information systems	% of smallholder farmers having access to an early warning system	%	30%?	66%?

Key components

Promote National and Household Food security component: has two strategic objectives: (i) Ensure sufficient food reserves at household and national levels, and; (ii) Reduce post-harvest losses at household level. Improving the management of the Strategic Grain Reserves (SGRs) will allow attaining the first objective. In this regard, the national grain reserve storage

capacity will be more than doubled, from 1,200,000 MT in 2011 to 2,500,000 Mt in 2018. On the other hand, the promotion of adequate food storage at household level will involve supporting the construction of 800,000 traditional silos from local materials (mud and bricks). The 800,000 beneficiary farmers will also be trained in good storage practices. The Food Security component will deal with a number of the above identified challenges including: low energy intake; serious stunting levels; and poor food storage at household level. This component is expected to require the lion's share of the program, with US$ 592 million.

Promote Access to Nutritious Food strategic objective will be to improve household nutrition through education. This will among others involve developing and disseminating 35 recipes as well as training 100,000 farmers in the recipes developed. The selection of farmers for training will be strategically done to optimise diffusion of knowledge and skills to a wider segment of the smallholder rural community. In a bid to popularize the usage of local foods for recipes, 200,000 small-scale farmers will be trained in on-farm processing. One other major intervention will be the promotion of school and home gardens and horticulture. A total of 2,500 extension staff will be trained and will be expected to extend the knowledge and skills acquired to 100,000 farmers. The Nutrition component will deal with the challenge of inadequate nutrition education. Initiatives aiming at improved nutrition under the NAIP will be closely coordinated with other social protection initiatives, such as the Food Security Pack, implemented by the Ministry of Community Development, and other social safety nets. This component is expected to cost US$ 50.46 million.

Ensure Risk management and Disaster mitigation capabilities: The key strategic objective is to stabilize small-scale farmers' food and nutrition security through enhanced farmers' protection against disaster. The three-fold key interventions under this will be: establishment and operationalization of crop insurance; Strengthen weather forecasting capability for agriculture by establishing weather stations in at least 100 districts, and; consistently and timely carry out Post Harvest and Crop Forecast Surveys. This component is expected to cost US$ 17.40 million.

The annual and total budget for implementing the food and nutrition security and disaster risk management programme is presented in **Table 16**.

Table 16: Budget – Food and Nutrition Security Component (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ	Farmers	Priv Sect
Promote National and Household Food Security	100.00	123.00	123.00	123.00	123.00	592.00	573.60	18.40	0.00
Promote Access to Nutritious Food	6.59	10.63	11.16	10.95	11.13	50.46	49.71	0.75	0.00
Ensure Risk Management and Disaster Mitigation Capability	3.54	3.64	3.64	3.54	3.04	17.40	17.40	0.00	0.00
Total	**110.13**	**137.27**	**137.80**	**137.49**	**137.17**	**659.86**	**640.71**	**19.15**	**0.00**

3.7 Key Support Services – Knowledge Support Systems

In order to allow MAL and the agriculture sector to provide the products and services required by farmers and practitioners, a number of knowledge support systems need to be further strengthened and developed. These include the research and extension systems, as well as the seed system, and the agricultural training and education system. Total budget for this Key Support Service is US$ 254.48 million. The main outcomes are provided in table 17 below.

Table 17: Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Research system	Enhance service delivery systems to ensure adequate funding of research and extension through alternative financing options	Percentage of funds from other sources (non-GRZ)	%	20	33
		Percentage funds from GRZ	%	5	10
		Number of phytosanitary certificates issued	# ('000)	18	-
		Number of nursery registration certificate	# ('000)	10	-
Extension system	Enhance the extension service delivery systems	Percentage of farmers that have access to extension services, by gender	%	-	-
		Ratio extension worker-farmer/livestock herder/fisher	#	1:1000	1:500
Seed system	Enhance Seed extension, seed testing, and variety testing, registration, and protection	Quantity of maize seed certified for sale	10^6 MT	50	-
		Quantity of wheat seed certified for sale	10^6 MT	3	-
		Quantity of cotton seed certified for sale	10^6 MT	4	-
Agricultural Education and Training system	Develop and implement appropriate training programs	Percentage of students that are satisfied with their course/teacher	%	-	-

Key components

This targets four sub-components: (i) Strengthen Seed Systems; (ii) Strengthen Research Systems; (iii) Strengthen Extension Systems, and; (iv) Strengthen Agricultural Training and Education Systems. These are briefly addressed below.

Strengthen Seed Systems: will enhance production, seed and variety testing, registration, protection and seed extension. Key intervention areas will include: decentralize seed services to all provinces and border posts, and; monitor and backstop satellite and private seed testing facilities. This component will also consider the informal seed system (e.g. non-certified seeds, of either local or improved varieties that are saved/recycled/exchanged through local markets). During the next 5 years, a total of 525 varieties and cultivars of different crops will be tested, protected and released and DUS test undertaken. A total of US$ 26.44 million will be spent in the next five years on improving the seed sector delivery services.

Strengthen Research Systems: the main strategic objective of Research will be to enhance public service delivery systems to ensure adequate funding for research and extension through alternative financing options. This will involve, among others, the establishment and operationalization of a Competitive Grant Scheme (CGS) for research. This will involve a total of US$ 1 million over the NAIP implementation period; Diversify sources of research funds through

producer levies, contract research, and joint ventures with the private firms. A total of 2,000 requests are expected to be made to ZARI during the NAIP implementation period, and; Contract out research and establish public-private partnerships (PPPs) involving a total of at least 10 PPP contracts signed. There will be a deliberate focus on gender sensitive research. As a matter of fact, the extent of gender sensitivity in the submitted research proposals will form a major criterion in the assessment of such proposals submitted to the Competitive Grant Scheme.

Another strategic objective for Research is to ensure effective research and development that promotes the participation of other stakeholders including the private sector. This will be concerned with the protection of 150 technologies during the period under consideration and the commercialization of another 150 technologies. This component will have a budget of US$ 37.06 million.

Strengthen Extension Systems: Extension services need to be strengthened in order to address the challenge of limited number of smallholder farmers receiving extension services. This sub-component will focus on facilitating the engagement of greater numbers of human capacity as well as rehabilitation and construction of farmer training centres and institutes (including those specialized for fishers) staff houses and procurement of motorbikes and other equipment for enhanced extension performance. During the implementation of NAIP, 3,500 extension staff will be trained/retrained in good crop, animal and fisheries husbandry practices. There will be a need to revisit the current extension system, which is divided between crops, livestock and fisheries, in order to move towards an integrated and unified extension system that caters for all thematic areas of the MAL. Furthermore, the private sector will be engaged to accelerate their participation in the provision of extension services. A number of seed and cotton private sector companies are already providing extension services to small scale farmers. This will be further encouraged and strengthened through among other things enactment and implementation of appropriate policy interventions such as tax rebates. A total of US$ 123.22 million will be spent in the next five years on improving the extension system delivery services

Strengthen Agricultural Training and Education Systems: In all the nine (9) training institutions under MAL, carefully selected core strategic activities will be implemented aimed at enhancing the institutions' performance in line with contributing to NAIP sector objectives and goal. The four core group of activities to be implemented across all the 9 training institutions will be defined by the following four strategic objectives: (i) To develop and implement appropriate training programmes; (ii) To develop and implement a rehabilitation, construction and preventive maintenance programme; (iii) To develop and operate income generating ventures to supplement income for institutions, and; (iv) To conduct collaborative research trials.

Interventions will include: review of curricular; undertake 25 farmer-school-community outreach initiatives per institution per year; training of staff (ranging from 10 to 60 per school, depending on the size of the training institution), and strengthen Income Generation Activities initiatives through strengthening of production units. A total of US$ 67.75 million is foreseen for strengthening the Agricultural Training and Education Systems over the next five years.

The annual and total budget for implementing the Knowledge Support Services sub-component is presented in **Table 18** below.

Table 18: Budget – Knowledge Support Systems (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ	Farmers	Priv Sect
Strengthen Seed Systems	5.71	5.41	5.17	5.22	4.93	26.44	26.44	0.00	0.00
Strengthen Research Systems	6.06	7.76	8.05	5.61	9.58	37.06	37.06	0.00	0.00
Strengthen Extension Systems	16.39	34.95	25.26	23.56	23.07	123.22	123.22	0.00	0.00
Strengthen Agricultural Training and Education Systems	21.76	20.87	11.91	7.40	5.81	67.75	67.75	0.00	0.00
Total	**49.91**	**69.00**	**50.38**	**41.79**	**43.39**	**254.48**	**254.48**	**0.00**	**0.00**

3.8 Key Support Services – Institutional Strengthening

Institutional strengthening will have four key components: (i) Awareness creation; (ii) Undertake sector policy dialogue, analysis and planning systems; (iii) Strengthen public financial management, procurement and audit systems, and; (iv) Improve human resources management and ICT systems. It should be appreciated that by their nature, institutional strengthening activities are cross-cutting and hence are dealt with in all the four NAIP programmes. This is critical given the need to capacity build the private sector entities and other players that will lead the NAIP implementation. Total budget for this Key Support Service is US$ 19.86 million. The main results are highlighted in table 19, while each component is further described below.

Table 19 Selected Strategic Objectives and Indicators by Component

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
Policy Dialogue and Analysis	Build capacity in PPD in policy analysis and impact assessment	Number of Policy-related studies undertaken per year	#	0	10
	Alignment of partner and stakeholder efforts to common NAIP implementation frameworks	% of donor funds that are aligned visibly to NAIP	%	0	100
		Number of joint Annual Sector Reviews held	#	0	4
Financial Management	Improved budget delivery (efficiency) and effectiveness of public spending	Percentage of budget spent by type of financing (GRZ, CP)	%	TBC TBC	95% 90%
		Number of Public Expenditure Tracking System implemented	#	0	2
Human Resources Management	Improved planning management and evaluation of Human Resources at all levels	% vacancy for established posts	%	?	20
		% of staff that complete their APAS	%	?	100
Planning, M&E	Improved planning, monitoring and reporting of MAL	Number of coordination meetings held at District level (CAS/DAS and DDCC)	# 100	100	400

Component	Strategic Objective	Outcome Indicators	Outcome Indicator Values		
			Unit	B/line	Target
	activities and results, as well as sector performance		Dist.		
		Number of quarterly reports at district, province and central level produced on time	#	20	600
		Number of consolidated Annual Report prepared by MAL	# (cumul)	0	5

Strengthen Sector policy dialogue and policy analysis: this will be with respect to policy and strategies being implemented by government including CAADP. PPD is well placed to spear-head sector policy dialogue and analysis. However, it currently lacks capacity for such, including skills as well as inadequate human resource. PPD needs to be strengthened to rise to the challenge of: (i) developing of a monitorable roadmap that reduces levels of adhoc interventions while the Market Based Instruments (MBIs) are being developed; (ii) facilitating the coordination and implementation of a flexible legislation that allows a transition with changing relative roles of the main players; (iii) monitoring both the incidence and impact of policy interventions and levels of MBI development, and; (iv) facilitate dialogue and rational decisions when constraints to adhering to the roadmap are identified. Among others, the realization of these will require various wide ranging stakeholder engagements at various levels; national, provincial, district and community. Another topic will be integrating climate change into agricultural policies and planning activities under the NAIP

Improve financial management, procurement and audit systems: This is crucial for NAIP to deliver on its objectives. This sub-component will carry out Public Expenditure Tracking Survey (PETS) and a quantitative Service Delivery Survey. While PETS has been carried out in other ministries including Education, the survey has not yet been carried out in the agricultural sector. It is vital that PETS be undertaken and that it be a recurring event after every five (5) due to its importance in highlighting the efficiency of financial resource use, among others.

Improve human resources management and ICT systems: the bulk of this activity will be concerned with sharpening the skills base of MAL technical and support staff aimed at sufficiently equipping them to undertake their facilitatory functions with regards to NAIP implementation.

Strengthen Planning, Monitoring and Evaluation Systems: This initiative is already under implementation through the European Union's funding window. The activity is to be carried out in nine months involving various levels of implementation (national, provincial, district). The whole MAL will have an integrated Planning, Monitoring and Evaluation system. Draft Key Performance Indicators (KPIs) have already been identified. The M&E system being developed through the PEP funding will be an integral part of this NAIP.

The annual and total budget for implementing the Institutional strengthening Services sub-component is presented in **Table 20** below.

Table 20: Budget – Institutional Strengthening (US$ million)

Component	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ	Farmers	Priv Sect
Strengthen Sector policy dialogue and policy analysis	0.49	0.22	0.22	0.22	0.22	1.38	1.38	0.00	0.00
Strengthen Public Financial Management, Procurement, and Audit Systems	0.43	0.12	0.37	0.10	0.35	1.37	1.37	0.00	0.00
Strengthen Human Resources Management and ICT Systems	1.45	1.00	0.95	0.96	0.96	5.33	5.33	0.00	0.00
Strengthen Planning, Monitoring and Evaluation Systems	5.49	3.75	1.06	0.75	0.75	11.79	11.79	0.00	0.00
Total	**7.86**	**5.09**	**2.60**	**2.03**	**2.28**	**19.86**	**19.86**	**0.00**	**0.00**

4 SUMMARY NAIP BUDGET

4.1 Costing Methodology

For each program under NAIP, a few strategic objectives have been identified, with their associated outcomes. Priority interventions contributing to achieve these outcomes have been described above, by program. These interventions have been characterized by output indicators, along with their associated unit, unit cost, baseline value and target value by the end of the NAIP (2018). The outputs have to the extent possible been quantified, with annual targets, and resulting annual values.

Following an output based budgeting methodology, the budget for each intervention has been calculated by multiplying an intervention's annual target by its unit cost, for each year of intervention. The sum of each annual value was then added over the total period of NAIP implementation (2014-18). The result is a total for each intervention, and by aggregation, for each sub-component, component and Programme.

4.2 Base Costs

The total NAIP budget, or requirements, over the next five years (2014-2018), is US$ 2,730.69 million, equivalent to 13.6 billion Zambian Kwacha (rebased, ZMW)[12]. Of this amount, 14.34% will be the expected contribution from farmers/ beneficiaries/ communities and 7.24% from the corporate private sector (see **Figure 16** below). Given the dire need to create an enabling environment for a private-sector led agricultural growth, the 78% share of government contribution is justified as a number of basics need to be targeted for investment to stir growth during the current phase (2014-2018). Priority investment areas deemed critical to stir growth

[12] An average exchange rate of 1 US$ = 5 ZMW has been used for the preparation of the budget

include; research and development; technology dissemination; market infrastructure and services development, among others.

NAIP summary costs are presented in **Table 21 and 22** below. All costs are expressed in base costs, i.e. without taking into consideration inflation.

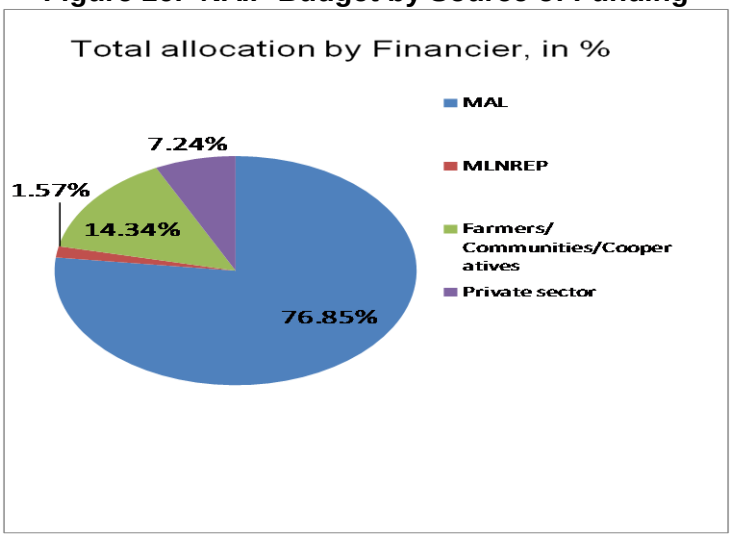
Table 21: NAIP Budget (US $ Million) by Program, year & financier 2014 - 2018

Program	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ/CP	Farmers	Priv Sect
Crops Production and Productivity	180.30	180.39	180.54	155.44	156.01	852.68	379.12	319.25	154.30
Livestock Production and Productivity	68.51	75.17	81.45	69.96	59.16	354.25	332.06	20.19	2.00
Aquaculture Production and Productivity	12.89	11.57	10.79	10.21	6.09	51.57	45.58	1.93	4.06
Market Access and Services Development	19.62	55.82	99.70	23.28	58.80	257.21	209.73	11.48	35.99
Food and Nutrition Security and Disaster Management	110.13	137.27	137.80	137.49	137.17	659.86	640.71	19.15	0.00
Sustainable Natural Resources Management	39.15	62.43	66.77	62.24	50.22	280.80	259.79	19.66	1.35
Knowledge Support Systems	49.91	69.00	50.38	41.79	43.39	254.48	254.48	0.00	0.00
Institutional Strengthening	7.86	5.09	2.60	2.03	2.28	19.86	19.86	0.00	0.00
Total	**488.37**	**596.74**	**630.02**	**502.44**	**513.13**	**2730.69**	**2141.33**	**391.67**	**197.70**

Table 22: NAIP Budget (ZMW Million) by Program, year and financier 2014 - 2018

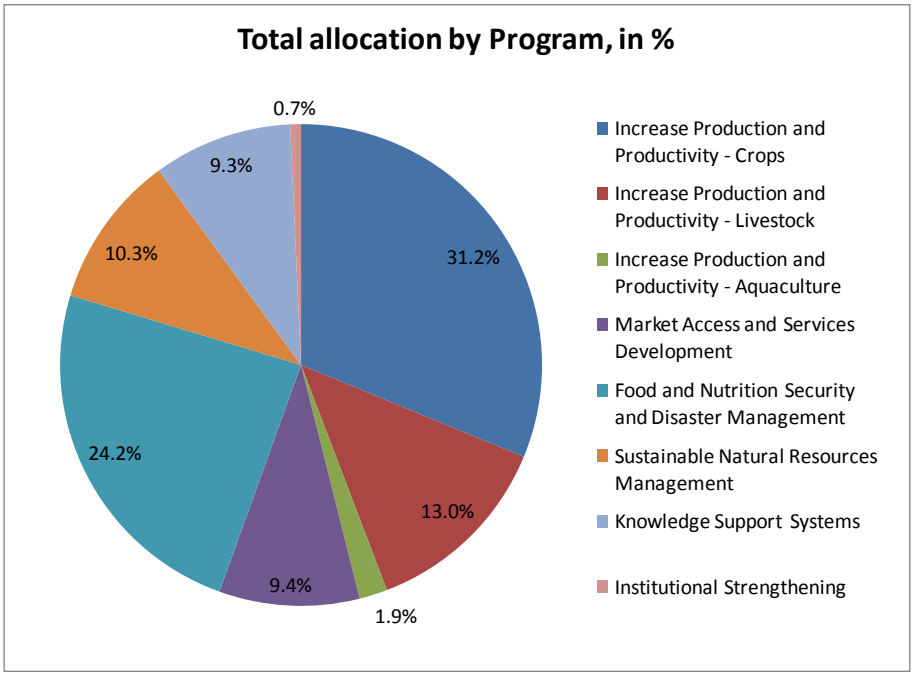
Program	Implementation Period (years)					Total	Source of Funding		
	2014	2015	2016	2017	2018		GRZ/CP	Farmers	Priv Sect
Crops Production and Productivity	901.50	901.94	902.68	777.21	780.05	4,263.38	1,895.60	1,596.26	771.51
Livestock Production and Productivity	342.55	375.83	407.26	349.81	295.81	1,771.26	1,660.28	100.97	10.00
Aquaculture Production and Productivity	64.45	57.87	53.97	51.07	30.47	257.83	227.91	9.63	20.29
Market Access and Services Development	98.10	279.09	498.49	116.38	293.98	1,286.03	1,048.67	57.41	179.95
Food and Nutrition Security and Disaster Management	550.64	686.36	689.01	687.43	685.87	3,299.29	3,203.54	95.75	-
Sustainable Natural Resources Management	195.73	312.17	333.83	311.18	251.11	1,404.01	1,298.95	98.31	6.75
Knowledge Support Systems	249.56	344.98	251.90	208.97	216.97	1,272.38	1,272.38	-	-
Institutional Strengthening	39.31	25.45	12.99	10.13	11.40	99.29	99.29	-	-
Total	**2,441.83**	**2,983.68**	**3,150.12**	**2,512.18**	**2,565.64**	**13,653.46**	**10,706.63**	**1,958.34**	**988.50**

Figure 16: NAIP Budget by Source of Funding



The next figure illustrates NAIP's budget broken down by Program. Approximately 46% of total budget is allocated to the Production and Productivity Improvement programme, divided by commodity, Crops (31 percent), Livestock (13 percent), Aquaculture (2 percent). This is expected on account of the Government crop production input (FISP) supported initiative. The second largest Program is the Food and Nutrition Security Program (24 percent), which includes the Government Maize Marketing initiative (FRA), whereas the Market Access Program and the Sustainable Natural Resources Management Programs are both at 10 percent. The remaining Key Support Services of Knowledge Support Systems and Institutional Strengthening represent 9 and 0.7 percent respectively. (see **Figure 17**).

Figure 17: NAIP Budget by Investment Portfolio



4.3 Available funds

The above budget does not take into account private investment at farm level, nor does it take into account private sector corporate investments that are taking place in Zambia at the moment. Efforts to collect this data would involve a detailed survey at farm level, and within the private commercial sector (corporate). An attempt to collect this data will be made in preparation for the Business Meeting.

The NAIP seeks to identify priority investments that are required to develop the agricultural sector in Zambia. These are to a large extent investments of a public nature, but they do also include private sector investments. For each intervention, an effort was made to estimate the share of financing that should come from the private commercial sector, as well as from farmers, their cooperatives, and communities, depending on the type of investment considered.

Sector Cooperating Partners (CP) have been put together with government. However, they funding could also be channeled through the private commercial sector operators, or farmers, their cooperatives and communities.

Regarding available funds to finance the NAIP, GRZ funding allocated to the sector has been taken from the Medium Term Expenditure Framework (2013-15), and the same growth rate was extrapolated to 2016, 2017 and 2018. MTEF figures exclude on-budget CP funds.

A database of on-going and planned interventions was compiled by Agriculture Cooperating Partners and shared with MAL. On the basis of this data, each individual commitment was realistically broken down annually and a determination was made as to the nature of this funding, whether on or off budget. On-budget signifies that the donor funding will appear in the Government annual budget (yellow book). These commitments are in the process of being broken down by NAIP Program, which should allow to have a more refined financing gap analysis, by Program.

On-going and planned interventions sum 503 million USD, of which approximately 308 million are deemed to be on-budget, and included in GRZ annual budget figures, but not in the MTEF figures. Approximately 195 million USD is considered to be off-budget, and these normally support private sector, and communities directly or through NGO contracts.

Climate finance, comprising public and private funds to support adaptation as well as mitigation could contribute to finance the NAIP. Building the necessary evidence base and financing channels to link climate finance with investments in agriculture, is a major focus of Climate Smart Agriculture (CSA) approaches. Financial resources that catalyze low-carbon and climate-resilient development represent a source of funds that could potentially be used to reward the positive externalities of NAIP. The costs associated to specific CSA activities have been identified and are included in the total requirements.

4.4 Preliminary financing gap

In order to prepare a preliminary financing gap, the following assumptions have been made: a) 100 percent of MAL's budget (excluding Personal Emoluments- PE) goes to finance the NAIP. It

is also assumed that approximately 5 percent of MLNREP's non-PE budget goes to finance outputs and outcomes defined under the NAIP.

It is also assumed that 100 percent of sector Cooperating Partners funding is considered available to finance NAIP priorities. These amounts are not included in GRZ projections, which are based on the MTEF, and have been included in full. Finally it is further assumed that approximately ten percent of farmers and private commercial sector's expected contribution is readily available.

The resulting financing gap is approximately equivalent to US$ 605.23 million, or 2.978 billion ZMW. This represents approximately 22 percent of the total requirements for the NAIP.

The preliminary financing gap calculations are shown in **Tables 23 and 24**

Table 23 Preliminary financing gap – million USD

Source of funding (million USD)	Implementation Period (years)					Total
	2014	2015	2016	2017	2018	
TOTAL NAIP requirement	488.37	596.74	630.02	502.44	513.13	2730.69
MAL (non PE)	237.13	263.43	287.42	316.16	347.78	1451.93
MLNREP (non PE, 5%)	15.79	18.46	23.15	25.47	28.01	110.89
CP commitments (on-going and planned)	148.21	133.38	95.81	79.07	47.26	503.72
Private Sector (10% assumed available)	3.95	3.95	3.95	3.95	3.95	19.77
Beneficiaries (10% assumed available)	7.83	7.83	7.83	7.83	7.83	39.17
Total available funds	412.92	427.06	418.17	432.48	434.84	2125.47
Gap	**75.45**	**169.68**	**211.85**	**69.95**	**78.29**	**605.23**

Table 24 Preliminary financing gap – million ZMW

Source of funding (million USD)	Implementation Period (years)					Total
	2014	2015	2016	2017	2018	
TOTAL NAIP requirement	2402.78	2935.96	3099.70	2472.00	2524.60	13434.99
MAL (non PE)	1166.68	1296.08	1414.11	1555.51	1711.08	7143.50
MLNREP (non PE, 5%)	77.69	90.82	113.90	125.31	137.81	545.58
CP commitments (on-going and planned)	729.19	656.23	471.39	389.02	232.52	2478.30
Private Sector (10% assumed available)	19.43	19.43	19.43	19.43	19.43	97.27
Beneficiaries (10% assumed available)	38.52	38.52	38.52	38.52	38.52	192.72
Total available funds	2031.57	2101.14	2057.40	2127.80	2139.41	10457.31
Gap	**371.21**	**834.83**	**1042.30**	**344.15**	**385.19**	**2977.73**

5 IMPLEMENTATION ARRANGEMENTS

The issues of concern are five-fold under the implementation arrangements: (i) Policy and Legal framework; (ii) institutional arrangements and roles; (iii) Financing Modalities; (iv) Monitoring and evaluation, and; (v) Risk analysis management. These are briefly discussed below sequentially.

5.1 Policy and Legal framework

The agricultural sector is guided by the National Agricultural Policy (NAP – See **Section 3.1** above) which undergoes periodic reviews to ensure its relevance to prevailing climatic, social and economic conditions of the country. In addition, the sector has a number of pieces of legislation some of which are outdated. A process has been initiated in the recent past to repeal, review, amend and enact new legislation aimed at providing a legal framework that will maximize sector development and growth.

The following policy statements (Table 25) were arrived at by consensus of all the key stakeholder categories in the sector and are contained in both the SNDP (Agricultural Chapter) as well as the Zambia CAADP Compact of January 2011. Consequently, these policies will be the basis for the implementation of NAIP.

Table 25 Key NAIP Policies

NAIP Structure	Zambia CAADP Compact Programmes	CAADP Compact Policy Statements
Natural Resources Management	• Sustainable Land Management Programme	• Government will facilitate equitable access to land for agricultural purposes
Agricultural Production and Productivity Improvement	• Agricultural Productivity Improvement Programme	• Government will develop and implement policies and programmes that support crop diversification, livestock and fisheries production, increased productivity in crops and livestock, sustainable land and water management, including forestry, agro-forestry, climate change adaptation and mitigation and other environmentally friendly agricultural systems;
Market Access and Services Development	• Agricultural Marketing Development Programme • Agricultural Investment Promotion Programme	• Government and the private sector will implement and adhere to predictable, rule-based market and trade policies and strengthen public-private coordination and dialogue • Government in consultation with stakeholders will identify investment priorities in infrastructure development that support the sector • Government will facilitate private sector to scale-up investments in production, input and output markets, processing and value addition in crops, livestock and fisheries
Food and Nutrition Security and Disaster Risk Management	• Food and Nutrition Security Programme	• Government will explore social protection instruments in partnership with private sector and civil society
Key Support Services (Knowledge Support Systems)	• Research and Extension Enhancement Programme	• Government in conjunction with private sector will promote diversified extension messages for all categories of farmers (crops, livestock and fisheries) with emphasis on the small-scale farmers • Government in collaboration with private sector and Cooperating Partners will mobilize resources in order to develop cost effective, demand-driven research and extension linkages focusing on Public Private Partnerships

NAIP Structure	Zambia CAADP Compact Programmes	CAADP Compact Policy Statements
Key Support Services (Institutional Strengthening)	• Cross-cutting	• The sector will also collaborate with relevant stakeholders to speed up the implementation of the National Decentralization Policy in order to facilitate improved service delivery • Government in collaboration with private sector and Cooperating Partners will promote and strengthen cooperatives and other farmer organizations as a vehicle for agricultural development

It has been realized by Government, the private sector as well as the Cooperating Partners that the existing policies and pieces of legislation are not adequate to create the enabling environment necessary for the private sector to drive the growth envisaged in the sector. Therefore, there will be need to review existing policies and a number of legislations so as to align them to the current social and economic environment, and where possible develop new ones to ensure that the policy and legal framework is conducive for the attainment of the desired growth and reduction in poverty levels.

The National Agricultural Policy is already under review. The other ones which are critical which will need immediate attention are the following: the development of an Agricultural Marketing Act that will regulate market players in agricultural marketing; the review of the Agricultural Credit Act to provide for use of warehousing receipt system as collateral in obtaining loans; legislations regarding animal health, livestock development, dairy development, animal identification and traceability and veterinary and para-veterinary professional which are necessary to guide the sector on the control and prevention of livestock diseases as well as regulate dairy and livestock production; and the Fisheries Policy and Fisheries Act.

5.2 Institutional Arrangements and Roles

5.2.1 Institutional Arrangements

The overall implementation responsibility of the NAIP will fall under the Ministry of Agriculture and Livestock whose major focus will be the creation of an enabling environment for a private-sector led agricultural development and economic growth.

MAL will ensure linkages and synergies with other relevant government ministries and institutions (covering all the relevent sectors) for effective implementation of its mandate. MAL will use the Agricultural Sector Advisory Group (Ag SAG) to engage other stakeholders on key issues affecting the sector as well as report progress on the implementation of its mandate. At sub-national level, existing structures, namely; the Provincial Agriculture and Environment Subcommittee (PAES) of the Provincial Development and Coordination Committee (PDCC); the District Agriculture and Environment Subcommittee (DAES) of the District Development and Coordination Committee (DDCC) and the Community Agriculture Committee (CAC), will be strengthened under the policy dialogue sub-component of the Key Support Systems (Institutional Strengthening). This will be aimed at promoting stakeholder participation, coordination and decentralization at these levels, which in turn is expected to enhance effective implementation performance of the NAIP (see **Appendix 2** for NAIP Implementation and Coordination Organogram). The membership of Ag SAG, PAES, DAES and CAC will be reviewed to ensure strong representation from appropriate private sector institutions. These

structures will be supported through regular meetings and heightened dialogue on programme design and implementation to ensure improved performance.

In line with the liberalization policy, the private sector will drive the development and growth of the agricultural sector along with the civil society and farmer organizations (including small scale, medium and large scale farmers). Other partnerships that are critical to the implementation of this NAIP will include Cooparating Partners (CPs), financial institutions, input suppliers, agro-industry, traders and regional economic communities such as the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC).

5.2.2 Roles

The **Private Sector** will take a dominating role in driving the development agenda of the Agricultural Sector. In this regard, government and the other stakeholders see a major role for the private sector in all the Investment Programmes. However, it needs to be recognized that the country is coming from a background where government dominated the running of the economy. This implicitly left a weakened private sector that needs considerable capacity building for it to effectively undertake its rightful role as an engine to propel the sector's growth.
The Central Government's facilitatory functions through MAL will include: strategic planning; oversight; policy formulation; capacity building of private sector and civil society organizations; enforcement of legislation; regulation and inspection; provision of basic agricultural and rural infrastructure; financing of the control of pests and diseases of national economic importance; sector coordination and overall monitoring and evaluation.

The **Local Governments** (at provincial and district levels) will offer investors in all the Investment Programmes incentives for identified ventures that are socially and environmentally sustainable. They will offer the necessary incentives for a heightened private sector driven agricultural development agenda within their respective boundaries within jurisdiction that present a "win" for communities, LGs and the investor. Local governments will negotiate terms and conditions for concessions or contracts for management of infrastructures including Built, Own Operate and Transfer (BOOT) investments. They will ensure the availability of the socially and environmentally feasible sites for resource development and use within their districts or provinces.

The **Central Government** (CG) will provide advice to districts and communities on PPP arrangements/modalities. Government will identify and support aspects of proposed local infrastructure development plans that may encourage private investment. CG will establish systems for the routine dissemination of advice to local institutions from inter-district to community level and to individual and community enterprises on sources of public investment funding; and it will promote investments in commercial intensive ventures that also benefit communities.

The **communities, community groups** or community-based institutions will participate in negotiating terms, conditions and concessions for investments to ensure community concerns are addressed including, participating in recurrent monitoring and oversight of investments to ensure it is in consonance with community interests. The Participatory Monitoring and Evaluation (PME), which has been tested and proven during the implementation of the Zambia Social Investment Fund (ZAMSIF), will be used by communities for tracking implementation

progress and impact of various interventions within community boundaries. Communities will provide services and labour forces required by local investments and generally take advantage to acquire new skills introduced by investors.

5.3 Financing Modalities

The financing of NAIP will follow a mixture of mordalities that allows participating Cooperating Partners (CPs) and other actors to meet their reporting obligations to their respective governments and tax payers. Nonetheless, the prefered modality of financing is the Direct Budget Support (DBS). Notwithstanding a particular mode of financing, all financing activities will come under the Integrated Financial Management Information System (IFMIS) whose roll out at national level began in 2012.

5.4 Monitoring and Evaluation

The NAIP will have a results-based M&E system. While not ignoring the lower level indicators (input and output) as these are critical to monitoring the implementation performance which ultimately leads to the achievement of the overall objectives (through the objective hierarchy), NAIP's M&E system will have a deliberate focus on higher level indicators (outcomes and impacts). These are critical to tracking the intended change and benefits accruing to the primary and other beneficiaries targeted by NAIP interventions.

For optimum performance of the NAIP taking into account its relevance, effectiveness, efficiency and sustainability, there is need for an M&E system that is robust and cost-effective. In this regard, the NAIP M&E system will incorporate the following 7 major components if it is to realize its mandate: (i) Clearly defined objectives; (ii) Clearly defined Key Performance Indicators (KPIs) that meet SMART criteria; (iii) Clearly defined data collection methods for the indicators (including frequency for data collection); (iv) Institutional framework for data collection (including a definition of roles for all those involved); (v) Frequency of data collection and responsibility; (vi) Data analysis frequency and responsibility; and, (vii) Information dissemination plan, including the audience.

An M&E system as described above needs a minimum number of dedicated staff at all levels for it to be effective. It is, therefore, proposed that there be dedicated staff to deal with M&E at national, provincial and district level through established M&E units. The proposed minimum number of such staff at the various levels are as follows: National level, at least 5; provincial level, not less than 2 and district level, at least 3. It is thus envisaged that an M&E directorate will be established to ensure the monitoring and evaluation of the NAIP implementation performance is given the attention it deserves. A number of variables will be assessed to establish their impact including: impact of government policies on various farmer categories; impact of climate change on production and productivity, and; impact of technologies and farming practices. All data will be desegregated by gender to ensure detailed in-depth analysis of these variables on male and female farmers. This will facilitate gender-sensitive programming and technological development. Analysis will also be undertaken by agro-ecological zones, rural versus urban as well as farmer categories.

Three evaluations will be undertaken aimed at tracking the performance of the KPIs in the next 5 years namely; baseline, mid-line and endline. Among others, the baseline evaluation will serve

the purpose of confirming and updating the baseline values as well as fill the gaps where such values do not exist as is currently the case for many KPIs. There will be need to incorporate new questions in the Post Harvest Survey to facilitate the collection of data for any important additional Key Performance Indicators (KPIs) in the NAIP, including per capita consumption of highly nutritive foods produced in the country.[13] The mid-line is critical to reviewing the extent to which NAIP will be on course in pursuing its overall goals and objectives halfway through its life. Consequently, a window of opportunity will be provided to make any necessary adjustments, if need be including adjustments of KPI values either upwards or downwards. The endline will provide lessons during overall implementation period of the Plan as well as provide a basis for informed decisions with regards to a possible phase II of NAIP and what the key focus areas of such a phase would be.

It is highly recommended that Annual Sector Performance Analysis (ASPA) be undertaken that would culminate in Annual Review meetings involving all key stakeholders. This will provide a forum for sector review as well as prioritize investment areas in the coming year. Consequently, the Annual Work Plan and Budget (AWPB) for the coming year will be informed by findings from the ASPA. IAPRI and the Department of Policy and Planning (PPD) of MAL are well placed to undertake these analyses.

5.5 Risk Analysis Management

Table 26 below identifies key risks that may be faced in the achievement of NAIP overall goal and objectives and provides a basis for determining how implementers of NAIP should address these risks.

Table 26: Summary of Risk Analysis and Mitigation

Risk	Risk Rating	Risk mitigation measures incorporated into NAIP design	Conditionality (Y/N)	Risk after mitigation
H – High; S – Substantial; M – Moderate; L – Low				
Ownership challenge: Inadequate country ownership of NAIP by MAL and other stakeholders may negatively affect implementation performance	S	NAIP has identified and specified implementation roles and responsibilities of various actors and stakeholders	N	M
Low capacity: MAL that will play a critical role in coordination and monitoring of NAIP has had capacity assessment undertaken and found low. PEP is currently under implementation to strengthen MAL's capacity. However, capacity building by PEP should have been finalized before implementation of NAIP.	S	A considerable portion of the NAIP is concerned with capacity enhancement of various stakeholders and systems. This includes training and procurement of appropriate equipment. Key Support Services have been particularly targeted for strengthening.	N	L
Donor/implementation fatigue: A number of interventions have been designed in the past to boost agricultural sector growth. There is a danger of "donor fatigue" and "implementation fatigue"	M	The emphasis of NAIP is that this is not an initiative that is a "stand-alone" entity, rather NAIP under CAADP is there to animate already existing strategies and policies	N	L
Funds flow: there may be a failure to		The computation of the total		

[13] At the time the NAIP was being formulated, the review of MAL's M&E system through a separate consultancy was on-going. This comprehensive review included an elaborate assessment of KPIs with a special focus on those at outcome and impact levels. It will be crucial that once finalized, this becomes an integral part of NAIP's M&E system. As alluded to above, it will be vital at that stage to review the Post Harvest Survey questionnaire to ensure it captures data for all the new KPIs that will have been finalized.

mobilize adequate resources. Additionally, the committed funds may not be disbursed timely.	M	NAIP budget has been done cautiously, based on prevailing planned expenditure figures by Ministry of Finance. The current actual budget (which is higher due to supplementary funding) has been avoided.	N	L
Overall risk assessment	**M**			**L**

Based on the above risk assessment, the overall risk of NAIP implementation is low. GRZ is currently implementing other supportive measures that will positively impact NAIP implementation performance such as the Integrated Financial Management Information System (IFMIS). The design of MAL's integrated Monitoring and Evaluation (M&E) system has reached an advanced stage. Once operational, the M&E system is expected to add value to the realization of NAIP objectives.

Appendices

Appendix 1: Approach and Methodology

Introduction
The development of the NAIP under the CAADP framework was based on all the major strategies of the country, including: (a) The Fifth National Development Plan (FNDP 2006-2010); (b) The Sixth National Development Plan (SNDP 2011-2015) and; (c) the Vision 2030 among others. Consequently, implicitly the formulation process drew from the rich and wide stakeholder consultations that preceded the implementation of these strategies. In addition, the lengthy (nearly two years) stakeholder consultation that preceded the formulation of the Zambia CAADP Compact signed in January 2011 proved valuable.

Stakeholder consultation was undertaken at four levels: national, provincial, district and community. At national level, separate meetings were conducted firstly with Cooperating Partners, then the Private sector, Agro-NGOs, International NGOs, Senior Government officials (including the Permanent Secretary). At provincial level, the Provincial Development Coordinating Committee (PDCC) was engaged as well as key stakeholders at district level, pl6including private sector and farmer organizations such as District Farmers Unions. Both male and female farmers were consulted at community level via Focused Groups Discussions.

The formulation of NAIP under the CAADP agenda was undertaken in the context of accelerating the successful implementation of the country's Vision 2030, the National Agricultural Policy (NAP) and Sections 3 and 14 of the PF manifesto relating to Agriculture and Land governance, through the National Development Plans (NDPs). The two most recent NDPs are the Fifth National Development Plan (FNDP 2006-2010) and the Sixth National Development Plan (SNDP 2011-2015).[14] The NAIP formulation lasted for nearly six months (i.e. end of June to end of December 2012).

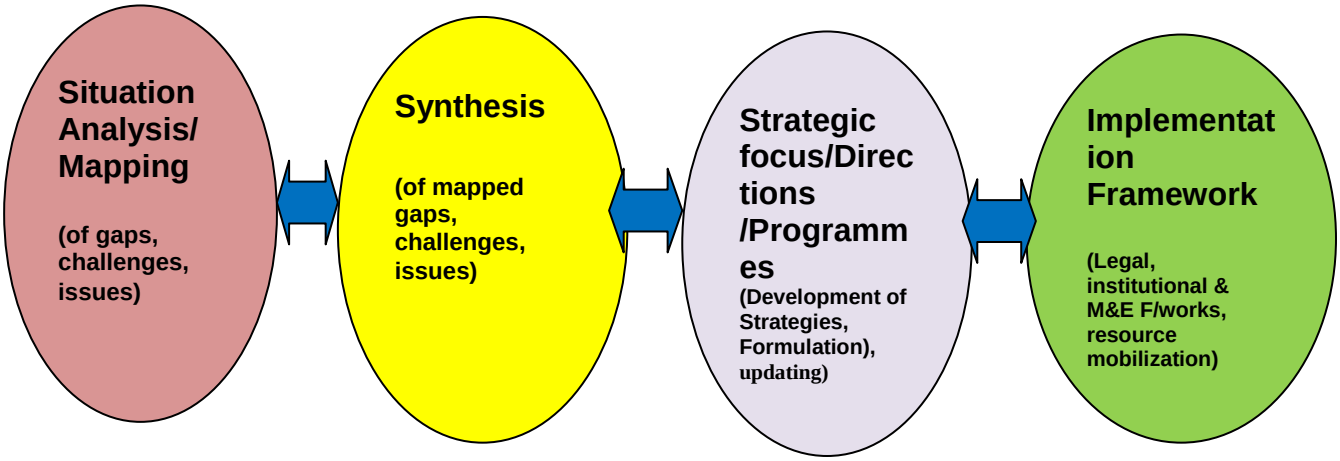
Institutional Housing
With respect to the institutional housing of the NAIP formulation process, the Policy and Planning Department of MAL interacted with the Formulation Team (FT) almost on a daily basis. Indaba for Agricultural Policy Research Institute (IAPRI) housed the FT during the whole formulation process. The Institute also provided the team with useful literature from its rich archives in addition to availing the team with specific professional inputs from time to time. IAPRI provided useful write-ups on the situation analysis, given its strength, work and experience in policy analysis and agricultural research in general. The NAIP formulation process also benefited from the input of the Ag SAG and the Agricultural Cooperating Partners through their quarterly and monthly meetings respectively.

General Approach and Methodology

The methodology and approach involved four major stages illustrated in **Figure 1** below, namely; (i) situation analysis/mapping of gaps, challenges and issues; (ii) synthesis of mapped gaps, challenges and issues; (iii) development of strategic focus (vision, mission, objectives) and strategies formulation/updating, and; (iv) development of implementation framework, including review of policy, legal, institutional and Monitoring and Evaluation (M&E) frameworks, as well as costing of programme strategies and activities. Each of these stages is briefly explained below.

[14] Zambia CAADP Compact, January 2011.

Figure 1: Key Elements of the Approach



Situation analysis/Mapping involved a critical review of the agriculture sector over the past 20 or so years. This included: an identification of factors that positively contributed to the achievement of the positive results recorded; an analysis of the strengths, weaknesses, opportunities and threats relating to the sector; identification of the key challenges as well as gaps. Literature review and stakeholder consultations were the key methods used for the situation analysis.

Synthesis was concerned with a detailed analysis of the identified successes, challenges, gaps and issues, among others. This included an identification of root causes of both the successes and challenges, as well as, an appreciation of whether factors that gave rise to these were still obtaining.

Strategic focus/direction/programmes were proposed based on the synthesized successes, gaps, challenges and issues. Every effort was made to ensure the existing initiatives/programmes/interventions were the starting point for the identification of programming, in line with CAADP ethos of adding value to what is already obtaining. Where existing initiatives were relevant, focus was on their re-orientation with the view to maximizing benefits accruing from such. Appropriate strategies and specific interventions were developed based on five components/Focal Areas, i.e.: Sustainable natural resources management; Agricultural production and productivity improvement; Market access and services development; Food and nutrition security and disaster risk management, and; Key support services (including Technology generation and dissemination and Public financial management system).

Implementation framework ensured that the necessary environment critical for effective implementation performance of the Plan existed. This included a consideration of the policy, legal, institutional, resource mobilization, and monitoring and evaluation frameworks. A monitoring and evaluation framework was developed to facilitate the measurement of performance against the major objectives of the NAIP as well as to facilitate the computation of results based costings.

Specific Steps/Processes

Qualitative approaches and tools were primarily utilized to gather data and information. Key Informant Interviews (KIIs), Semi-Structured Interviews (SSIs), Stakeholder Workshops and Special Meetings, as well as Focus Group Discussions (FGDs) in selected communities were

undertaken. As already alluded to above, at national level there were a series of meetings with all key stakeholder categories including: MAL senior officials; Cooperating Partners; the private sector; International NGOs; Agro – NGOs, and; Farmer Representatives (see **Appendix 5**). The approach used was to meet various stakeholder categories in a single meeting, then follow up individuals for specific details.

Initial Meetings

Several meetings took place between the consultants and the client at the start of the assignment aimed at clarifying the Terms of Reference; resolving logistical issues, and; defining key milestones/deliverables as well as dealing with organization and coordination issues.

Literature Review

An extensive literature review was undertaken, targeted at key documents (see **Appendix 3)**. **Table 1** below presents a summary of the type of key documents reviewed. The documents were obtained from different sources including the client and CPs.

Table 1: Selected Key Documents Reviewed

Level	Document type/category	Justification
International (AU/NEPAD)	• CAADP Review, 2010 • Post Compact Review: Guidelines, 2010 • All the Four Pillar documents (Pillar 1: Land and water management; Pillar 2: Market access; Pillar 3: Food security; Pillar 4: Research and technology)	• These were important documents as they provided the overall CAADP context, focus and status at the time. • The documents presented the minimum elements a country's National Agriculture Investment Plan should contain.
	• National Agriculture Investment Plans from other countries on the continent, particularly those whose NAIPs have already adequately attracted funding. • Donor Programmes/ Project Appraisal Documents (esp. WB; AfDB; EU and others specific to the agric. Sector)	• This allowed lesson learning from what others have already done.
Regional (COMESA)	• COMESA documents on CAADP and its agricultural policy	• This ensured that the NAIP formulation was aligned to the regional development agenda
National and Sector Levels	• Policy related documents for all relevant sectors [(e.g. The National Agricultural Policy (NAP); the Vision 2030; the Irrigation Policy; Land Policy; the PF Manifesto, etc]	• It was critical to anchor NAIP in the existing policy framework. The formulation of NAIP under CAADP framework was about accelerating the implementation of the existing National Agricultural and related policies and strategies
	• Existing national development strategies as well as those specific to MAL's departments (e.g. FNDP, SNDP, departmental strategies, Annual Work Plans and Budgets, etc)	• The NAIP under CAADP framework supports the implementation of the Agriculture Chapter of the SNDP which in many ways is a continuation of the FNDP, as well as that of the individual departmental strategies.
	• IFPRI's Stocktaking Report and Modeling Report	• The Stocktaking report presents an analysis of the past agricultural sector programmes, their performance, achievements as well as key challenges. Though a passage of time had elapsed since the document was written, it nonetheless offered very useful data on the sector's past performance. • The modeling document presented investment options that would yield maximum returns to investment. Though the document needed to be updated, it nonetheless presented an indication of

Level	Document type/category	Justification
		what the potential investment areas were at the time.
	• Recent Sector Evaluation, Impact Assessment, and Review Reports, as well as Departmental and Ministry progress reports	• These provided the current status of the agricultural sector in terms of its performance, successes, challenges and gaps.
	Documents relating to cross-cutting issues e.g. policy documents/legislation and appraisal documents on Gender, climate change and HIV/AIDS.	• This ensured an adequate consideration of key cross-cutting issues in the NAIP.

Issues Identification and Formulation Workshop

This workshop was critical to providing a forum for the identification of key issues that would guide NAIP formulation process. The objectives of the workshop were:

- To identify issues that must be addressed in the NAIP
- Propose higher level programmes and strategies for the NAIP
- Propose higher level objectives for the proposed programmes and strategies

Field Work

Six provinces (including Lusaka as a base) were visited by the Formulation Team, namely; Western, Northern, Central, Eastern, Southern and Lusaka provinces. **Table 2** below presents justifications for the choice of each province visited.

Table 2: Provinces Visited and their Justification

Province	Justification for Inclusion
Western	• The province is the poorest in the country, hence provided an opportunity to appreciate issues that faced the country's poorest farmers; • Provided the needed diversity contained in the sector including: fisheries, livestock, and emerging issues on climatic change.
Northern	• Has issues relating to environmental management for sometime (Chitemene) • Had potential to becoming the country's future bread basket, hence it provided an opportunity to give attention to mitigation measures that would deal with the challenges Southern province has faced.
Central	• It provided an opportunity to deal with issues faced by emerging and commercial farmers, and; challenges surrounding the adoption of new technologies and new farming practices. • Issues to do with crop production, including high value crops, were dealt with • Issues to do with irrigated agriculture were dealt with • A deepened understanding of agricultural financing came to the fore. • Challenges relating to farm-block development and investment were highlighted. • It faced emerging issues on climatic change.
Eastern	• Has the greatest potential for smallholder-led agricultural growth; • Has the highest population density of all the rural provinces which has implications on land degradation and other environmental hazards; • The cooperative movement is still fairly active; • Has a number of commercial enterprises involving smallholder farmers (e.g. cotton out-grower schemes, etc).
Southern province	• Historically used to be the country's bread basket but not any more • Has issues with respect to change in climatic conditions resulting in recurrent droughts • Prone to land degradation due to large concentration of animals • Has serious water management issues • Has food security issues
Lusaka	• Houses more than 95% of national headquarters of various institutions (government, private sector, NGOs – both local and international), etc. • Linked to above, has the highest concentration of primary stakeholders.

Field visits were intended to gather information on successful programs implemented, challenges faced at the program implementation level and solicit input from program implementers on strategic areas of focus during the formulation of the NAIP. There were five teams with each team visiting a province (except Lusaka where all were involved in data collection at their own time).

At district level, all the key stakeholders (including DACO's office; Government officials; farmers'/representatives, NGOs, traditional leaders, farmer groups, cooperatives, and project representatives operating in the district) were engaged. Carefully formulated templates were used for data collection. Reports generated from data collected based on these templates were submitted during the meetings. The reports contained current district status regarding socio-economic variables. One community per district was selected for consultations. About 5 Key Informant Interviews (KIIs) and 2 Focus Group Discussions (FGDs – one with men and the other with women) were conducted, to solicit grassroots stakeholder input into the NAIP.

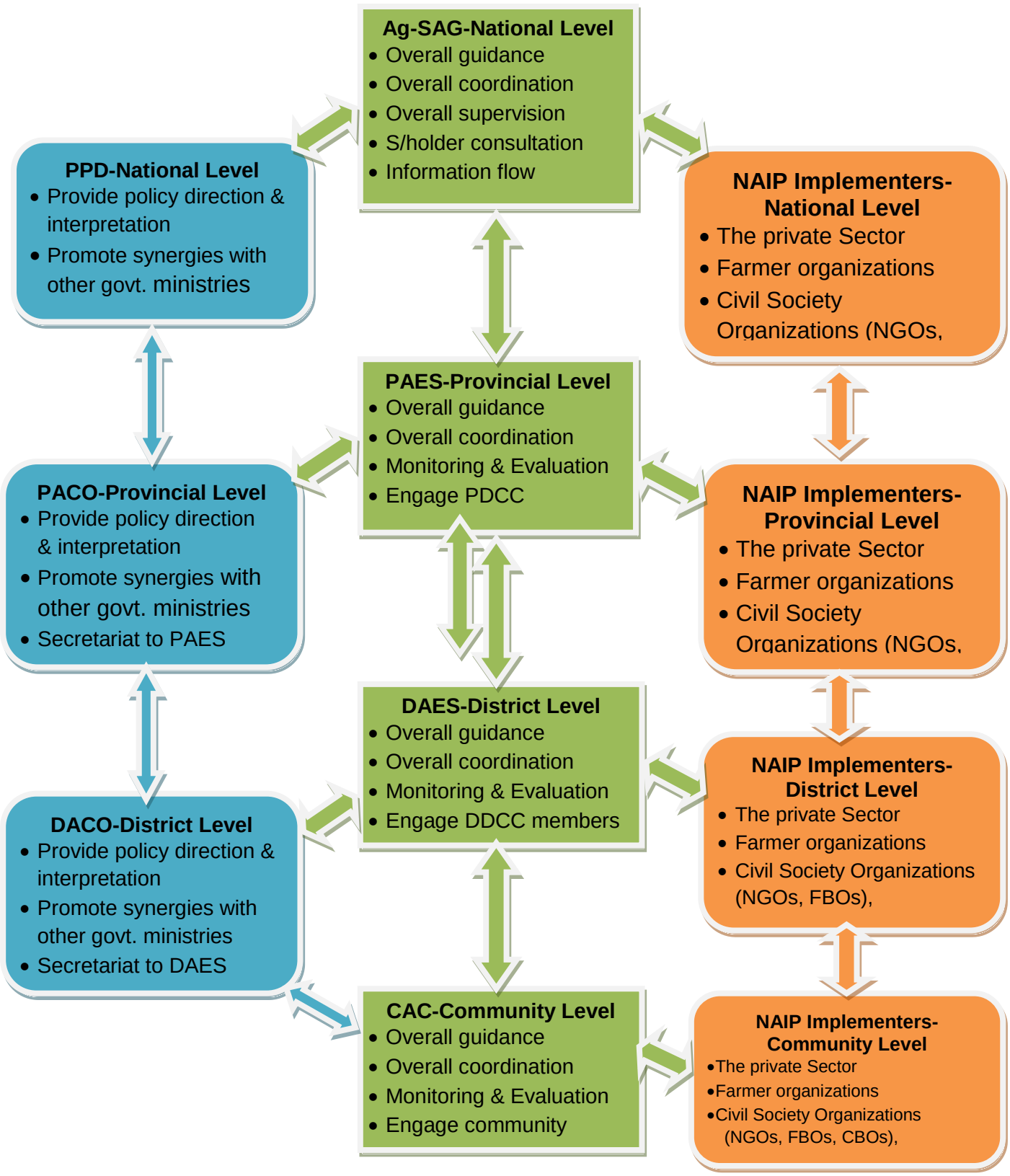
Synthesis of Emerging Issues

Following the field visit, the FT met the Client for a debriefing session. This served the purpose of bringing to the fore key issues that had arisen from all the provinces that were visited by the Team. A synthesis of key emerging issues was undertaken to provide a basis for writing the draft NAIP.

Results Framework and Costing

A Results Framework was formulated side by side with the narrative NAIP. This involved heightened consultations with key MAL technical staff as well as other stakeholders, through one-on-one meetings and workshops.

Appendix 2: NAIP Implementation and Coordination Organogram



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Appendix…3: List of Legislation under the Ministry of Agriculture and Livestock

Sn	Title	Chapter	Year
1.	Coffee Act	Cap. 228	No.13 of 1994
2.	Co-operatives Societies Act	Cap.397	No.20 of 1998
3.	Cotton Act	Cap.227	No.21 of 2005
4.	Food Reserve Act	Cap.225	No. ….of 2005
5.	Plant Pests and Diseases Act	Cap.233	No. 13 of 1994
6.	Plant Variety and Seeds Act	Cap. 236	No. 21 of 1995
7.	Tobacco Act	Cap. 237	No. 13 of 1994
8.	Tobacco Levy Act	Cap. 238	No. 13 of 1994
9.	Plant Breeders' Rights Act		No. 18 of 2007
10.	Fertilizer and Feeds Act	Cap. 226	No. 51 of 1966 and No. 13 of 1994
11.	Noxious Weeds Act	Cap. 231	No. 13 of 1994
12.	Agricultural Credits Act	Cap. 224	No. 23 of 1995
13.	Agricultural Marketing Bill		
14.	Agricultural Lands Act		
15.	Agricultural Statistics Act	Cap 229	No. 13 of 1994
16.	Agricultural Products Levy Act	Cap 232	No. 13 of 1994
17.	Control of Goods Act (Agriculture)	Cap421	5.5.1
18.	The Financial Services Act		
19	The Fisheries Act	Cap 379	No. 22 of 2011
20	The Animal Health Act	Cap 27	No. 27 of 2010
21	Prevention of Cruelty to Animals Act	Cap. 245	5.5.2
22	Veterinary and Veterinary Para-professionals Act	Cap. 45	No. 45 of 2010
23	Public Health Act	Cap. 295	No. 22 of 1995
24	Tsetse Control Act,	Cap. 249	No. 13 of 1994
25	Dairy Industry Development Act	Cap.22	No. 22 of 2010
26	The Animal Identification Act	Cap. 28	No. 28 of 2010
27	Pig Industry Act,	Cap. 251	5.5.3
28	Standards Act	Cap.416	5.5.4
29	PPP Act		No. 10 of 2009