An Action Plan for Developing Agricultural Input Markets in Zambia

An International Center for Soil Fertility and Agricultural Development

An Action Plan for Developing Agricultural Input Markets in Zambia

Prepared by

IFDC—An International Center for Soil Fertility and Agricultural Development

and

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Foreword

Agricultural sectors play important roles in providing livelihood and social support to millions of people in sub-Saharan Africa. Yet due to low productivity and poor resource management, many people who depend on agriculture suffer from poverty and hunger. The soils used for crop production are becoming depleted of the most important nutrients. To confront the challenges of hunger, malnutrition, and natural resource degradation, African agriculture should be modernized and the use of modern inputs, such as mineral fertilizers, improved seeds, crop protection products (CPPs), and other agronomic practices, should be increased. However, the use of these inputs cannot be increased unless well-functioning agricultural input markets (AIMs) are developed and operational.

To aid in understanding the dynamics of market development, IFDC prepared a Strategic Framework in 1999 and tested it by preparing action plans for AIMs development in six countries: Ghana and Nigeria in West Africa, Malawi and Zambia in Southern Africa, and Uganda and Tanzania in Eastern Africa. The action plan development work was funded by the U.S. Agency for International Development (USAID), Sasakawa-Global 2000 (SG 2000), and other donors.

The Zambia action plan was prepared in collaboration with the Food Security Research Project of Michigan State University. Like its other counterparts, this action plan provides a blueprint for an orderly development of AIMs in Zambia. It recommends a holistic approach based on the five pillars of market development and supporting conditions to be nurtured by public-private partnership and long-term commitment. Issues dealing with input use are also addressed.

I hope that policymakers, donors, the private sector, and other stakeholders will find it useful to improve input supply in Zambia and other African countries and thereby make a difference in the livelihoods of the people in rural areas of Africa.

Amit H. Roy
President and Chief Executive Officer

Preface

This report provides an assessment of the functioning and performance of agricultural input markets in Zambia and the measures needed to improve their efficiency and effectiveness. The report was prepared by a team consisting of the following members:

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The team visited Zambia during June 1-25, 2003. In addition to interacting with several stakeholders in Lusaka, the team traveled to Chipata, Ndola, Kasama, Choma, and other areas and interacted with stakeholders from various domains including donors, private sector, bankers, policymakers, farmers, and non-governmental organizations (NGOs). The team's initial impressions were discussed at MACO and USAID/Zambia on June 23/24, 2003 (Annex I).

To validate the action plan, a national stakeholders' workshop was held on April 27/28, 2004. The comments received at the workshop are reflected in the action plan.

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[1]The views and interpretations expressed in this document are those of the Action Plan team and should not be attributed to the funding or sponsoring agencies.

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Acronyms and Abbreviations

ABDF	Agri-Input Business Development Fund
ACF	Agricultural Consultative Forum
ACMP	Agricultural Credit Management Program
ADRA	Adventist Development and Relief Agency International
AIIF	Agricultural Input Import Fund
AIMs	Agricultural Input Markets
AMIC	Agriculture Market Information Center
BS	Breeder seed
CARE	Cooperative for Assistance and Relief Everywhere
CCF	Christian Children's Fund
CF	Commercial farm
CLUSA	Cooperative League of the United States of America
CMA	Crop Marketing Agency
CPP	Crop Protection Product
CSO	Central Statistical Office
CUSA	Credit Union and Savings Association
DAI	Development Alternatives, Incorporated
DAP	Diammonium Phosphate
DFID	Department for International Development
DGIS	Directorate General for Development Cooperation
DRC	Democratic Republic of Congo
EAZ	Environmental Association of Zambia
ECZ	Environmental Council of Zambia
EU	European Union
FAO	Food and Agriculture Organization
FRA	Food Reserve Agency
FSP	Fertilizer Support Program
FSRP	Food Security Research Project
GRZ	Government of the Republic of Zambia
IFDC	An International Center for Soil Fertility and Agricultural Development
IITA	International Institute for Tropical Agriculture
IPM	Integrated pest management
LC	Letter of Credit
LGs	Local governments
LWF	Lutheran World Federation
MACO	Ministry of Agriculture and Cooperatives
MCTI	Ministry of Commerce, Trade and Industry
MoFED	Ministry of Finance and Economic Development
MSU	Michigan State University
MTL	Masdar Technology Limited
MZM	Malawi-Zambia-Mozambique

Acronyms and Abbreviations
(Continued)

NAMBOARD	National Agricultural Marketing Board
NCZ	Nitrogen Chemicals of Zambia Limited
NGO	Non-governmental organization
Ngwee	Zambian currency (100 Ngwee equal to 1 Kwacha)
PAM	Program Against Malnutrition
PHS	Post harvest survey
PPS	People Participatory Security
ROADSIP	Road Sector Investment Program
SADC	Southern Africa Development Community
SCCI	Seed Control and Certification Institute
SCRB	Soils and Crops Research Branch
SG 2000	Sasakawa-Global 2000
SMEs	Small and medium enterprises
SSCR	Shifting Supply Curve to the Right
TZM	Tanzania-Zambia-Malawi
UK	United Kingdom
UNDP	United National Development Program
USAID	United States Agency for International Development
WARDA	West African Rice Development Association
ZAA	Zambia Agrochemicals Association
ZADA	Zambia Agri-Input Dealers Association
ZANACO	Zambia National Commercial Bank
ZASTA	Zambia Seed Trade Association
ZBS	Zambia Bureau of Standards
ZCF	Zambia Cooperatives Federation
ZK	Zambian Kwacha
ZNFU	Zambia National Farmers' Union
ZRA	Zambia Revenue Authority

An Action Plan for Developing Agricultural Input Markets in Zambia

Executive Summary

I. Introduction

Zambia's agricultural transformation from traditional subsistence farming to modern commercial farming has proven to be an immense challenge. Consequently, per capita cereal production is declining, and the natural resource base is degrading through nutrient depletion and *chitemene* (slash and burn). Agricultural productivity is low, especially in the smallholder sector where only 20%–30% of the farming households are estimated to use modern inputs including improved seed, mineral fertilizers, and crop protection products (CPPs). Without adequate, timely, and affordable supply and use of modern inputs, Zambia's agricultural sector cannot confront the challenges of food security, agricultural growth, and environmental protection.

II. An Assessment of Agricultural Input Markets in Zambia

Although private sector participation increased in the aftermath of liberalization in the early 1990s, full liberalization was never achieved, and various interventions and distortions continued to create disincentives for the private sector to realize its full potential, especially in the fertilizer and seed markets. As a result, agricultural input markets (AIMs) remain underdeveloped and fragmented.

Consistent with the GRZ policy statements, the overall objectives of achieving well-functioning AIMs in Zambia are to reduce the cost of input supply and increase the use of modern inputs by making them more profitable and easily accessible to small-scale farmers. Guided by these objectives, IFDC and MSU/FSRP, in collaboration with MOA/GRZ, conducted an assessment of AIMs and prepared an action plan for creating well-functioning input markets in Zambia. The assessment focused mainly on the following themes:

- Functioning and performance of input markets—fertilizer, seed, and CPPs.
- Constraints affecting the performance of AIMs, with a special focus on policy, human capital, finance, market information, and regulation.
- Factors affecting input demand.
- Potential of the private sector to supply inputs in a cost-effective manner.
- Measures needed to strengthen the performance of AIMs.

Constraints Affecting the Performance of AIMs

Macropolicy Constraints
The development of well-functioning input markets in rural areas is hampered by a depreciating exchange rate; high interest rates and stringent collateral requirements; and the poor state of rural infrastructure.

Market Development Constraints
***Non-Conducive Policy Environment*—**In spite of liberalization, interventions by various entities, including the government, continue to distort the functioning of the input markets and discourage the effective participation of the private sector by creating uncertainty and inconsistency in the policy environment. This applies specifically to the Fertilizer Support Program (FSP), which involves: fertilizer distribution through a subsidy; GRZ procurement of fertilizers through tendering; and a 15% duty on insecticides.

***Inadequate Human Capital*—**Due to the scarcity of independent dealers in rural areas, farmers do not have easy access to inputs; they typically have to travel 20-30 km to purchase inputs. Where there are retailers, they lack technical knowledge about the products they are selling and business and marketing skills.

***Limited Access to Business Finance*—**Access to finance for input dealers is made difficult by high interest rates and stringent collateral requirements and compounded by the limited banking facilities in rural areas. The high rates of loan default and poor mechanisms to enforce contracts have also discouraged the development of the retail networks.

Lack of Market Transparency—The lack of timely and accurate information about different market segments has hampered the development of input markets in Zambia. Although MACO has started collecting information about selected markets, dissemination of that information remains weak.

***Ineffective Enforcement of Regulatory Frameworks*—**Although the GRZ has enacted different rules and regulations about quality, standards, and measures, enforcement remains weak because the responsible agencies are understaffed and under-funded.

Constraints Affecting Input Demand

Agricultural inputs are not widely used by smallholder farmers; only 20% use fertilizers and 30% use improved seeds.[1] A key reason for low input use is high input/output price ratios, which keep the profitability of fertilizer use low. Other factors constraining demand include lack of agricultural credit, lack of education and extension support, and adverse agro-ecological conditions, which constrain fertilizer response and thereby its profitability.

The approximately 800,000 small-scale farm households in Zambia can be divided into three main groups: Group 1 consists of approximately 200,000 farmers who have a commercial demand for improved inputs and would benefit from market improvements; Group 2 consists of another 200,000 smallholder farmers for whom fertilizer use is profitable or potentially profitable, and who have limited commercial demand for inputs, and Group 3 consists of the remaining 400,000 smallholders who have limited effective demand for inputs due to limited purchasing power.

Commercial demand from Groups 1 and 2 is met by commercial supply (private input dealer). Both commercial and non-commercial demand is met by non-commercial (at cost) supplies from NGOs and government programs. Matrix A provides the framework consisting of a range of possible market scenarios under these different supply and demand conditions.

Matrix A. Market Scenarios Under Commercial and Non-Commercial Demand and Supply Conditions

	Non-Commercial Demand	Commercial Demand
Non-commercial supplies	*Scenario 1*—NGOs supply subsidized inputs to farmers who would not be able to purchase inputs at full cost.	*Scenario 2*—NGOs supply inputs to farmers who pay (cash) at cost. Suppliers retain zero margins.
Commercial supplies	*Scenario 3*—Private traders only supply subsidized inputs to farmers who would not be able to purchase at full cost.	*Scenario 4*—Commercial supplies meet commercial demand.

[1]These data on production estimates were derived using statistics from the Central Statistics Office's Post Harvest Surveys (PHS). These statistics were based on initial weights developed by CSO. However, they are being updated with new weights developed by CSO and MSU to account for population growth. Therefore, there may be differences between the production estimates in this report and future reports presenting Zambian crop production data using the same PHS data source.

Technical Constraints

The key technical constraints are outdated and uniform fertilizer recommendations, soil acidity, and inadequate research and extension support. For example, although aluminum (Al) toxicity is the principal constraint in the highly acidic soils in Zambia, lime recommendations continue to be based on soil pH. The growing misconception that the application of lime alone can improve crop yields without fertilizer use is also a constraint.

III. Potential of the Private Sector

Many governmental interventions are justified on the grounds that the private sector is not capable of supplying inputs. Therefore, the team paid special attention to assess the potential of the private sector to supply inputs. The team's assessment indicates that the private sector has good potential to supply inputs to Zambian farmers in a cost-effective manner. However, because of the constraints identified earlier, this potential has not been realized and will not be realized in the short-to-medium term. **A proactive approach** is needed to modify distorted policies and create human and institutional capacity to provide greater incentive for private sector participation in market development. Policy and other related measures needed to create well-functioning markets and the profitable input use by smallholders in Zambia are elaborated in Section IV.

IV. An Action Plan for Developing AIMs in Zambia

The Approach

To realize the latent potential of the private sector and create effective and efficient input markets in Zambia, various policies and programs are recommended (Matrix B). These measures can broadly be divided into five groups:

A. Policy options for the role of the government in input markets.
B. Private sector capacity-building programs.
C. Investment environment enhancement programs.
D. Technology transfer programs.
E. Infrastructure development programs.

Programs or options under policy reform, private sector capacity building, and infrastructure development will primarily impact the supply-side of the market equation and, thereby, contribute to a shift in the supply curve to the right (and reduce the supply price), while those under technology transfer, investment enhancement, and infrastructure development will largely influence the demand-side by improving the efficiency of input use and output marketing.

A. Policy Options for the Role of Government in Input Markets

There is a need to create a market-friendly environment to promote the development of competitive markets. To this end, the government, donors, and NGOs should not intervene in the marketplace. The GRZ should clearly articulate and implement its fertilizer marketing policy. Since the FSP accounts for a large share of the market (over 40%), it is strongly recommended that the government should implement a program of phased withdrawal from the market. Where government support is considered necessary for humanitarian (natural disaster or vulnerable groups) purposes, such support should be implemented in a market-friendly manner by selecting appropriate instruments. In this context, three options are proposed based on the classification of smallholders and the supply and demand scenarios discussed in Section II.

Option 1: Non-Commercial Supply Meeting Commercial Demand—The government can elect to service only those farmers who are already willing and able to pay the full cost for the inputs. In addition, resources saved

Matrix B. Action Plan Matrix of Options/Programs

Programs	Options/Activities	Comments
A. Policy Reform for the role of government in input markets	1. Non-commercial supply meeting commercial demand	1. Uncertainties related to tendering will continue to hamper market development.
		2. Delays in input supply will affect farmers and their crop production.
		3. With no subsidy, there is little justification for government involvement in input distribution.
	2. Commercial supply meeting non-commercial demand	1. Unless subsidies are given directly to the needy farmers through targeting, this option continues to plague the market development efforts.
		2. Monitoring and enforcement of targeting are essential.
		3. The mode of targeting—cash, vouchers, or product distribution—may affect market performance.
	3. Commercial supply meeting commercial demand	1. This option will help in developing well-functioning input markets.
		2. Resources spared from subsidies should be earmarked for market-development efforts.
		3. Design market-friendly poverty alleviation strategies.
B. Private Sector Capacity Building	1. Development of human capital	1. Limited marketing and technical skills among input dealers and the lack of dealers in rural areas keep input markets inefficient.
		2. Development of human capital should receive priority in any future market development efforts. ZADA should be established.
		3. Benefits from this activity will be realized slowly but steadily.
	2. Improved access to business finance	1. Create AIIF and ABDF to share risks and promote input business development.
		2. Close monitoring of funds is essential.
	3. Dissemination of market information	1. Transparency in market information is essential.
		2. To promote transparency, frequent and comprehensive dissemination of the market information should be encouraged.
	4. Strengthening of regulatory capacity	1. Enforcement of quality control and truth-in-labeling regulation is essential.
		2. Capacity of regulatory agencies should be strengthened.
C. Investment Environment Enhancement Programs	1. Improve legal environment	1. Enforcement of Credit Act provisions will help retailers in doing business on credit.
		2. This will help in contract enforcement, which is essential for business investment
	2. Facilitate cross-border trade	1. Cross-border trade will help in expanding the scale of business by increasing demand.
		2. Policies, programs, and standards should be harmonized. This will reduce the need for repackaging and relabeling.
	3. Open-trade policies in commodities	1. Instability in the maize market erodes demand for inputs. Restrictions on maize exports erode demand for crop output and create instability in the maize market.
		2. Open-trade policies can promote input use by expanding the size of the maize market and by reducing instability.
		3. Imports and exports should be allowed without permits, which are a non-tariff barrier.

Matrix B. Action Plan Matrix of Options/Programs (continued)

Programs	Options/Activities	Comments
	4. Promotion of rural credit and barter trade	1. Commercial credit can be facilitated by integrated input and output trade, as is the case for cotton and tobacco.
		2. Barter trade among dealers and farmers should be promoted to ease credit constraints for viable smallholders.
D. Technology Transfer	1. Develop better fertilizer and lime recommendations	1. Area-specific fertilizer recommendations will help in improving the efficiency of fertilizer use.
		2. Promote the use of lime at moderate levels to correct soil acidity problem.
		3. New trials and demonstrations should be conducted to improve fertilizer and lime applications based on soil and plant analysis.
	2. Strengthen research and extension capacity	1. Conduct additional research on soils, crops, and fertilizer products to develop better recommendations.
		2. Strengthen the capacity for soil testing, variety development and approval, and quality regulation.
		3. Research support for seed production should be strengthened.
	3. Promote crop diversification through legume-cereal rotations	1. To minimize N requirements, legume-cereal rotations should be promoted (through education and demonstration).
		2. Such rotations will help to generate extra cash income for poor farmers.
E. Infrastructure Development	1. Linking Chipata to Mchinji	1. Development of this railway link will open opportunities for trade and development in the MZM triangle.
		2. Reduce input prices for farmers in the MZM area.
	2. Integration of regional markets	1. Zambia has borders with eight countries—Angola, Namibia, Botswana, Zimbabwe, Mozambique, Malawi, Tanzania, and Democratic Republic of Congo. Promoting cross border trade will aid Zambia's agricultural development.
		2. Harmonization of policies and practices should receive priority in the Southern Africa Development Community (SADC) programs.
	3. Improving roads in rural areas	1. This is a long-term activity. Better rural infrastructure is needed for overall economic development.
		2. The development of rural roads will help to reduce transportation costs. More resources should be devoted to this activity from the development budget.

from FSP can be channeled into the development of commercial demand among farmers from Group 2. However, in the long-term, the government should allow the private sector to satisfy commercial demand.

Option 2: Commercial Supply Meeting Non-Commercial Demand—The government can also opt to continue to meet non-commercial demand among smallholders by supplying subsidized products but start the process of developing a functioning input market by allowing commercial suppliers to conduct input distribution without government contracts.

Option 3: Commercial Supply Meeting Commercial Demand—The government can phase out the FSP and facilitate market development without the assistance of government price subsidies and distribution programs. Traders will service those farmers who can pay the full cost. For some of those farmers who cannot use inputs profitably at the full cost, complementary investments in the agricultural sector should provide relief in the medium to long term.

As part of Policy Options 1 and 3, it will also be necessary to indicate what (if any) alternative poverty-alleviating, non-market distortionary measures will be implemented that would affect those farmers without commercial demand.

B. Private Sector Capacity-Building Programs

1. ***Development of Human Capital***—To improve the availability of inputs in rural areas, an integrated input distribution network should be developed by establishing a large number of skilled and knowledgeable input dealers in rural areas and linking them with wholesalers, and wholesalers should be linked with importers. Human capital development efforts will also be needed in the public sector, especially in the area of market information and quality control enforcement explained below. To sustain the efforts in human capital development, an association of input dealers called Zambia Agri-Input Dealers Association (ZADA) should be established and ZADA staff members trained in administrative and technical matters.

2. ***Improved Access to Business Finance***—To improve access to finance by importers and dealers, two risk management funds must be created. Unlike the funds that were operated primarily unsuccessfully in the past, these funds are geared to share risks among three key stakeholders, namely, the input dealer, the banker, and the society-at-large (represented by GRZ). The first fund, called the Agri-Input Business Development Fund (ABDF) will serve input dealers and the second fund, called the Agricultural Input Import Fund (AIIF), will serve input importers. These arrangements reduce the risk for the commercial banks by spreading the risk among all the stakeholders and provide importers, wholesalers and retailers with the business capital to invest in developing dealer networks in rural areas.

3. ***Promotion of Market Intelligence and Transparency***—To improve the flow of information and transparency in the market, a market information system should be designed, established and operated regularly. MACO should be given the official mandate to maintain and operate this system. MACO should also work with ZADA to establish public-private partnership in this area.

4. ***Strengthening of Regulatory Capacity***—It is essential to create adequate capacity to enforce regulations in the key regulatory institutions through training and technical assistance. The activities of these executing agencies should be carried out so that they facilitate rather than hinder the agri-input business.

C. Investment Enhancement Programs

1. Improve Legal Enforcement—Improvements in the rule of law are crucial for further investment by the private sector in this industry. The Credit Act is a key instrument to improve the provision of inputs on credit to smallholder farmers.

2. ***Facilitate Cross-Border Trade by Open Trade Policy***—An open trade policy is the key to expand traders' market area beyond the small domestic input market and for input markets to gain from economies of size. Domestic trading policies across the region will need to be harmonized to enable market integration. Maize is the main commodity on which fertilizer is used, and the restrictions on maize exports keep the producer price in the main surplus zones depressed, eroding demand for inputs. An open trade policy is therefore essential for creating effective demand for agricultural inputs.

3. ***Promotion of Commercial Rural Credit***—Some smallholders can use inputs profitably but may not necessarily have the cash flow for pre-season purchasing of inputs. One proposal for consideration is to promote the use of crop-fertilizer barter arrangements that would allow cash-constrained farmers to pay for fertilizer with crops rather than cash.

D. Technology-Transfer Programs

1. ***Develop Better Fertilizer and Lime Recommendations***—Better fertilizer and lime recommendations based on soil type, crop and cropping system, and agro-ecology need to be developed. New fertilizer trials should be conducted in representative areas. Lime requirements of soils should be re-evaluated based on their exchangeable aluminum contents, and studies should be undertaken to correlate this criterion with field-based indicators and crop response. Educational campaigns should be launched to inform farmers about the new fertilizer, lime requirements, and alternative methods of applying lime.

2. ***Strengthen Research and Extension Capacity***—Research capacity for the production of better seed varieties and fertilizer and lime recommendations should be strengthened. The enactment and implementation of the Plant Variety Protection Legislation are critical in attracting the private sector investment in research and variety development. Extension needs to educate farmers on the correct input use and to promote integrated pest management (IPM) for crop protection.

3. ***Promote Crop Diversification Through Legume-Cereal Rotations***—To improve crop yields while minimizing the cost of fertilizers for smallholders, MACO should consider encouraging crop diversification through legume-cereal rotations and other crops. The promotion of higher analysis fertilizer products can further reduce fertilizer cost.

E. Infrastructure Development Programs

1. ***Linking Chipata to Mchinji***—The Nacala railway line should be extended to link Chipata to the Nacala Port. Such a link could facilitate the importation of fertilizers for the Eastern Province from Nacala and help reduce the cost of fertilizers. Since Chipata serves the border areas of Zambia, Malawi, and Mozambique, it can become a source of input supply in all three countries, and gains from scale economies would reduce input prices significantly.

2. ***Enlarging Market Size through Integration of Regional Markets***—Integration of markets in the Malawi, Zambia, and Mozambique (MZM) triangle and the Tanzania, Zambia, and Malawi (TZM) border areas by harmonizing the policies and regulations would allow economies of scale in procurement and distribution of inputs and, thereby, reduce prices for all farmers. The country should develop infrastructure and institutions to harness benefits from such integration of inter-country markets in border areas.

3. ***Improving Roads in Rural Areas***—The GRZ should develop rural infrastructure by allocating resources for these activities under the Road Sector Investment Program (ROADSIP) II in the development budget. This would facilitate private sector investment and enable farmers to benefit from new technologies and markets.

V. Institutional Arrangements

Holistic Approach

These measures to strengthen the functioning of input markets in Zambia must be implemented in a holistic manner, and an optimum sequencing and phasing scheme should be developed so that the synergy resulting from the various, interrelated measures can be realized.

Public-Private Partnership

Both the public and private sectors have a role in creating well-functioning input markets and should work jointly in removing market development-related constraints.

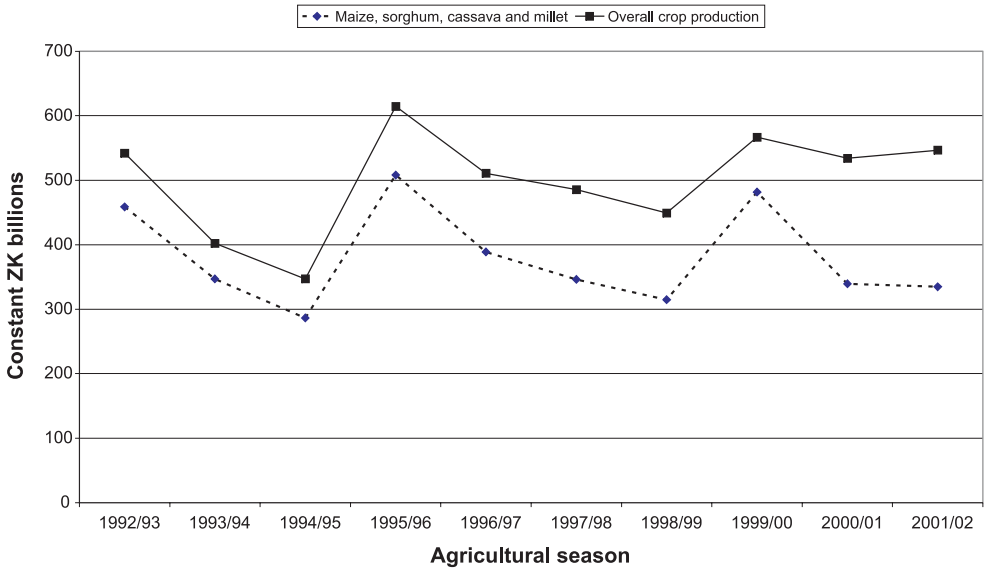
Government Commitment and Donor Support

A strong commitment will be needed from the government for the implementation of the action plan. Above all, the government has to work with donors to raise the necessary resources to implement the action plan.

An Action Plan for Developing Agricultural Input Markets in Zambia

I. Introduction

Zambia is experiencing an agricultural transformation from traditional subsistence farming to modern commercial farming. This transformation has not been easy. In spite of good potential, Zambia's crop production (in 1994 constant prices) increased only at 1%/year during the 1992-2002 period while the value of its cereal and cassava production decreased at 1%/year[1] (Figure 1). With a population growth rate of over 2% per year, the performance of agriculture is unlikely to generate sustainable livelihood for many inhabitants of rural areas. Zambia's food security situation remains unstable with a declining trend in per capita cereal production (Figure 2). Often Zambia must depend on imported food and related products. Not only is the country not self-reliant in food production, but its natural resource base is also degrading through nutrient depletion and *chitemene* (slash and burn). Nutrient depletion from Zambian soils is estimated to be more than 30 kg/ha (Figure 3). As a result, agricultural productivity is low, especially in the smallholder sector where only 20%–30% of the farming households are estimated to use modern inputs including improved seed, mineral fertilizers, and CPPs. Although it is recognized that small farmers—like their large-scale commercial counterparts—should use modern inputs under profitable conditions, input use remains low due to



ZK = Zambian Kwacha

Source: Post Harvest Surveys, Central Statistical Office

Figure 1. Real Value of Cereals and All Crops (ZK Billions) Produced by Smallholder Farmers Between 1992 and 2002, Zambia (1994 = 100)

[1]The PHS statistics reported in this paper are derived from the original weights developed by CSO. In 2005, these weights were revised to account more accurately for population growth since 1990, based on district-level population growth between the 1990 and 2000 censuses. As a result, many of the statistics reported here, which are based on original PHS weights, are likely to underestimate actual crop production, with the underestimates being low for the early 1990s and progressively larger toward the end of the 1990s. The CSO and Ministry of Agriculture are in the process of revising ex-post crop production estimates. The PHS pertains to the small-scale and medium-scale farm sector only. It does not include trends in the large-scale farm sector.

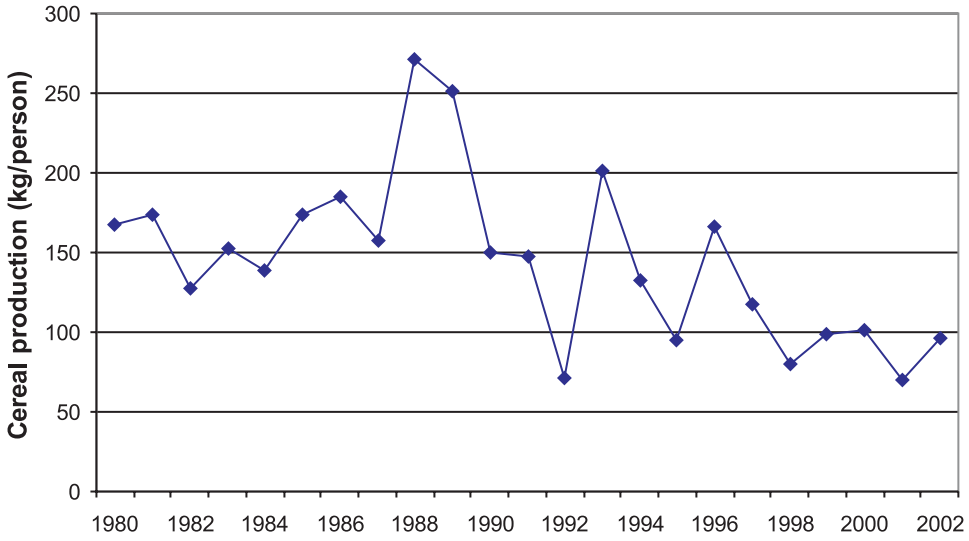
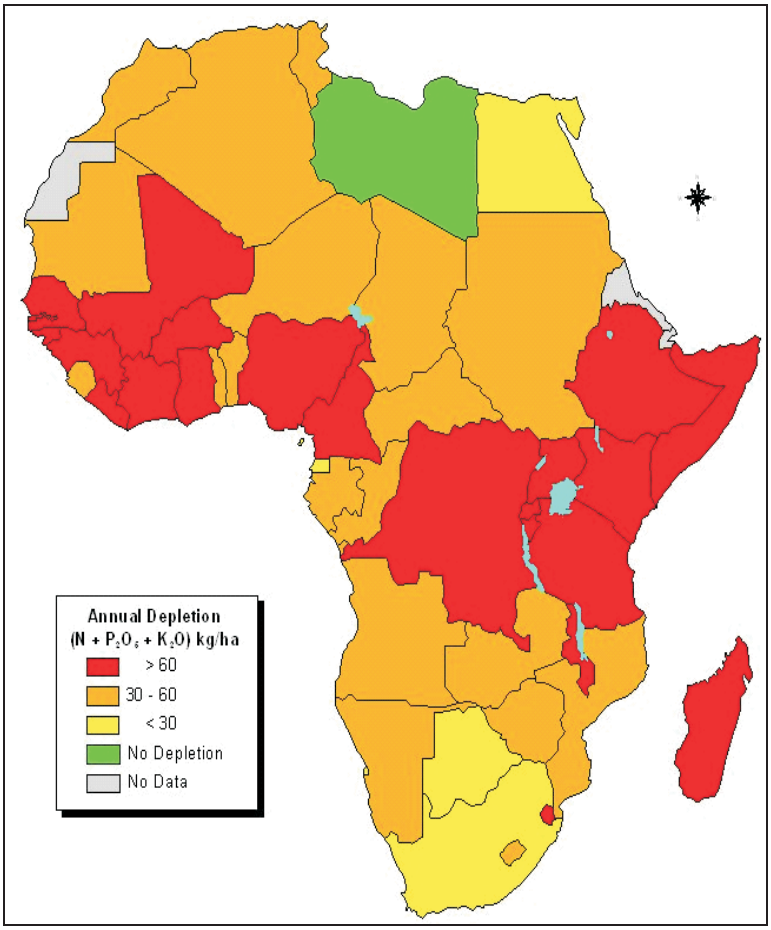


Figure 2. Cereal Production in Zambia, 1980-2002



Source: Henao and Baanante (1999).

Figure 3. Average Annual Rates of Nutrient (NPK) Depletion in Africa (Years 1993-95)

underdeveloped input supply systems and output markets, agro-ecologically risky conditions, inadequate extension and research support, and poor infrastructure in rural areas. In spite of increased private sector participation since 1991, input supply systems remain inefficient. Without adequate, timely, and affordable supply of modern inputs, Zambia's agriculture sector cannot confront the challenges of food security, agricultural growth, and environmental protection.

MACO and GRZ invited IFDC and FSRP to conduct an assessment of input use and supply systems in the country. Guided by the need for improving the supply and use of inputs among smallholder farmers, an action plan for developing well-functioning input markets in Zambia was prepared with a focus on the following objectives:

- Assess the functioning and performance of input markets—seed, fertilizer, and CPPs.
- Identify the constraints affecting the performance of input markets with a special focus on policy, human capital, finance, market information, regulatory frameworks, soil fertility, and input use.
- Assess the potential of the private sector in supplying inputs in a reliable and cost-effective manner.
- Suggest policy-related and other measures to alleviate constraints and make input use and supply more effective and farmer friendly.

The assessment team visited Zambia during June 1–25, 2003, and interacted with more than 200 stakeholders, including policymakers, donors, non-governmental organizations (NGOs), private sector, farmers, bankers, and others. The team traveled to Choma, Chipata, Chongwe, Kasama, Katete, Kitwe, Mazabuka, Mpongwe, and Ndola districts. The team's initial impressions were discussed at two debriefings—one at MACO on June 23, 2003, and the other at USAID/Zambia on June 24, 2003. Annex I includes the main points discussed at these debriefings. In April 2004, a national stakeholders' workshop was organized to validate the action plan. Comments received at the workshop are reflected in the report.

Background

This action plan is a part of the series of activities undertaken by IFDC to promote well-functioning input markets in Africa. In 1998/99 with funding support from the USAID/Africa Bureau, IFDC—in collaboration with other institutions—prepared *A Strategic Framework for African Agricultural Input Supply System Development.* Since the framework was generic in nature, it was decided to prepare country-specific action plans to test the validity of the framework. Consequently, six countries were selected—two each in East Africa (Uganda and Tanzania), West Africa (Ghana and Nigeria), and Southern Africa (Malawi and Zambia). The countries were selected to provide regional diversity and representation in developing measures needed for strengthening the functioning of agricultural input markets in Africa. The countries were also selected with a view to lay foundations to integrate regional input markets so that the economies of scale can be realized in input procurement and production. Action plans have already been completed for Malawi, Uganda, Ghana, and Nigeria, and the follow-up projects are being executed in each country. The Zambia action plan is the fifth in the series, and the draft Tanzania action plan was completed during October 2003–March 2004. It was validated at a national stakeholders' workshop in Dar-es-Salaam in August 2004.

USAID/Washington has provided the seed money for all action plans. Other donors who have contributed to the preparation of action plans include the European Union (EU), the Department for International Development (DFID), The World Bank, the Directorate General for Development Cooperation (DGIS), Sasakawa-Global 2000 (SG 2000) and national USAID offices. While differing from one country to the other, collaborating institutions involved in the preparation of action plans include the International Institute for Tropical Agriculture (IITA), the West African Rice Development Association (WARDA), Development Alternatives, Incorporated (DAI), Masdar Technology Limited (MTL), SG 2000, and the national ministries of agriculture.

Additionally, FSRP/MSU has been working with MACO since 1999/2000 on food security issues with a special focus on fertilizer and crop marketing. FSRP has also worked on input markets in other countries including Mali, Ethiopia, and Kenya. Thus, FSRP's and IFDC's interests converged to conduct an assessment of input markets in Zambia.

II. An Assessment of Agricultural Input Markets in Zambia

Agricultural input markets (AIMs) in Zambia have undergone several transformations. During the 1970s and 1980s, input distribution was controlled by government agencies such as the National Agriculture Marketing Board (NAMBOARD), the Zambia Cooperative Federation (ZCF), and others. During this period, the private sector was banned from importing and distributing inputs; prices were controlled; and inputs were subsidized. In the early 1990s, input markets were liberalized. The public sector monopoly (in input distribution) was abolished; subsidies were reduced; prices were decontrolled; and the private sector was allowed to participate in the importation and marketing of inputs, especially for the smallholder sector. However, full liberalization was never achieved; various interventions and distortions continued to create disincentives for the private sector to realize its full potential, especially in the fertilizer and seed markets.[2] As a result, AIMs remain underdeveloped and fragmented, and farmers in Zambia face high input prices, difficult accessibility, and poor quality products. The terms of trade for farmers are unattractive, especially with high fertilizer prices and low maize prices. Fertilizers are not easily available to farmers, especially emergent farmers, who can use fertilizer at non-subsidized prices.[3]

Consistent with the GRZ policy statements, the overall objectives of achieving well-functioning agricultural input markets in Zambia are to:

1. Reduce the transaction cost of supplying fertilizer to small-scale farmers.
2. Improve small-scale farmers' access to fertilizer by encouraging a widespread network of input dealers operating in rural areas.
3. Increase the use of modern inputs by making them more profitable and easily accessible to small-scale farmers.

Constraints Affecting the Performance of AIMs

Constraints affecting the performance of AIMs can be divided into three broad groups:

1. Macropolicy.
2. Market development.
3. Technical.

Macropolicy Constraints

Macropolicy factors that have an adverse impact on input supply use are exchange rate instability, high interest rates, and poor infrastructure in rural areas. **Depreciation of the exchange rate** may not cause problems for importers because imported fertilizer is quoted and purchased in U.S. dollar terms. However, because farmers, retailers, and wholesalers do not use dollars or other hard currency to pay for fertilizers, a depreciating exchange rate introduces risk and uncertainty in the input market. The value of the dollar in terms of the Zambian Kwacha (ZK) has increased from ZK452/US $1 in 1993 to ZK4,800/US $1 in 2003. The impact of this change in exchange rate is that while global prices of fertilizers have remained more or less stable, domestic prices have increased significantly from ZK8,500 per 50-kg bag in 1993 to ZK83,000 per 50-kg bag in 2003. Additionally, macroeconomic instability resulting from a depreciating exchange rate leads to **high interest rates** that increase transaction cost and discourage investment in business development throughout the entire economy. In 2003 interest rates varied between 45% and 55% per year. High interest rates, coupled with stringent collateral requirements (150%–200% of the loan amount), discourage the development of independent fertilizer dealers in rural areas. Because of high interest rates, most dealers are forced to use their own savings for developing business activities. However, because most people do not have adequate saving reserves, the agricultural input business remains underdeveloped, especially in rural areas. **The poor state of rural roads and other infrastructure** further adds to the cost of moving inputs to and products from rural areas and, therefore, hampers the development of input supply systems.

[2]For further details, see Technical Annexes on Seed, Fertilizer, and CPP available at IFDC.

[3]In 2002/03, Zambia used 120,000 product tons of fertilizers—50,000 tons of urea, 50,000 tons of Compound D (10-20-10-10S) and 20,000 tons of AN, CAN, and other products. Nearly 45% of the use was concentrated in the estate/large-scale commercial farms sector and the remaining in maize-growing smallholder sector. The Government of Zambia distributed 48,000 tons of products to targeted 120,000 smallholder farmers at a 50% subsidy. Some of the subsidized fertilizers were sold at below market price and distorted the fertilizer market. Fertilizer prices varied between ZK83,000/bag in Lusaka to ZK95,000/bag in Kitwe. Omnia, Sasol, and Avignon are the major fertilizer importers and suppliers in the country.

Market Development Constraints

Well-functioning markets in any economy require that the policy environment be conducive, human capital is adequate, access to finance and information is easy, and regulatory frameworks and antitrust laws are enforced. Well-functioning markets also require that proper contract enforcement mechanisms are in place, and different segments of the market are well connected through marketing infrastructure. In Zambia, the policy environment is non-conducive, human capital is inadequate, access to finance and information is limited, and regulatory frameworks are poorly enforced. Furthermore, information on the appropriate use of fertilizers among farmers is insufficient and transportation costs are high. These factors constrain both input use and supply in many areas and make input markets inefficient and ineffective in rural areas.

Non-Conducive Policy Environment—A conducive policy environment for well-functioning markets requires that there be no intervention or distortion in the marketplace. In spite of liberalization of input markets during the early 1990s, interventions by various entities, including the government, continue to distort the functioning of the input markets (Tables 1 and 2). However well-intentioned these interventions may be, they discourage the effective participation of the private sector in the development of markets by creating uncertainty and inconsistency in the policy environment. For example, the Fertilizer Support Program (FSP) introduced in 2002 has discouraged the private sector from developing dealer networks in rural areas for several reasons. First, because fertilizer products under this program are distributed at a subsidy, farmers do not want to purchase inputs from the private sector at the full price. This discourages the private sector from investing in the input business, even for those farmers who are willing to pay the market price. Second, as the Government of Zambia procures fertilizers through tendering, the private sector responds to these tenders and supplies fertilizers to the government. Rather than developing fertilizer markets for the smallholders in rural areas, the private sector is scaling down operations and prefers to trade in the primary marketing centers. The tendering process itself adds another layer of uncertainty by awarding tenders to different companies in the same province. Because each company is unsure whether it will be awarded a tender to operate in the same province each year, it has little incentive to make the necessary investments to develop retailer networks in the province.[4] Such investments may come to naught if another firm is awarded the tender in this province in the near future. A case in point is the experience of Omnia Fertilizers that invested in the development of depots in the late 1990s after having been awarded tenders to distribute government program fertilizer on credit in several districts. By 2002-03 Omnia Fertilizers had closed most of these depots because it was competing against other companies selected to distribute the subsidized program fertilizer. Because some subsidized fertilizers are recycled in the market at a price lower than the market price, cheap program fertilizer discourages the participation of the private sector participation in the development of markets. Thus, by first eliminating the market at the farm level and then by diverting the private sector's energy toward tendering, the government interventions hamper the development of competitive input markets. In the past, government programs suffered from low recovery and poor targeting. Fertilizers under various programs were largely distributed to farmers and districts well served by commercial channels.

Inadequate Human Capital—In Zambia input dealers are mostly concentrated in urban and semi-urban areas, along the railway lines and highways. As a result, farmers in rural areas do not have an easy access to inputs. In some areas farmers must travel 20–30 km to purchase inputs. The absence of independent dealers in rural areas is a critical constraint to the use of modern inputs. Where there are retailers, they lack technical knowledge about products and business acumen. Marketing and business skills are also limited. Although there are importers and wholesalers in the country, few have taken interest in developing independent dealers, partly for reasons concerning government interventions as described above. Some of them have tried, though unsuccessfully, to open their own depots. Because of risks resulting from a non-conducive policy environment, poor loan recovery, and overhead costs of maintaining their own staff, these depots could

[4]In the short term, negative effects of such interventions could be minimized by advance planning and transparency in the execution of such programs. However, in the long term, the government should refrain from such interventions and devote resources to capacity building for market development in rural areas.

Table 1. Fertilizer Distribution in Zambia—Systems and Agencies During the Pre- and Post-Market Liberalization Periods

Period	Systems and Agencies	Fertilizer Market Impact
Prior to Liberalization (up to 1990)	National Agricultural Marketing Board (NAMBOARD), a public sector organization established in 1969 and abolished in 1989, was responsible for agricultural input and output marketing for small-scale farmers. NAMBOARD handled procurement of fertilizer supplies from local manufacture by Nitrogen Chemicals of Zambia (NCZ), a government organization, and imports mainly from South Africa. NAMBOARD operated field warehouses, owned sales depots, and also had about 100 commission agents. Fertilizers were sold at a 50% subsidy to the small-scale farmers. Commercial farmers and large farmer associations obtained fertilizers (with no subsidy) directly from Sasol, Omnia, Norsk Hydro, Kynoch, and others.	Effective in introducing fertilizers to the small-scale farmers. Fertilizer consumption in Zambia increased in the 1960s and 1970s, reaching a peak in 1987, which was still relatively low. However, due to non-economic price and other controls, heavy subsidies, and other interventions, market structure was inherently flawed and growth was not sustainable without support.
Liberalization in 1991	NAMBOARD was dissolved and its assets were transferred to Zambia Cooperatives Federation (ZCF) and NCZ. NCZ was made responsible for all fertilizer operations—supplies and distribution. NCZ distributed fertilizers using ZCF, Credit Union and Savings Association (CUSA) and Lima Bank. Fertilizer markets liberalized, and controls on prices, imports, and marketing were removed. Subsidy was also removed.	• No fixed prices. • Entry of private sector possible in domestic marketing. • Freedom to import. • No direct fertilizer subsidies. • Import duties removed.
1991-1994	ZCF/NCZ supplied fertilizers on credit to the small-scale farmers using the field warehouses and depots inherited from NAMBOARD and the distribution networks of ZCF, CUSA, and Lima Bank and a newly created commercial wing of NCZ. The recoveries were reportedly very low (about 5%-10%). This arrangement was subsequently discontinued. Sasol, Omnia, Norsk Hydro, Kynoch continued to supply the market—commercial farmers and some small scale as well.	Despite liberalization, the intervention with credit supplies and low recoveries in effect implied a large subsidy of 90%-95% depending on the level of recovery. Consequently, the market was disrupted, discouraging the emergence of the small local private independent dealer.
1994-1997	An Agricultural Credit Management Program (ACMP) was introduced to provide fertilizer supplies on credit to the small-scale farmers using private-sector contractors like SGS. In this case, recoveries were also low, and the program was discontinued after three seasons.	This intervention also disrupted the market and prevented growth of the private sector by creating uncertainties.
1997/1998	A Food Reserve Agency (FRA) was created, inheriting the field warehouses and depots of NAMBOARD; it handled the distribution of fertilizers on credit. This program did not perform well and the recoveries were low. The Government also brought in price controls and pan-territorial pricing irrespective of distances from sources of supply. The program through FRA was discontinued.	The price controls and pan-territorial pricing policy discouraged the private sector in making any investments in fertilizer marketing. The sudden and abrupt shifts in policy kept the private sector uncertain.
1998-2001	An Agro-Support Program was introduced and run using the FRA.	

Table 1. Fertilizer Distribution in Zambia—Systems and Agencies During the Pre- and Post-Market Liberalization Periods (Continued)

Period	Systems and Agencies	Fertilizer Market Impact
2001-2002	Two programs were introduced: 1. For 3 years, beginning in 2001, through the distribution of PAM's Food Security Packs, 5 kg maize seed, one bag of urea, and one bag of Compound D were given to 200,000 small-scale farmers on credit for one lima (one-fourth hectare) land. Recovery would be in the form of one bag of maize grain. 2. For a period of 3 years, beginning in 2002, the Fertilizer Support Program was introduced to supply four bags of Compound D (basal) and four bags of urea (topdressing) plus 25 kg maize seed to 120,000 small-scale farmers selected on the given criteria for application on a hectare of land. The farmers would pay 50% of the cost of the fertilizer package in a given bank account and obtain a local purchase order. This would be presented by the farmer to a fertilizer stockist, appointed by the government, who would supply the product. The government would procure the fertilizer through local tenders and arrange its distribution using local transport companies and selected traders.	The Food Security Pack distributed through PAM is considered a handout and is strengthening the dependency syndrome. This is also disrupting the market because it ignores the local dealers. The Fertilizer Support Program allows for the purchase of a large quantity of fertilizer through local tender. Therefore the companies that do not win the tender are left out. In view of the uncertainty involved, companies are not willing to carry inventories in the hope of success at the tenders. In the market, there is an air of expectancy because farmers do not want to purchase fertilizers, hoping to obtain some fertilizer through the PAM or this Program. This air of uncertainty discourages private sector participation in the fertilizer business.
2003	The two programs introduced in 2001 and 2002 are to be continued. The Fertilizer Support Program will now be operated for 3 years, discounting last year since there was a change in the 2002/03 program where toward the end there was a policy shift to allow the farmers credit for the 50% they were required to pay in cash in advance. Tenders for this year's program were received on June 20th for 30,000 tons urea and 20,000 tons Compound D. An order for 10,000 tons Compound D had been placed earlier with NCZ.	Same as above.

Table 2. Input Support Programs in Zambia for the 2003/04 Agricultural Season

NGO/Donor	District/Camp	Number of Households	Area per Household	Type of Inputs/Quantity	Other Specificity	Economic Conditions	Implementing Agency
Confirmed programs (i.e., for which the funds are already available):							
FAO/WFP (UK)	The project will fill the gaps in: Kalabo, Shang'ombo, Senenga, Sesheke, Kazungula, Livingstone, Kalomo, Itezhi-Thezi, Sinazongwe, Gwembe, Monze, Siavonga, Choma, Luangwa, Chama, Namwala	20,000	2 limas: -1 lima sorghum or millet -1 lima c/peas and g/nuts	Max 342.5 kg per HH: -Sorghum: 2.5 kg /lima or millet:1 kg/lima -Groundnut: 10 kg/0.5 lima -Chickpeas:5 kg/0.5 limas -Lime: 200 kg/2l limas -Urea 25 kg/lima cereal -Basal 100 kg/2 limas -Food for work -Food for training	CF	Vulnerable but viable	NGOs
CARE (various donors)	10,000 Kazungula/Livingstone 12,000 Kalomo	22,000	-1 lima cereal -1 lima c/peas -some fertilizer for maize	15 tons maize seeds 22.5 tons sorghum 7.5 tons millet 27.5 tons c/peas 300 tons fertilizer	CF	CF	CARE
ADRA (Danida/ fertilizer from EuronAid)	2000 Namwala 2000 Itezhi-Tezhi 2000 Mazabuka 1000 Kafue 2500 Nyimba 2500 Mambwe	12,000	4 limas	6 crops -1 lima maize + fertilizer -1 lima sunflower -1/4 lima groundnut -1/4 lima sweet potatoes -3/4 lima sorghum -3/4 lima chickpeas	CF No fertilizer in Mambwe		-ADRA -Training: Riverside
CRS (DFID)	5,400 Shang'ombo 5,400 Sesheke	10,800		-Seed fares -No fertilizer -60 tons OPV maize (EuronAid)		Vulnerable but viable	
CLUSA (Self funding from 2002 revolving funds)	Gwembe (Choma, Monze)	3,000 (approx.)	2 limas	Cereals, legumes, compound and urea fertilizer, and agricultural lime.	CF planting basins—dry season.	Via depots and community selected distributors. Endeavoring to develop community revolving fund.	CLUSA
LWF (EuronAid)	Katete, Petauke	2,200		1 hoe, 1 machete / HH 15 kg maize seeds / HH 5 kg bean seeds / HH 2 kg sunflower seeds / HH 50 kg cassava cuttings 50 kg sweet potato vines Groundnut, chickpeas, millet, sorghum seeds 50 kg urea, 50 kg Compound D		a) Poorest of the poor b) Orphan headed HH c) Women headed HH d) Aged e) Handicapped but able to work	

Table 2. Input Support Programs in Zambia for the 2003/04 Agricultural Season (Continued)

NGO/Donor	District/Camp	Number of Households	Area per Household	Type of Inputs/Quantity	Other Specificity	Economic Conditions	Implementing Agency
Concern Worldwide (Concern or else)	Mongu	1,000		Livelihood security program with agriculture-related activities (includes inputs for crop diversification, i.e., millet, cassava, sweet potatoes, and tools)	-Participatory approach -HIV/AIDS component	Targeting of the most vulnerable, done by PPS with MACO and Barotse Royal establishment	PPS (People Participatory Security)
LWF (DIAKONIE) (not confirmed)	200 Lundazi 200 Chipata 200 Katete 200 Chadiza	800	1 lima	Diversification in cassava / sweet potatoes		Vulnerable but viable	
Christian Children's Fund, Inc. (AusAID / CCF Australia)	450 Chibombo (245 Kabile, 205 Namayani) 305 Mumbwa	755	2 limas	2 crops -1 lima maize (10 Kg/HH) -1/4 lima sweet potatoes -50 Kg D-compound/HH -50 Kg Urea/HH	CF with MACO's extension workers	Vulnerable but Viable On loan basis—Beneficiaries pay one-third of the harvest to the cooperative	CCF
Total number of households		**72,555**					
Unconfirmed Programs:							
DMMU / GRZ (World Bank) EDRP/Food Security Pack	38 districts drought affected in 2001-02; final selection depends on other programs	120,000	1 lima cereal 1 lima legume 1 lima tuber fertilizer, lime	See security packs from the Ministry of Community Development		Pack content to be adjusted according to date of implementation	4 NGOs; Final selection of IP end of August
GRZ Food Security Pack (Ministry of Community Development) (year 3 of a 5-year program) K13 billion (~$2.6 million) budgeted by GRZ	-June to Oct: wetland (10,000 western Province; 10,000 Luapula (Bangweulu), North, Lusaka, Southern province	20,000	2.5 limas: -1 lima cereal -0.5 lima legume -1 lima tuber	-75 tons maize -1 ton sorghum -30 tons beans -10 tons groundnuts -2 million cassava cuttings -140 tons top, 140 tons basal fertilizers	CF Recovery in kind from beneficiaries left to communities	Vulnerable but viable; Farm < 1 ha	PAM
	-rainy season: in districts not covered by GRZ/World Bank	35,000	2.5 limas: -1 lima cereal -0.5 lima legume -1 lima tuber	-Maize, rice, sorghum, or millet -Beans, groundnut, soybeans, or chickpeas -Cassava or sweet potato -25 kg basal + 25 kg top fertilizer for 1 lima maize -Lime in high rainfall areas			
WVI / ZEST phase 2 (Zambia Emergency Seed and Tool (OFDA)	8,800 Sinazongwe 8,600 Choma 6,400 Monze 7,200 Chongwe	31,000	2 limas mini	-5 kg maize for all -2 kg sorghum for all -10 kg groundnut for 15,000 HH -2 kg chickpeas for 16,000 HH -1 kg millet for 10,000 HH -2 kg pigeon peas for 5,000 HH -no fertilizer	CF done by MACO		WVI

not be sustained for a long time. The creation of independent input dealers in rural areas will be crucial to improve input supply to smallholders.

Limited Access to Business Finance—High interest rates and stringent collateral requirements make it difficult to borrow funds for business development. Interest rates vary between 45% and 55%. Borrowing at such high interest rates is not feasible for a seasonal business geared to agriculture because the returns on investment in crop production are not that high. The lack of financial infrastructure in rural areas further compounds the problem of borrowing and mobilizing funds. Because there are limited banking facilities in rural areas, input dealers are forced to keep large amounts of cash in hand. Keeping such large amounts of cash adds to the risks in developing business in rural areas. The high rate of loan default and poor mechanisms to enforce contracts have also discouraged importers and wholesalers in developing retail networks. In 2002 Sasol Fertilizers (Zambia) Limited lost more than US $21 million in dealer indebtedness, partly due to poor planning and partly due to difficulties in contract enforcement.[5] That experience has discouraged many wholesalers from selling fertilizers on credit and highlights the need for effective contract enforcement mechanisms.

Lack of Market Transparency—Although MACO has started collecting information about selected markets, dissemination of that information remains weak. In a competitive market setting, commodity prices send signals to both buyers and sellers about undertaking various transactions. Hence, it is essential for a free (open) market system that buyers and sellers have information about prices, quantities traded, and stocks in different segments of the market so that they can procure inputs from the cheapest source and maximize benefits. Without such information, farmers and dealers may face high prices in one market and low in another. An unreasonably large spread between input prices in two markets indicates that markets are not well integrated. The lack of information about different market segments has also hampered the development of input markets in Zambia.

Ineffective Enforcement of Regulatory Frameworks—Like many reforming economies, Zambia also moved from a public sector monopoly to a private sector-based input supply system. In a public sector monopoly system the government is the producer and supplier of inputs, and there is little need to have a quality control system because it is implicitly assumed that the government, by virtue of its authority and mandate, will protect farmers' interests. However, when the government is no longer the supplier of goods and services, it is essential that the government protect the interest of consumers (input buyers at all levels) by formulating and enforcing quality control measures and other regulatory frameworks dealing with standards, measures, and proper use and disposal of chemicals (pesticides). Although the GRZ has enacted different rules and regulations about quality, standards, and measures, the enforcement remains weak. The Environmental Council of Zambia (ECZ) and the Zambia Bureau of Standards (ZBS), responsible for enforcing regulatory laws and quality control, are grossly understaffed. The Seed Control and Certification Institute (SCCI), responsible for enforcing seed laws and regulations, is equally understaffed and under-funded. Adulterated products and poor quality seeds were reported to have been sold by unscrupulous traders. Poor enforcement of such laws discourages honest traders from developing input business; unscrupulous traders can easily outbid them by selling poor quality products at cheaper prices. Inadequate management of CPP registrations, trademarks, and repackaging activities also adversely affects the operations in the CPP marketplace.

Constraints Affecting Input Demand

According to the Central Statistical Office's Post Harvest Survey (PHS) data, approximately 20% of the smallholder farmers use fertilizers and 30% use improved seeds. A small proportion of smallholders growing cereal crops applies CPPs. During the 1997/98 season, in 45 of the 70 districts, 15% of the farmers used fertilizers, whereas in only one district, more than 50% of the smallholders used fertilizers. On the other hand, 70% of the total fertilizer is used on maize. Hence, the fertilizer and maize markets go hand-in-hand.

[5]Sasol Fertilizers (Zambia) Limited is now defunct. In September 2003, Bridgeway Commodities took franchise from Sasol Agriculture, South Africa, to sell fertilizers produced by Sasol Chemicals, South Africa.

Demand for improved inputs depends on their profitabilities for farmers. Poor rural infrastructure, lack of education and extension support, non-availability of complementary packages, low crop prices, and adverse agro-ecological conditions have contributed to lack of demand for fertilizer among smallholders in many parts of the country. Lack of liquidity has also exacerbated the problem of low effective demand. High fertilizer prices and low crop prices (resulting largely from weak marketing infrastructure and high transport costs) keep the profitability of fertilizer use low. Improvements in both input and output markets will be needed to improve the profitability of fertilizer use. In some parts of the country, soil acidity and other related factors may constrain the fertilizer response and thereby its profitability.

In the past, agricultural credit was highly subsidized with poor recovery, most subsidized credit schemes formerly available are no longer available, and banking facilities are non-existent in rural areas. Consequently, farmers do not have an easy access to finance because interest rates vary between 45% and 55% per annum. The lack of affordable finance has deprived many smallholders from using fertilizers and other modern inputs, even when their use is profitable. Farmers growing cotton, tobacco, and paprika have benefited from pre-harvest in-kind support provided by crop marketing firms or out-growers. As mentioned earlier, the tender process for identifying firms to operate government fertilizer programs each year inhibits the development of stable dealer networks in rural areas, which further restricts the use of modern inputs among *willing and able* smallholders.

At the present time, agricultural inputs such as a fertilizer and improved seed are not widely used by smallholder farmers of Zambia. Fertilizer use is concentrated in only a few districts in the country. The top ten districts absorb more than 50% of fertilizer distribution. Limited farm-level profitability of fertilizer use, resulting from a distorted and underdeveloped fertilizer market, is the main reason for low fertilizer use in many parts of the country. Where demand is limited by lack of profitability, fertilizer products are not easily available to the few farmers who are willing to pay the full market price. By making the necessary investments to raise the profitability and accessibility of inputs, input demand and supply could be improved in small-scale farming areas.

Because of the tender process of government programs, sale of highly subsidized fertilizer, and other supply-side constraints mentioned earlier, commercial wholesaler-to-retailer links remain underdeveloped even in some areas where fertilizer use is profitable. Hence, farmers travel longer distances to these markets to buy inputs than would be the case if durable wholesaler-retailer linkages could have time to develop in a more market-friendly environment.

Classification of Smallholders for Marketing Policy Options

With limited resources, government policy has been able to focus on only a few main problems. The past government programs have focused on supplying fertilizer on credit to smallholders with low credit repayment. Although the FSP has abstained from distributing fertilizers on credit (except in a few districts), it has not focused on ameliorating the underlying structural causes of unprofitable use and limited accessibility of fertilizer by most smallholders. Until public investments and policies are focused on the three objectives mentioned earlier, commercial fertilizer use in Zambia will remain limited.

The key to identifying input marketing policy choices is the recognition and identification of commercial and non-commercial demand and supply. In Zambia, there are approximately 800,000 small-scale farm households that can be partitioned into three main groups.

Group 1. In the first group, there are roughly 200,000 farmers who already use improved inputs and who stand to benefit from market improvements. Farmers in this group are generally located in accessible areas near roads, have good knowledge of using inputs, and are willing and able to pay for them at full cost. Hence, as is the case with large commercial farmers, a commercial demand for fertilizer and other improved inputs exists among this class of smallholders.

Group 2. The second group consists of another 200,000 smallholder farmers in the same areas as Group 1 farmers, for whom fertilizer use is profitable or potentially profitable, but who do not buy fertilizer on a consistent basis. These farmers generally seek to obtain fertilizer but first wait to see if it will be made available at lower prices (or on credit terms) through the FSP. The existence of the FSP provides an incentive for farmers to defer purchasing fertilizer through commercial channels because FSP fertilizer is subsidized.

Among this group are farmers who would be able to use inputs profitably but who require credit or crop-input barter arrangements that allow them to acquire inputs at market prices. Also among this group are subsistence farmers who do not produce for the market. For these farmers, using fertilizer provides a cheaper alternative than buying maize from the market for home consumption. Limited commercial demand for inputs may exist among this group, although the scope for commercial credit is likely to be limited.

Group 3. The remaining 400,000 smallholders who make up Group 3 have limited effective demand for inputs. They are generally farther from market infrastructure and do not have access to appropriate fertilizer application recommendations. Because they are generally farther away from roads, output markets are also less developed, which depresses incentives to produce a marketed surplus. This group may require crop diversification or other programs to help them improve their living standards.

The demand for inputs is currently being met through commercial and non-commercial channels. Commercial demand from Groups 1 and 2 farmers is ideally met by commercial supply, i.e., by private input dealers. Commercial demand is currently also met by non-commercial (at cost) supplies from NGOs such as CLUSA and AFRICARE. These NGOs supply inputs at cost without retaining any distribution margins. There are non-commercial supplies originating from government programs (FSP and the Food Security Pack Program). The government pays for delivering and storing inputs. Ideally these supplies could be targeted at non-commercial demand (Group 3) as the case with the Food Security Pack Program, implemented by the Program Against Malnutrition (PAM). Currently, government supplies meet both commercial and noncommercial demand.

Table 3 depicts the possible market scenarios under different supply and demand conditions as discussed above. This framework is used to propose various policy options for market development in Section IV.

Scenario 1: Non-Commercial Supply Meeting Non-Commercial Demand—This scenario depicts the current situation whereby non-commercial marketing channels meet non-commercial demand. The non-commercial supplier in this case is PAM delivering free inputs to vulnerable villagers who cannot pay the full market price. This helps introduce improved inputs to farmers and creates potential effective demand in the future. Those who particularly benefit from this market scenario are companies that are contracted by PAM

Table 3. Market Scenarios Under Commercial and Non-Commercial Demand and Supply Conditions

	Non-Commercial Demand	Commercial Demand
Non-commercial supplies	*Scenario 1*—NGOs supply subsidized inputs to farmers who would not be able to purchase inputs at full cost.	*Scenario 2*—NGOs supply inputs to farmers who pay (cash) at cost. Suppliers retain zero margins.
Commercial supplies	*Scenario 3*—Private traders only supply subsidized inputs to farmers who would not be able to purchase at full cost.	*Scenario 4*—Commercial supplies meet commercial demand.

to deliver and store inputs through tendering and the farmers who receive the inputs. The contracted traders receive support to deliver inputs to areas that they would not operate commercially. The FSP is targeting farmers who can raise 50% of the full cost of eight 50-kg bags of fertilizer and 20 kg of hybrid maize seed. When the price subsidy through FSP benefits farmers with effective commercial demand, the government program hurts commercial suppliers excluded from the program by taking away potential commercial sales. Farmers who are not members of cooperatives or farmer associations often feel "excluded" and deprived of a benefit conferred to others. Under FSP, taxpayers pay 50% of the cost of inputs and the cost of transporting and storing fertilizer in the villages.

Scenario 2: Non-Commercial Supply Meeting Commercial Demand—This scenario would depict a situation whereby the supplier offers inputs at cost, thus meeting only commercial demand. Farmers pay for operating costs incurred in purchasing, delivery, and handling inputs by the supplier. This scenario may occur after the FSP's subsidy element is phased out. Those who benefit are the few contracted suppliers. Farmers accessing inputs at cost may pay marginally less than full market price if the supplier's distribution is efficient. Most farmers may be disadvantaged by a lack of competition in the market because NGO-organized transportation, storage, and handling are inherently inefficient. Zambian taxpayers will not pay any ngwee.[6] Foreign taxpayers must pay to fund NGOs such as CLUSA who operate such input distribution schemes.

Scenario 3: Commercial Supply Meeting Non-Commercial Demand—This scenario would occur when a price subsidy program is channeled through a private sector distribution network. A blanket subsidy placed at the import stage of the market would reduce wholesale and retail prices for all input users. This has the effect of artificially increasing the demand for inputs. The private sector alone will meet this demand without further direct government involvement in the market. Suppliers of the additional quantities demanded and input users in general will benefit. Taxpayers must pay for the subsidy. Alternatively, government would issue purchasing power to villages and allow local private traders to meet the demand through their own commercial arrangements. Of course, the private sector role in this scenario is only sustainable to the extent that it supplies at least some farmers who have an existing or potential commercial demand (Groups 1 and 2) that can form a commercial basis for the longer term when no artificial demand is available. Beneficiaries include farmers who receive cheap fertilizer and those commercial suppliers who are able to capture a sustainable level of business among farmers in Groups 1 and 2. Firms that primarily supply farmers in Group 3 may eventually be disadvantaged after subsidies are removed and effective demand for inputs drops below commercially viable levels. Taxpayers must pay for the price subsidy only. Delivery and storage costs will be shared between local traders and farmers.

Scenario 4: Commercial Supply Meeting Commercial Demand—This scenario is the ultimate goal of the action plan. Groups 1 and 2 are serviced by input dealers, and direct subsidies on inputs are removed. No unsustainable demand for otherwise unprofitable inputs is created, and this ensures that no market distortions occur. Farmers will benefit from a competitive market environment, resulting in lower prices and better service. At the same time, a much larger number of private input supply firms will be able to enter the market. Resources previously allocated as input subsidies can now be invested in complementary investments in market development and agricultural transformation. Some farmers in Group 3 may benefit when prices are reduced, but most will not benefit from this scenario. Specific programs are required that recognize the limitations of capital-intensive agricultural potential and focus on crop diversification and other poverty alleviating strategies.

Technical Constraints

Several technical constraints have impacted the development of input markets, but three constraints, namely, fertilizer recommendations, soil acidity, and inadequate research and extension support, warrant special attention. First, **fertilizer recommendations** are based on fertilizer trials and soil assessment work beginning in the late 1950s through the early 1980s. Because of low fertilizer input and consequent nutrient mining and changes in crop varieties and cropping patterns (introduction of grain/legume rotations and conservation farming), these recommendations may no longer be suitable for existing crop requirements. Moreover, a

[6]100 ngwee equal to 1 Zambian kwacha.

single recommendation of four bags/ha of Compound D (NPK 10-20-10-6.5S) or Compound X (20-10-5-6.5S) for basal application and four bags/ha of urea (46% N) for top dressing for maize has generally been used for smallholder farmers in all regions rather than having crop and soil-specific recommendations. There is a need to revise these recommendations to improve the agronomic and economic efficiency of fertilizer use.

Second, **soil acidity** affects crop yields in certain parts of the country, especially in the northern regions. Aluminum (Al) toxicity is recognized as the principal constraint in highly acidic soils, but lime recommendations continue to be based on soil pH. Recently it has been recommended that soil texture and color be incorporated into the recommendation criteria. These criteria may correlate reasonably well with the exchangeable Al contents of soils; however, it is necessary to re-examine the critical pH levels in relation to exchangeable Al content since the current norms appear to substantially overestimate lime requirements (Figure 4). For example, 24 soils sampled recently on smallholder plots in Region II were characterized as strongly to very strongly acidic (pH-$CaCl_2$ of 3.59-4.93) and were recommended for liming at 0.25-1.08 t/ha. However, the exchangeable Al content of these soils (0.02-0.28 $cmol_c$/kg) suggests much lower lime rates of 0.3 t/ha or less would be adequate, based on a rate of 1 t/ha of lime for every 1 $cmol_c$/kg of exchangeable Al. Published crop yield response to rates of applied lime in Zambia and experience on highly acidic soils elsewhere in the tropics appear to support this suggestion although the possible presence in Zambian soils of soluble manganese (Mn), which is also toxic to plants at high concentrations, may require slightly higher lime recommendations. Critical information is needed for developing proper recommendations for lime application to ameliorate acidic conditions taking into consideration smallholder constraints. There is also a growing **misperception** that the application of lime alone can improve crop yields without fertilizer use. It is possible in the short term to obtain increased crop yields because the application of lime may improve the availability of phosphorus or other immobile nutrient by increasing their solubility in soil or improving crop root growth and, hence, exploration of the soil volume. However, because the soils have a limited amount of P reserve, such practice cannot give long-term benefits. The short-term political expediency may eclipse the long-term economic non-sustainability. The solution is not "either/or." Rather, sound application of both lime and fertilizers is needed for better crop yields. Better and more information should be collected to design proper lime application rates in the long run. Third, **research and extension support** for input use is inadequate. Research for developing better seed varieties and fertilizer and lime recommendations is needed. To educate farmers, extension support is also required. Little work has been done in Zambia to promote integrated pest management (IPM) for crop protection.

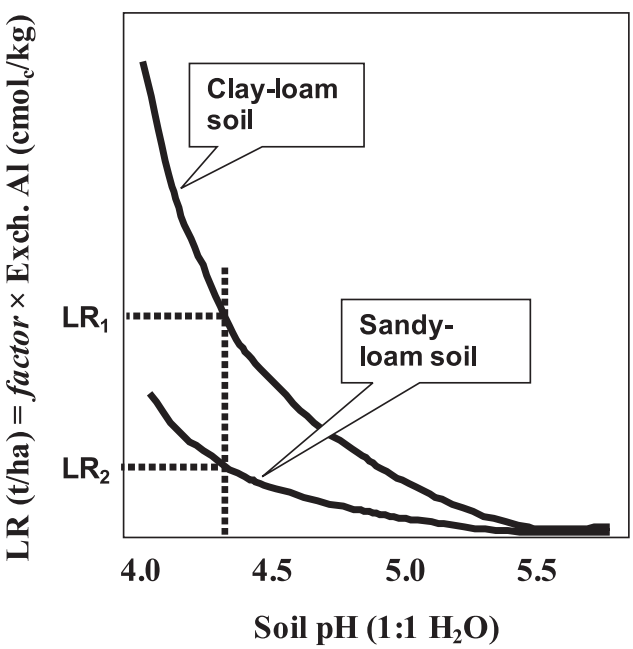


Figure 4. Relationship Between Soil Texture, pH, Exchangeable Al Content and Lime Requirement (LR). The "Factor" Is Based on the Quality and Properties of Liming Material. LR May be Reduced by an Amount Corresponding to the Exchangeable Al Content at a Target pH.

III. Potential of the Private Sector

There has been a constant debate in the country, especially after the liberalization of input markets, about the capacity and efficacy of the private sector in supplying inputs in rural areas. In fact, many government interventions, including the FSP, were justified on the grounds that the private sector is not capable of supplying inputs, and one of the stated objectives of the

FSP was to create private sector capacity by transferring wealth to rural areas through subsidies. Therefore, the team paid special attention to assess the potential of the private sector in supplying inputs.

The team's assessment indicates that the private sector has good potential in supplying inputs. There are several companies involved in fertilizer and CPP imports and marketing and in seed production and marketing. These companies include both national and international organizations but are concentrated along the railway line and other easily accessible areas. Given the opportunity, support, and enabling environment, these entities can venture into supplying inputs in a cost-effective manner. In recent years, the private sector has ventured into supplying lime to different parts of the country. No government intervention in the CPP market has allowed the private sector to supply the needed products on time, unlike the situation in the fertilizer and seed sectors. All these experiences indicate that the private sector has good potential to supply seed and fertilizers in Zambia.

It should, however, be stressed that "potential" refers to "*latent energy,*" which could be unleashed if the policy environment is conducive and supportive marketing institutions and infrastructure are in place. However, because of the non-conducive policy environment and other constraints identified in Section II, this potential has not been realized and will not be realized in the short-to-medium term. **A proactive approach** is needed to modify distorted policies to provide greater incentive for private investment. Public investments need to be made for building private sector capacity and institutional infrastructure and to reduce transport and transaction costs to make fertilizer use by small-scale farmers more profitable at market prices. Policy and other related measures and options needed to create well-functioning markets and the profitable use of fertilizers by smallholders in Zambia are elaborated in Section IV.

IV. An Action Plan for Developing AIMs in Zambia

Rationale for the Action Plan

To realize the latent potential of the private sector and create effective and efficient input markets in Zambia, policy and programs will be needed in several areas affecting supply-side and demand-side of the market equation. The supply-side measures are geared to shift the supply curve to the right and thereby reduce the supply price (Figure 5)**.** The demand-side factors aim at improving the efficiency of input use, crop prices, and open trade policies. These programs thus focus on the role of government in input markets, private sector capacity building, institutional and infrastructural development, technology transfer efforts, and output market development. Policies and programs recommended for strengthening AIMs are summarized in Table 4. These measures can be divided into five broad groups:

A. Policy options for the role of the government in input markets.
B. Private sector capacity building programs.
C. Investment environment enhancement programs.
D. Technology transfer programs.
E. Infrastructure development programs.

Programs or options under policy reform, private sector capacity building and infrastructure development will primarily impact the supply side of the market equation and thereby contribute to a shift in the supply

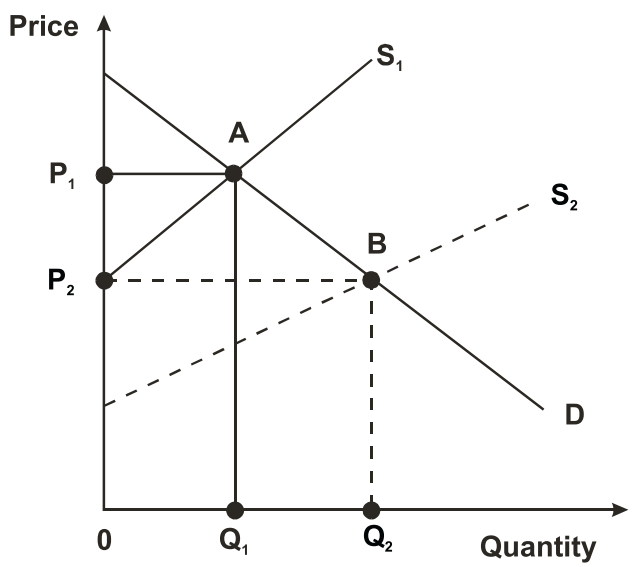


Figure 5. Reducing Fertilizer Price by Shifting the Supply Curve to the Right (SSCR)

Table 4. Action Plan Matrix of Options/Programs

Programs	Options/Activities	Comments
A. Policy Reform for the role of government in input markets	1. Non-commercial supply meeting commercial demand	1. Uncertainties related to tendering will continue to hamper market development.
		2. Delays in input supply will affect farmers and their crop production.
		3. With no subsidy, there is little justification for government involvement in input distribution.
	2. Commercial supply meeting non-commercial demand	1. Unless subsidies are given directly to the needy farmers through targeting, this option continues to plague the market development efforts.
		2. Monitoring and enforcement of targeting are essential.
		3. The mode of targeting—cash, vouchers, or product distribution—may affect market performance.
	3. Commercial supply meeting commercial demand	1. This option will help in developing well-functioning input markets.
		2. Resources spared from subsidies should be earmarked for market-development efforts.
		3. Design market-friendly poverty alleviation strategies.
B. Private Sector Capacity Building	1. Development of human capital	1. Limited marketing and technical skills among input dealers and the lack of dealers in rural areas keep input markets inefficient.
		2. Development of human capital should receive priority in any future market development efforts. ZADA should be established.
		3. Benefits from this activity will be realized slowly but steadily.
	2. Improved access to business finance	1. Create AIIF and ABDF to share risks and promote input business development.
		2. Close monitoring of funds is essential.
	3. Dissemination of market information	1. Transparency in market information is essential.
		2. To promote transparency, frequent and comprehensive dissemination of the market information should be encouraged.
	4. Strengthening of regulatory capacity	1. Enforcement of quality control and truth-in-labeling regulation is essential.
		2. Capacity of regulatory agencies should be strengthened.
C. Investment Environment Enhancement Programs	1. Improve legal environment	1. Enforcement of Credit Act provisions will help retailers in doing business on credit.
		2. This will help in contract enforcement, which is essential for business investment
	2. Facilitate cross-border trade	1. Cross-border trade will help in expanding the scale of business by increasing demand.
		2. Policies, programs, and standards should be harmonized. This will reduce the need for repackaging and relabeling.
	3. Open-trade policies in commodities	1. Instability in the maize market erodes demand for inputs. Restrictions on maize exports erode demand for crop output and create instability in the maize market.
		2. Open-trade policies can promote input use by expanding the size of the maize market and by reducing instability.
		3. Imports and exports should be allowed without permits, which are a non-tariff barrier.

Table 4. Action Plan Matrix of Options/Programs (Continued)

Programs	Options/Activities	Comments
	4. Promotion of rural credit and barter trade	1. Commercial credit can be facilitated by integrated input and output trade, as is the case for cotton and tobacco.
		2. Barter trade among dealers and farmers should be promoted to ease credit constraints for viable smallholders.
D. Technology Transfer	1. Develop better fertilizer and lime recommendations	1. Area-specific fertilizer recommendations will help in improving the efficiency of fertilizer use.
		2. Promote the use of lime at moderate levels to correct soil acidity problem.
		3. New trials and demonstrations should be conducted to improve fertilizer and lime applications based on soil and plant analysis.
	2. Strengthen research and extension capacity	1. Conduct additional research on soils, crops, and fertilizer products to develop better recommendations.
		2. Strengthen the capacity for soil testing, variety development and approval, and quality regulation.
		3. Research support for seed production should be strengthened.
	3. Promote crop diversification through legume-cereal rotations	1. To minimize N requirements, legume-cereal rotations should be promoted (through education and demonstration).
		2. Such rotations will help to generate extra cash income for poor farmers.
E. Infrastructure Development	1. Linking Chipata to Mchinji	1. Development of this railway link will open opportunities for trade and development in the MZM triangle.
		2. Reduce input prices for farmers in the MZM area.
	2. Integration of regional markets	1. Zambia has borders with eight countries—Angola, Namibia, Botswana, Zimbabwe, Mozambique, Malawi, Tanzania, and Democratic Republic of Congo. Promoting cross border trade will aid Zambia's agricultural development.
		2. Harmonization of policies and practices should receive priority in the Southern Africa Development Community (SADC) programs.
	3. Improving roads in rural areas	1. This is a long-term activity. Better rural infrastructure is needed for overall economic development.
		2. The development of rural roads will help to reduce transportation costs. More resources should be devoted to this activity from the development budget.

curve (and reduce the supply price), whereas those under technology transfer and investment enhancement will largely influence the demand side by improving efficiency of input use and output marketing. However, some components in each of these groups may impact both demand for and supply of inputs. For example, improved rural infrastructure will enhance input demand and supply by reducing transportation cost for both input and output. Table 5 indicates the likely *primary* impact of each of these components on the demand side or supply side of the market equation. In the secondary rounds, these measures may also impact the other side of the market. For example, dealer networks in rural areas will improve supply of inputs in the primary round, but by improving accessibility to inputs, they will also impact demand. Likewise, better prices for crop output through open trade policies will enhance input demand and thereby input supply. Thus, this classification of impacts should be treated as a suggestion. In addition to these programs, market-specific measures proposed in Tables 7, 8, and 9 will also contribute to the efficiency and effectiveness of AIMs by affecting demand side or supply side or both.

A. Policy Options for the Role of Government in Input Markets

To promote the development of competitive markets, the government should create a market-friendly environment by removing distortions and interventions and should phase out its current intervention through the FSP. The GRZ's recent decision about not involving Crop Marketing Authority (CMA) input distribution and removing input distributions from the existing Food Reserve Agency's (FRA) functions is laudable. This is consistent with the team's recommendation that the CMA/FRA should not be authorized to distribute seed and fertilizers because its direct involvement in input distribution will create more distortions in the market and thereby delay the development of well-functioning AIMs in the country. Not only should the government refrain from the direct intervention in the marketplace, but the donors and NGOs should also not interfere in

Table 5. Likely Impact of Proposed Options/Programs on Demand Side or Supply Side of the Market

Programs	Options/Activities	Demand Side	Supply Side
A. Policy Reform for the role of government in input markets	1. Non-commercial supply meeting commercial demand	x	
	2. Commercial supply meeting non-commercial demand	x	
	3. Commercial supply meeting commercial demand		x
B. Private Sector Capacity	1. Development of human capital		x
	2. Improved access to business finance		x
	3. Dissemination of market information	x	x
	4. Strengthening of regulatory capacity		x
C. Investment Environment Enhancement Programs	1. Improve legal environment	x	x
	2. Facilitate cross-border trade	x	
	3. Open-trade policies in commodities	x	
	4. Promotion of rural credit and barter trade	x	
D. Technology Transfer	1. Develop better fertilizer and lime recommendations	x	
	2. Strengthen research and extension capacity	x	
	3. Promote crop diversification through legume-cereal rotations	x	
E. Infrastructure Development	1. Linking Chipata to Mchinji		x
	2. Integration of regional markets		x
	3. Improving roads in rural areas	x	x

Note: Only the primary impact of each option is recognized in this table.

the market mechanisms or use market-friendly mechanisms for distributing inputs for humanitarian efforts. The GRZ should clearly articulate and implement its fertilizer marketing policy

It was planned that for the 2004/05 season, subsidies will be reduced to 25%, but they were not reduced. After subsidies are phased out, the FSP should also withdraw from input distribution. Because the FSP accounts for a large share of the market (more than 40%), it should be phased out in such a way that it does not disrupt the market. It is strongly recommended that the government should implement a program of phased withdrawal from the market (under FSP). Such withdrawal should be synchronized with a program for building of private sector capacity in rural areas. Where the government support is considered necessary for humanitarian (natural disaster or vulnerable groups) purposes, such support should be implemented in a market-friendly manner by selecting appropriate instruments.

In this context, three options are proposed based on the classification of smallholders and the supply and demand scenarios discussed in Section II.

Option 1: Non-Commercial Supply Meeting Commercial Demand—The government can elect to service only those farmers who are already willing and able to pay full cost for the inputs. This would represent a move from Scenario 1 to Scenario 2. This is precisely the way the FSP is designed. Farmers are expected to increase their contribution from 50% in the first year to 75% in the second year and 100% in the third year. To continue the move to Scenario 4, a strategy is needed to phase in private individuals who can supply inputs commercially at different stages of the market. This is already happening at the import stage. However, at the retail stage, distribution contracts are for transporters, not input traders. As a result, the capacity of traders remains undeveloped. Also, farmers should be organized through district cooperative unions to procure their inputs.

Resources saved from FSP can be channeled into the development of commercial demand among farmers from Group 2 through complementary investments in the agricultural sector that would eventually increase the scope for profitable use of inputs. These measures are applicable to all of the policy options and are captured in the various programs that follow.

As part of this policy option, it will also be necessary to indicate what (if any) alternative poverty-alleviating measures will be implemented that would affect those farmers without commercial demand. Particular attention has to be paid to the avoidance of market distortions.

Option 2: Commercial Supply Meeting Non-Commercial Demand—The government can also opt to continue to meet non-commercial demand among smallholders, at least for the immediate future, but start the process of developing a functioning input market by letting commercial suppliers handle input distribution without government contracts. This would represent a move from Scenario 1 to Scenario 3. Instead of the government identifying a small number of suppliers from Lusaka to supply inputs throughout the country, local suppliers at the provincial and district level can be engaged. However, non-commercial demand can be met only by supplying subsidized products. This means that a mechanism is required to pass on a subsidy to input users and only those users who do not have sufficient purchasing power. Depending on the implementation modalities, this option may provide conditions that would allow the emergence of local suppliers who would develop a business from the existing non-commercial (artificial) demand, possibly also capturing business originating from farmers with commercial demand.

Mechanisms by which a subsidy is introduced may involve a direct payment (cash or voucher) to the farmer, thus providing additional purchasing power or a direct payment to the supplier providing a price reduction on the marketed product.

The advantage of this option is that private sector development in rural areas is promoted through the provision of additional purchasing power. The disadvantage is that this development is unsustainable in those areas where input use is not profitable under commercial conditions; i.e., without the subsidy. An important determination is to identify whether there are areas where existing purchasing power among farmers would be sufficient to trigger localized commercial input distribution activities without any subsidy.

Option 3: Commercial Supply Meeting Commercial Demand—An alternative option is for government to phase out the FSP and facilitate the market to develop without the assistance of government price subsidies and distribution programs. This represents a direct move from Scenario 1 to Scenario 4. It would eliminate non-commercial market channels supplying subsidized fertilizer. So far, this has impeded the development of a dense network of wholesaler-retailer supply chains serving rural areas where fertilizer is currently profitable. Traders will service those farmers who can pay at full cost. For some of those farmers who cannot use inputs profitably at full cost, complementary investments in the agricultural sector should provide relief in the medium to long term. This is especially true as reductions in input- and output-marketing costs improve commercial farming potential for farmers in Group 2. It will be essential that specific agricultural sector investment programs are designed and implemented for this purpose, and it should not be assumed that savings arising from abolishing government input delivery programs are automatically available for scaled-up investments in the rural sector. As part of this policy option, it will also be necessary to indicate what alternative poverty-alleviating measures will be implemented that would affect those farmers without commercial demand; i.e., those in Group 3.

Such measures should not interfere with the input market. It is estimated that during the 2003 planting season about 20,000 tons of fertilizer and other inputs were distributed for free by various NGOs and donors, including the World Bank and FAO. Measures must therefore be identified that protect the interests of private sector market participants at all stages of the market, not just wholesalers or importers.[7]

B. Private Sector Capacity-Building Programs

There are four activities identified in this group. Although some phasing and sequencing will be needed in implementing these options, it must be stressed that these are not "either/or" options. These are highly interconnected and, therefore, should be implemented in a holistic manner.

[7]The seed market working group at the workshop recommended the use of vouchers for such purposes.

1. Development of Human Capital—To improve the availability of inputs in rural areas, independent input dealers should be developed by providing training and technical assistance to potential entrepreneurs. There are many retailers dealing in consumer goods who can be easily trained to expand the scope of their business to sell inputs in an environmentally friendly way. However, these entrepreneurs will need technical and business development training. On the technical side, they should be trained about various aspects of seed, fertilizers, and CPPs so that they can help farmers in understanding different aspects of various products. On the business side, they should be educated about financial planning, accounting, banking, business development, and the economic aspects of input use. A large number of such input dealers should be established in rural areas and should be linked with wholesalers, and wholesalers should be linked with importers. Such integrated dealer networks are essential to make the flow of goods and information smooth. Training and technical assistance will also be needed for wholesalers and importers so that they can develop business linkages and procure inputs in a cost-effective manner. Human capital development efforts will also be needed in the public sector, especially in the area of market information and quality control enforcement explained below.

Training and technical assistance for importers is essential to promote better spatial distribution of importers. Currently, all importers are concentrated in Lusaka. Given the vast size of the country, such a concentration adds considerable cost to imported inputs. Promoting the development of importers in Chipata (connected to Nacala Port) and Kasama (connected to Dar-es-Salam Port) could significantly reduce the import cost of fertilizers in the eastern and northern provinces (Table 6). These towns have willing and able entrepreneurs who could be trained to become fertilizer importers and wholesalers. This development alone could reduce the cost of imported fertilizers by $70/ton to $90/ton (ZK17,500/bag to ZK22,500/bag) in the Eastern and Northern provinces.

To sustain the efforts in human capital development, an association of input dealers called Zambia Agri-Input Dealers Association (ZADA) should be established. ZADA staff members will be trained in administrative and technical matters. The association will be empowered to conduct training for dealers, operate

Table 6. Freight Charges Through Alternative Routes in Zambia

	Route	US $/ton
I.	Johannesburg—Lusaka	90
	Lusaka—Kasama/Kapiri	50
Ia.	Total	140
Ib.	Dar-es-Salaam—Kapiri/Kasama	50
Ic.	**Net savings in transportation costs via DSM route** (Ia *minus* Ib)	**90**
II.	Johannesburg—Lusaka	90
	Lusaka—Chipata	40
IIa.	Total	130
IIb.	Nacala to Chipata	60
IIc.	**Net savings in transportation costs via Nacala route** (IIa *minus* IIb)	**70**

Source: Action Plan team calculations.

market information, and perform policy advocacy for market development.

2. Improved Access to Business Finance—Finance is the lifeblood of any business activity. Without adequate access to finance at a reasonable interest rate, it would be difficult to develop dealer networks in rural areas. To improve access to finance by importers and dealers, two funds must be created. Unlike the funds that were operated primarily unsuccessfully in the past, these funds are geared to share risks among three key stakeholders, namely, the input dealer, the banker, and the society-at-large (represented by GRZ).

The first fund will be called Agricultural Input Import Fund (AIIF). This fund will be maintained in foreign exchange at the Bank of Zambia. Any importer interested in importing fertilizers or other inputs will have an access to this fund to obtain a letter of credit (LC) from the commercial bank. The fund will be managed so that the importer will provide 30% of the needed funds for an LC, the commercial bank will provide 70% as a loan, but the Bank of Zambia will provide a guarantee for 30% of the 70% loan. This will help in reducing the cost of imported fertilizers by lowering the funds needed to acquire an LC. The second fund will be called the Agri-Input Business Development Fund (ABDF). This fund will provide finance for developing retail networks in rural areas. Any dealer who is trained and knowledgeable of the technical and commercial aspects of the input business will be able to use the guarantee from this fund to invest in a retail or wholesale business. Like the importer, the interested dealer will provide 30% of the required capital, and the commercial bank will provide 70%, but 30% will be guaranteed by the ABDF. The ABDF will be managed by a reputable commercial bank. By facilitating the availability of business capital, the ABDF will help small and medium dealers in developing dealer networks in rural areas.

3. Promotion of Market Intelligence and Transparency—Competitive markets produce efficient outcome only when there is transparency in the marketplace. That is, all buyers and sellers are familiar with prices and quantities available in different segments of the market so if prices are high in Chipata and low in Lusaka, buyers or dealers can move quantities from Lusaka to Chipata and reduce the unreasonable gap between prices in these locations. During the initial

stages of market development, the MACO should assume the responsibility for collecting and disseminating information about prices, quantities, stocks, and products in different locations. With the support from the FSRP, the MACO has started maintaining data on crop and input prices in different locations. However, it is important that this information is disseminated widely so that different segments of the market are well informed. Additional resources and capacity should be allocated to disseminate information more frequently. Bi-weekly or monthly bulletins should be published in local languages and distributed. The use of radio bulletins and updated information on an Internet website is also desirable. MACO should also work with ZADA to establish public-private partnership in this area.

4. Strengthening of Regulatory Capacity—Farmers can develop a preference for using improved inputs if the inputs are of good quality and farmers are confident of getting the desired field results. As new entrants emerge into the market, farmers should be protected from unsubstantiated product claims, product adulteration, short weights, nutrient deficiency, and other abuse. This calls for efforts to develop product standards and enforce truth-in-labeling.

Although Zambia has laws and regulations to control the quality of inputs, enforcement of such regulatory frameworks is weak. The ECZ has the responsibility for enforcing regulations about fertilizers and CPPs, but its capacity to enforce these regulations is highly limited. The ZBS has responsibility for setting standards for imported commodities and also has limited capacity to enforce standards at the border. The MACO has no capacity to spot check randomly the quality and quantity of fertilizers. Likewise, the capacity of the Seed Control and Certification Institute (SCCI) is limited to enforce seed regulation. It is essential that, through training and technical assistance, adequate capacity is created in these institutions to enforce regulations about quality, quantity, and proper use of inputs. Furthermore, there is a need for regulatory agencies to delegate some of their responsibilities to associations like the Zambia Seed Trade Association (ZASTA) that can ensure quality products among its members, help with seed inspection, spot check at retail outlets, and enforce truth-in-labeling. Such a partnership will create a win-win situation by reducing the workload on regulatory agencies and promoting responsible behavior in the seed industry. Likewise, in the long run, ZADA could be strengthened to provide a similar service for fertilizers. The existing 15% duty on insecticides should be removed because it prevents small farmers from using CPPs for minimizing crop and post-harvest losses.

Regulatory systems should be enforced in such a way that it encourages the entry of new dealers in the input business. This can be achieved by simplifying regulations and reducing administrative burdens. The procedures need to be streamlined so that:

- Registration is more for reporting than restricting trading.
- Procedures do not lead to business delays.
- Charges on permits, licensing, and registration are not prohibitive.

The capacity and performance of executing agencies such as the Environmental Council of Zambia need improvement. Such agencies should facilitate but not hinder business in inputs.

C. Investment Environment Enhancement Programs

1. Improve Legal Enforcement—Improvements in the rule of law are crucial for further investment by the private sector in this industry. The existing environment puts pressure on retailers to rely more on their own equity to purchase stocks. The Credit Act is a key instrument in the provision of inputs on credit to smallholder farmers. The provisions of this law should make it economically feasible to seek and obtain redress in case of conflicts. The Credit Act should do a better job of protecting parties who enter into non-spot market arrangements.

2. Facilitate Cross-Border Trade—Open trade policy is key to ensure that traders have more than the domestic input market to serve. The domestic input markets on their own are too small to create any gain from economies of size. Domestic trading policies across the region will need to be harmonized so that there is market integration. A key mechanism for this policy is the establishment of mutually agreeable product standards. This will reduce repackaging, relabeling and possible rejection when products move across borders.

Some countries favor openness whereas others prefer controlled markets. To prosper, AIMs need to operate unhindered by administrative burdens.

3. Open Trade Policy in Commodities—The demand for inputs is contingent upon whether use of such inputs under the current market conditions earns a farmer an attractive return. This is not just about input prices or product prices alone. Smallholder farmers in Zambia use fertilizer profitably on tobacco, paprika, coffee, and vegetables. Although smallholder maize is the main enterprise on which fertilizer is used, the instability of the maize market creates risks in fertilizer use. The restrictions on maize exports keep the producer price in the main surplus zones depressed, eroding demand for inputs. An open trade policy is therefore essential in creating effective demand for agricultural inputs. Permits are a non-tariff barrier. Government trade policies should allow imports and exports without permits to and from neighboring countries.

4. Promotion of Commercial Rural Credit and Input-Output Barter Trade—Several smallholders in Groups 1 and 2 are commercially viable and can use inputs profitably but may not necessarily have the cash flow for pre-season purchasing of inputs. Commercial credit provision has proven possible in the cotton sector, and input-output barter trade has occurred in the past. The latter provided smallholders with inputs well before planting time in exchange for maize or other crops. The lack of commercial credit should be recognized and is the reason that government credit schemes have proven unable to address the problem.

One proposal for consideration is how to promote the use of crop-fertilizer barter arrangements. The number of maize bags per bag of fertilizer would be determined by firms themselves, based on the commercial cost of fertilizer delivery to a particular region compared to the market demand for maize. This allows cash-constrained farmers to pay for fertilizer with crops rather than cash, and it helps farmers to acquire the fertilizer in a timely way in advance of the planting period. Past government programs have frequently supplied fertilizer late, resulting in lost productivity. This problem would be avoided in barter arrangements. Adequate security arrangements should be made to protect fertilizer and grain stocks in the village.

D. Technology-Transfer Programs

1. Develop Better Fertilizer and Lime Recommendations—Although farmers know the importance of hybrid seed and fertilizers and, to a lesser extent, CPPs, there is a need to develop better fertilizer and lime recommendations based on soil type, crop and cropping system, and agro-ecology. There is considerable interest in Zambia on basing fertilizer and lime recommendations on soil tests. However, soil tests need to calibrate fertilizer rate experiments on farmers' fields to provide recommendations that are more soil and crop specific, given the extent of soil nutrient mining and the changes in crop varieties that have occurred since the last calibrations were carried out 20+ years ago. Lime requirements of soils should be re-evaluated based on their exchangeable Al contents and studies should be undertaken to correlate this criterion with field-based indicators (soil pH measured with field kits, soil texture, and color) and crop response. Alternative methods of applying lime should be investigated for smallholder situations such as spot applications or concentrating applications in broad bands around the row, techniques for incorporating lime to greater depth, and use of lower but more frequent doses such as every 1-2 years. In most soils in Zambia, an annual application of 400-500 kg/ha of lime application may suffice to neutralize acidity.

There is also a need to demonstrate—all over the country—the proper use of fertilizers and lime for better yields and to modify the current uniform recommendation of eight bags of fertilizers. To develop better fertilizer and lime recommendations, new fertilizer trials should be conducted in representative areas, and educational campaigns should be launched to inform farmers about the lime requirements.

2. Strengthen Research and Extension Capacity—Research capacity for the production of improved seeds should be strengthened. The production of breeder seed for various crops should be promoted, and proper rules and regulations should be established about pricing and exclusivity of breeder seed when it is given to private seed companies. Private seed companies should work with research institutes in developing and propagating new varieties and harnessing synergies. The enactment and implementation of the Plant Variety Protection Legislation is critical in attracting the private sector investment in research and variety development.

3. Promote Crop Diversification Through Legume-Cereal Rotations—To improve crop yields while minimizing the cost of fertilizers for smallholders, MACO should consider encouraging crop diversification through legume-cereal rotations and other crops. The main advantage of such rotations is that legumes can fix their nitrogen (N) requirements from the atmosphere so that farmers do not have to spend money on N fertilizers. Moreover, a legume crop can leave N in the soils and the recycle of N-rich crop residue from legumes can reduce N requirements for the follow-up maize crop. The legume-cereal rotations also reduce the incidence of pests and diseases. Thus, not only the money spent on N fertilizers is reduced, but also the legume crops like groundnut or soybean can become a source of cash income for the poor farmer. The promotion of higher analysis fertilizer products, such as DAP (diammonium phosphate containing 18% N and 46% P_2O_5), can further reduce fertilizer cost.

E. Infrastructure Development Programs

1. Linking Chipata to Mchinji—Although there is a general need to develop rural roads so that rural communities could be integrated with urban areas, there is one issue that should receive priority attention. There is a railway line that comes from Nacala Port in Mozambique to Lilongwe in Malawi and then to Mchinji on the Malawi/Zambia border. Mchinji is only 21 km away from Chipata. If this railway line is extended to Chipata, then Chipata is linked to the Nacala Port by railway line. Such a link could facilitate the import of fertilizers and other goods in bulk for the Eastern Province from Nacala and help in reducing the cost of imported inputs. Because Chipata is a trading center serving customers in the border areas of Zambia, Malawi, and Mozambique, it can become an important source of input supply in all three countries and benefit from economies of scale in procuring inputs in large quantities and reduce input prices significantly. It is recommended that this segment of 21 km be completed soon. Furthermore, to integrate rural and urban markets, the GRZ should allocate additional resources for the construction of feeder roads in rural areas.

2. Enlarging Market Size through Integration of Regional Markets—Zambia shares borders with eight countries,[8] and these borders are porous so that there is considerable formal and informal trade in inputs among the people of the different countries. This geographic location advantage could be converted into developing large regional markets because each country per se makes a small market. Integration of markets in the Malawi, Zambia, and Mozambique (MZM) Triangle by harmonizing the policies, practices, and regulations could lead to the creation of a large market. This would allow economies of scale to procure and distribute and, thereby, reduce prices for all farmers. Likewise, the linking of markets in Mbeya in Tanzania, Kasama in Northern Zambia, and Karonga in Northern Malawi (TZM border areas) could lead to the creation of a large fertilizer market that can benefit from imports from Dar-es-Salaam Port. The country should develop infrastructures and institutions to harness benefits from such integration of inter-country markets in border areas.

3. Improving Roads in Rural Areas—Many rural areas are not connected to urban centers, and their isolation prevents them from the benefit of new technologies and markets and discourages the private sector from building retail networks. Lack of supply channels to rural areas, often blamed on the lack of private sector capacity, may more accurately reflect high transport costs that make fertilizer use costly. The GRZ should pay special attention to developing roads and other infrastructures in rural areas by allocating resources under the Road Sector Investment Program (ROADSIP) II for these activities in the development budget.

Market Specific Action Plans

Specific and common measures needed for improving the performance of each market are included in Tables 7, 8, and 9.

V. Institutional Arrangements

Holistic Approach

This action plan includes several measures to strengthen the functioning of input markets in Zambia. These

[8]Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola, and the Democratic Republic of Congo.

Table 7. Zambia Action Plan Matrix: FERTILIZERS

Issues/Constraints	Actions Recommended	Responsibility
1. Policy Constraints There is an air of uncertainty in the market due to massive, regular and different types of interventions of the Government in the market since liberalization in 1991. Although these are well intentioned, they cause severe disruptions in the market, because the Government gets involved in several marketing functions such as procurement and distribution of more than 50% of market requirements.	• A clear and consistent fertilizer policy statement is required. This policy should be in line with the market liberalization program of the government. • The well-intentioned interventions aimed at the resource-limited, small-scale farmer should be made "market friendly" and work only on the demand side. The government should not become involved in any of the fertilizer marketing functions on the supply side.	MACO to formulate clear consistent policy for medium and long-term. MACO/Donors/NGOs/International organizations only undertake safety net programs in a market-friendly manner so that the development of a private sector supply system is not disrupted.
2. Human Capital—Distribution and Dealer Network • Very few local independent dealers in the country. • Wholesalers/distributors not established on a long-term basis. • Limited number of fertilizer importers.	• Encourage development of local dealer network through training and human resource development, incentive and financial assistance. • Financial assistance and training, and developing required domestic and international linkages.	MACO/Donors/Project Management MACO/Donors/Project Management
3. Financial Constraints • Credit for farmers and agribusiness is not available. • Interest rates high. • Collateral requirements are stringent. • Foreign exchange rates unstable. • Lack of financial institutions in rural areas.	• Create revolving fund placed with Zambia National Commercial Bank (ZANACO) for providing commercial lines of credit to the fertilizer importers, wholesalers and retailers with a reasonable interest rate and collateral requirements. • Stabilize exchange and interest rates. • Encourage banks to have branches in rural areas through tax incentives and provision of security.	MACO/ZANACO/Donors Ministry of Finance and Bank of Zambia MACO/Banks/other financial institutions/local administration

Table 7. Zambia Action Plan Matrix: FERTILIZERS (Continued)

Issues/Constraints	Actions Recommended	Responsibility
4. Market information systems inadequate	• Set up fertilizer cell in MACO to collect, analyze, and disseminate data.	MACO to set-up with private sector involvement.
• Market information systems/ data inadequate for proper planning.	• Set up a monthly meeting of MACO, private sector fertilizer organizations, farmers for planning and review.	MACO to form suitable committee including private sector and farmers.
5. Regulations not being implemented • There is limited monitoring in the market for quantity or quality of fertilizers.	• Energize and adequately staff Zambia Bureau of Standards to undertake routine inspection/testing. • Set up laboratories for testing of fertilizers in the agriculturally important provinces.	MACO to coordinate with donor funding.
6. Infrastructure • Feeder and farm-to-market roads are in poor condition. • Number of trucks is low in relation to requirements. • Rail operations within the country inefficient. • Telephone links are weak.	• Pursue implementation of ROADSIP II Program to improve these roads. • Adjust customs duty, VAT and income tax structure to encourage import of trucks. • Privatize Zambian Railways. • Encourage mobile phone companies through incentives.	MACO/Ministry of Transport/World Bank/Donors/Local Governments MACO/Ministries of Commerce and Finance MACO/Ministries of Transport and Finance MACO/Ministry of Communication
7. Packaging • Fertilizers are not available in less than 50-kg bags. • Resale of subsidized fertilizers.	• Promote small packages—5 kg, 10 kg, and 25 kg bags. • Donor/NGO/GRZ-funded fertilizer bags should be marked "Not for Sale." • Strict enforcement of "Not for Sale" rule.	Private Sector/MACO Donors/NGOs/MACO Donors/NGOs/MACO

Table 8. Action Plan Matrix: Seeds

Issues/Constraints	Recommended Actions	Responsible Institution	Comments
Policy Formulation and Implementation: The National Seed Policy has been in draft since 1999. Failure to ratify and implement it has left gray areas in the industry and constrains development.	1. Develop a mechanism for accessing public varieties, with clear conditions for their ownership and commercialization.	MACO, public and private seed companies	Immediate action
	2. Develop mechanisms for ensuring seed security with clearly defined roles for GRZ, public and private seed companies, NGOs, etc.	MACO, public and private seed companies	Long-term
	3. Need to elaborate mechanisms for seed of "orphan crops."	MACO, NGOs, seed companies	Long-term
Seed Quality Issues: SCCI is under-funded and understaffed, which limits its capacity to service the industry in a timely manner. It also lacks capacity to do point-of-sale inspection of seed going out to farmers. Despite decentralization of SCCI activities and the existence of a comprehensive law, there are many cases of fake and expired seeds on the market.	1. SCCI should work with the industry to develop and strengthen quality assurance systems.	SCCI, seed companies	Long-term
	2. SCCI should pay more attention to point-of-sale checks by using delegated extension and company staff.	SCCI, MACO, seed companies	Long-term
	3. Education should be extended to farmers and stockists to enhance awareness of their rights under the law.	SCCI, MACO	Long-term
	4. There should only be one season of testing prior to release of varieties already grown in the SADC or MZM countries, following harmonization of seed laws.	SCCI	Immediate
Limited Capacity for Research and BS Production: Variety development, variety maintenance and production of breeder seed are expensive and take time. Local companies have not had the opportunity to develop the requisite capacity, yet government funding for research has declined.	1. GRZ should institute practical mechanisms to support local private research and BS production so as to boost in-country self-sufficiency. These include: tax incentives, grants, long-term developmental loans, and training.	GRZ, seed companies, Donors	Immediate, Long-term
	2. Allow local seed companies to access research facilities and BS of the Soils and Crops Research Branch (SCRB) through Memoranda of Understanding.	MACO, SCRB, seed companies	Immediate, Long-term
	3. Increase funding for public research. At the same time SCRB should be proactive in seeking contracts with seed companies and should be allowed to retain and use funds so generated.	GRZ, SCRB	Immediate, Long-term

Table 8. Action Plan Matrix: Seeds (Continued)

Issues/Constraints	Recommended Actions	Responsible Institution	Comments
Uncoordinated Government and Donor Interventions: The supply of seeds and fertilizers by GRZ and NGOs is sometimes necessary following natural disasters or for the purpose of supporting the very poor farmers. However, political interference, poor planning and coordination, and creation of a culture of free things have negatively affected development of the seed industry. The centralized, tendering system creates distortions in distributorships and affects the suppliers' ability to establish market channels.	1. De-politicize GRZ interventions by establishing an independent body comprised of representatives of MACO, private companies (input dealers), NGOs, and donors to plan and coordinate the work.	MACO, Donors, NGOs, private companies	Immediate, Long-term
	2. Develop market-friendly mechanisms for government interventions.	GRZ, Private sector	Immediate
	3. MACO should strengthen its coordination role, establish a code of conduct for NGOs, and closely monitor their activities.	MACO, NGOs	Immediate, Long-term
	4. NGO and other cottage seed systems should concentrate on local cereals and grain legumes whose seed is not readily commercialized and leave room for seed companies to promote hybrids to enterprising small farmers.	NGOs, MACO, Donors, seed companies	Long-term
	5. Link the cottage seed systems into the commercial stream with a view to developing them into SMEs, contract seed growers, or agents for seed companies.	NGOs, seed companies	Long-term
Low Investment in Market Development: The frequent government and NGO interventions are largely blamed for the low levels of industry involvement in seed market development. Companies wait for the next program of intervention. The existing distribution network is disjointed and does not reach down to rural areas. Both public and private sectors have crucial roles to play in developing input markets.	1. Government and NGO interventions should aim to integrate smallholders into the commercial sector through improvement of rural infrastructure, rural financial services and education and training.	GRZ, NGOs, Donors	Long-term
	2. Seed companies and other input suppliers should cooperate to promote complete technology packages to farmers through demonstrations.	Input Suppliers, Distributors, Extension	Long-term

Table 8. Action Plan Matrix: Seeds (Continued)

Issues/Constraints	Recommended Actions	Responsible Institution	Comments
Limited Technical Know-How and Market Information: Technical knowledge and marketing and business skills are missing in the entire chain. There are no organized collection and dissemination of critical market information. MACO data are too general to help the industry.	1. Embark on training of selected company personnel, distributors and stockists on product knowledge, effective use and handling, and business skills. Train farmers on "farming as a business." 2. Establish a mechanism within ZASTA for the collection and dissemination of market information.	Donors, GRZ, seed companies Donors should help ZASTA to build capacity for this.	Immediate, Long-term Long-term
Poor Credit Repayment Culture: Free issue of agricultural inputs, coupled with political interference in the distribution of inputs, has led to a culture of none repayment among some farmers.	1. Political leaders should abstain from interfering in well-intentioned government programs. 2. ZASTA should operate a credit rating scheme where all agri-input dealers can freely exchange information on the credit status of stockists and farmers.	GRZ Seed companies	Immediate, Long-term Long-term
Marketing Issues: Seed prices are high, considering the low purchasing power of smallholders. Improved seed is not easily available and accessible to rural farmers. As a result, effective demand is low and many farmers still use traditional or recycled seed.	1. Seed companies should try to reduce their costs by decentralizing production and processing. Taking on some cottage seed systems could be a good starting point. 2. Seed companies should improve seed distribution by building up a rural stockist network and increasing promotion work. 3. Improvement of rural infrastructure. 4. Production of smaller seed package.	Seed companies Seed companies, Merchants, Extension GRZ/Donors/Local governments (LGs) Seed companies	Mid-term Immediate, Long-term Long-term Immediate

Table 9. Action Plan Matrix: CPPs

	Key Constraints	Recommended Actions	Responsible Institutions
1	Inadequate registration and monitoring of CPPs and businesses	• Building ECZ capacity to regulate and monitor businesses and product use. • Review registration procedures. • More coordination within line ministries–ECZ, Ministry of Commerce, Trade, and Industry (MCTI), ZBS, etc. • Update and make widely available the list of registered products and businesses.	ECZ/GRZ, ZAA/Croplife ECZ, MCTI, ZAA/Croplife, ZBS ECZ
2	Inadequate analytical facilities	• Strengthening of public and private partnerships. • Conduct an assessment of existing laboratories in the country and thereafter establish laboratory facilities for proper analysis.	ECZ, MACO-Mount Makulu, ZAA/Croplife
3	Lack of an IPM Policy	• Promote the design and enactment of an IPM policy.	MACO, ZNFU, MST, EAZ, ECZ
4	Weak trade association	• Establishing a common permanent secretariat with the seed trade association and fertilizer industry. • Developing more training activities, fundraising and training capabilities through training and networking. • Promoting the creation of a national agro-input trade association for licensed wholesalers and retailers. • CPP importers should be encouraged to register with Zambia Agrochemicals Association (ZAA).	ZAA/Croplife, ZASTA, fertilizer industry
5	Increased risk of unregulated repacking	• Monitoring and certifying the repacking facilities. • Reduction of 25% duty associated with packaging materials.	ECZ, ZBS, ZAA/Croplife, MoFED
6	Limited access to basic CPPs and nutrients for small-scale farmers	• Removing the 15% duties attached to insecticides. • Review the classification disparity of liquid and granular fertilizer and nutrient formulations.	MoFED, MACO ZNFU, ZAA/Croplife, MoFED/ZRA
7	Limited knowledge of products by farmers, extension workers, and retailers	• Designing and conducting training programs for farmers, outgrowers, technical staff, and extension workers. • Designing a graduate course and procedure for retailers and government extension workers.	MACO, ZAA/Croplife, ECZ, commodity associations
8	Lack of database on market information on CPPs	• Notice of arrival forms. • Returns information; more advertising from the industry. • Increasing collaboration with ZNFU, NGOs to disseminate technical and business information to dealers and users.	ECZ, ZAA/Croplife, ZRA, Central Statistical Office, AMIC, NGOs

measures deal with the issues related to both the demand side and supply side of the market equation. Although it may not be possible to implement all of these measures in a single project due to resource constraints, it is essential that an optimum sequencing and phasing scheme be developed so that the synergy resulting from various measures can be realized. In this context, while developing prioritization, special attention should be paid to the measures dealing with policy reform, human capital development, access to finance and market information, and enforcement of regulatory frameworks. These measures should be implemented in a holistic manner because reforms in one area are directly linked to reforms in another area, and their joint implementation will create synergistic benefits (Figure 6). For example, if policy distortions are removed, but human capital is not developed in rural areas, then these reforms may not create the desired impact. Likewise, if human capital is developed but trained people do not have excess to finance and information, then they cannot use their skills to promote retail networks. If all these measures are implemented, but the government is not effectively enforcing regulatory frameworks, then many honest, hardworking entrepreneurs will be discouraged in making the necessary investment in business development. Because these factors are related in an interactive manner, their holistic implementation is desirable.

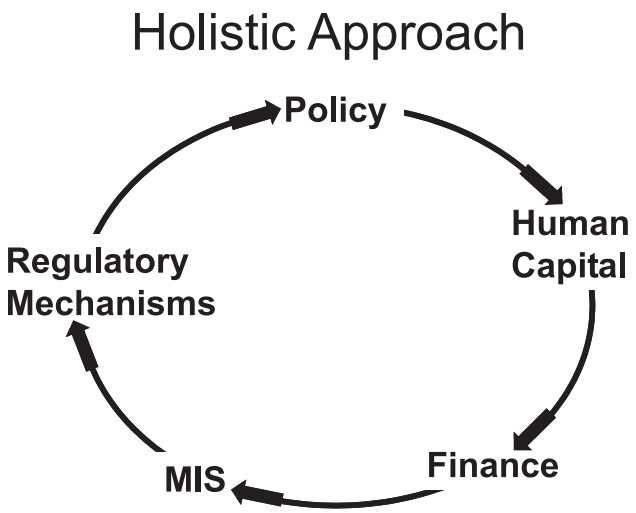


Figure 6. The Market Development Process

Public-Private Partnership

The experience of the last three decades indicates that sustainable input supply systems cannot be developed either by the private sector or by the public sector alone. Both sectors have a role in creating well-functioning input markets and should work jointly in removing market development-related constraints. The public sector should shoulder the responsibility of creating an enabling environment, enforcing regulatory frameworks, and disseminating market information to create a level playing field. At the same time the private sector should assume the responsibility for importing and marketing quality inputs. There are several areas where the public and private sectors can work jointly. For example, many trained dealers can assume the responsibility of providing extension advice to farmers, while the MACO can focus its limited resources on subject matter specialists and organize training for dealers to empower them about new technologies and knowledge. By sharing risks in improving access to finance, both sectors can work together to improve input supply in the country. Likewise, in maintaining and disseminating market information, public and private sectors can work together. Public and private sectors can produce more benefits by working collaboratively rather than by working in isolation or at cross purposes.

Government Commitment and Donor Support

A strong commitment will be needed from the government for the implementation of the action plan. Such a commitment will manifest in the removal of existing distortions and create a favorable environment for the private sector participation in input markets. Support for building institutional capacity will also be needed. Above all, the government has to work with donors to raise the necessary resources to implement the action plan.

Annex I . Notes for Debriefing at MACO

Lusaka, Zambia
June 24, 2003

An Action Plan for Developing Agricultural Input Markets (AIMs) in Zambia

Introduction—Background and Rationale for the Action Plan.

Field Visits—Choma, Chipata, Chongwe, Kasama, Katete, Kitwe, Mazabuka, Mpongwe, and Ndola districts.

Stakeholders Visited—Farmers, private sector dealers, bankers, policymakers, donors, and NGOs.

Assessment—AIMs are underdeveloped and fragmented—high prices, difficult accessibility, and poor quality of products.

Constraints—Macropolicy, market development, and technical.

Macropolicy Constraints—Exchange rate depreciation, high interest rate, and underdeveloped rural infrastructures.

Market Development Constraints
- Uncertain and inconsistent policy environment.
- Inadequate human capital/dealer networks.
- Limited access to finance.
- Inadequate dissemination of market information.
- Ineffective enforcement of regulatory frameworks.

Technical Constraints—Soil acidity, imbalanced fertilizer use, and inadequate research and extension support.

Potential of the Private Sector—Good but constrained.

Measures Needed to Strengthen the Functioning of AIMs in Zambia
- Creation of an enabling policy environment.
- Development of human capital.
- Improved access to finance.
- Strengthening of regulatory capacity.
- Dissemination of market information.
- Infrastructure development—Extension of railway line from Mchinji to Chipata.
- Integration of regional markets.
- Technology transfer efforts—Addressing soil acidity problem and imbalanced fertilizer use, and promotion of legume-maize rotations.
- Poverty alleviation and safety nets.

Institutional Arrangements
- Holistic approach.
- Public-private partnership.

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