An Action Plan for Developing Agricultural Input Markets in Tanzania

An International Center for Soil Fertility and Agricultural Development

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An Action Plan for Developing Agricultural Input Markets in Tanzania

Prepared by

IFDC—An International Center for Soil Fertility and Agricultural Development

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Foreword

The agriculture sector plays an important role 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, and the soils used for crop production are becoming depleted of the most important nutrients. To confront the twin challenges of hunger and 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. This action plan is the last one under Phase I of action plan development work funded by the U.S. Agency for International Development (USAID), Sasakawa-Global 2000 (SG 2000), and other donors. Like its counterparts, this action plan provides a blueprint for an orderly development of AIMs in Tanzania. It recommends a holistic approach based on the five pillars of market development and supporting conditions to be nurtured by public-private partnership.

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

Amit H. Roy
IFDC President and
Chief Executive Officer

Preface

Tanzania is a naturally rich but economically low-income country with a per capita income of $277 and a high incidence of poverty and hunger. The agriculture sector dominates the economy of Tanzania because it provides 45% of the gross domestic product (GDP), 60% of export earnings, and more than 80% of the rural employment. Nevertheless, the incidence of poverty remains high in rural areas, per capita cereal production has been decreasing, and crop yields are low. Low productivity of agriculture is a result of low use of modern inputs including improved seed, fertilizers, and crop protection products (CPPs).

During the 1990s, the Government of Tanzania introduced several policy reforms including subsidy removal and privatization of input supply services. These measures have allowed the entry of the private sector into input supply but have failed to revitalize input use. Guided by low input use and inadequate and untimely supply of inputs in rural areas, the Ministry of Agriculture and Food Security (MAFS), Government of Tanzania, requested IFDC and SG 2000 to conduct an assessment of agricultural input supply systems in the country and suggest suitable measures for improvement. As a result IFDC prepared this action plan in consultation with various stakeholders. The action plan team included the following members:

B. L. Bumb, Policy Economist and Team Leader, IFDC
M. F. Beig, Marketing Specialist, IFDC
C. Mataya, Credit Specialist, IFDC
S. Masagasi, Input Specialist, MAFS
N. T. Msomba, Private Sector Specialist, Tanzania Fertilizer Company (TFC)
F. Muhhuku, Seed Specialist, IFDC Consultant
M. Wanzala, Agricultural Economist, IFDC

The fieldwork for the action plan was conducted during October-November 2003. The assessment team traveled to Arusha, Kilimanjaro, Iringa, Mbeya, Morogoro, Kigoma, and Tabora and interacted with stakeholders from both public and private sectors, non-governmental organizations (NGOs), and the donor community. Initial impressions were discussed at a debriefing at the MAFS and USAID, and comments received were incorporated in the draft action plan, which was validated at the National Stakeholders' Workshop in Dar es Salaam in August 2004. The comments received at the workshop are reflected here.

This action plan is one of the six action plans that IFDC has prepared with partial funding support from USAID during the 2000-2004 period. Other action plans were prepared for Ghana, Malawi, Nigeria, Uganda, and Zambia. All these action plans have focused on the functioning and performance of agricultural input markets (AIMs)—fertilizer, seed, and CPPs, constraints affecting the private sector participation in these markets, and measures needed to make them more effective and efficient.

The action plan recommends a holistic approach encompassing public-private partnership for input market development in Tanzania. The holistic approach should focus on the five pillars of market development (policy, human capital, finance, market information, and regulation) and supporting measures in regional trade, technology transfer, and infrastructure and output market development. This action plan complements the MAFS efforts under the agriculture sector development strategy (ASDS), participatory agricultural development and empowerment program (PADEP), and other developmental activities.

USAID and SG 2000 provided partial funding support for the preparation of the action plan and the stakeholders' workshop. Logistic and administrative support provided by SG 2000/Tanzania and MAFS is gratefully acknowledged.[1]

[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

AAT	Agrochemical Associations of Tanzania
ABDF	Agri-input Business Development Fund
AIIF	Agricultural Input Import Fund
AIMs	Agricultural input markets
ARIs	Agricultural research institutes
AS	Ammonium sulfate
ASDP	Agricultural Sector Development Program
ASDS	Agricultural Sector Development Strategy
ASP	African Stockpile Program
CAD	Community Agricultural Development
CAN	Calcium ammonium nitrate
CBIS	Capacity Building and Institutional Strengthening
CIS	Community Investment Subprojects
COMESA	Common Market for Eastern and Southern Africa
CPPs	Crop protection products
DAI	Development Alternatives, Incorporated
DAP	Diammonium phosphate
DFID	Department for International Development
DGIS	Directorate General for Development Cooperation
EA	East Africa
EAC	East African Community
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FGIS	Farmer Group Investment Subprojects
FSF	Foundation Seed Farm
GDP	Gross domestic product
GOT	Government of Tanzania
HYV	High-yielding variety
IFAD	International Fund for Agricultural Development
IFDC	An International Center for Soil Fertility and Agricultural Development
IITA	International Institute for Tropical Agriculture
K	Potassium
KR II	Kennedy Round II
LC	Letter of credit
MAFS	Ministry of Agriculture and Food Security
MTL	Masdar Technology Limited
N	Nitrogen
NGOs	Non-governmental organizations
OPVs	Open-pollinated varieties
PADEP	Participatory Agricultural Development and Empowerment Program
PRSP	Poverty Reduction Strategy Paper
RDS	Rural Development Strategy
SADC	Southern Africa Development Community
SG 2000	Sasakawa-Global 2000

Acronyms and Abbreviations (Continued)

SSCR	Shifting the supply curve to the right
SMEs	Small and medium enterprises
SOEs	State-owned enterprises
TADA	Tanzania Agri-Input Dealers Association
TAZARA	Tanzania Zambia Railway Authority
TBS	Tanzania Bureau of Standards
TDV	Tanzania Development Vision
TFA	Tanganyika Farmers Association
TFC	Tanzania Fertilizer Company
TOSCA	Tanzania Official Seed Certification Agency
TPRI	Tropical Pesticides Research Institute
TRA	Tanzania Revenue Authority
TSP	Triple superphosphate
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
WARDA	West African Rice Development Association

An Action Plan for Developing Agricultural Input Markets in Tanzania

Executive Summary

I. Introduction

Tanzania is a naturally rich country, but the realization of its rich potential is progressing slowly. As a result the incidence of poverty and hunger is high, food production has not been keeping pace with population growth, and nutrient depletion is excessive (more than 60 kg/ha). Several factors may have contributed to these trends, but the declining fertilizer use and limited use of other modern inputs seem to have played a key role.

In confronting the twin challenges of food security and environmental protection, accelerated growth in the agricultural sector is essential and such acceleration cannot occur without adequate and timely supply of modern agricultural inputs (improved seed, fertilizers, and CPPs) at cost-effective prices to farmers in rural areas. In spite of market liberalization and private sector participation, farmers continue to face difficulty in accessing quality inputs at reasonable prices. To identify the factors responsible for inefficient input supply systems, IFDC, in collaboration with MAFS and SG 2000, conducted an assessment of agricultural input markets (AIMs) in Tanzania with a focus on the following objectives:

- Assess the functioning and performance of AIMs—seed, fertilizer, and CPPs.
- Identify the constraints affecting the performance of AIMs, with a special focus on policy, human capital, finance, market information, and regulatory systems.
- Evaluate the potential of the private sector in supplying inputs.
- Suggest actionable measures to improve the functioning and performance of AIMs.

This activity is a part of the six country assessments that IFDC has conducted in collaboration with other institutions. Other countries include Ghana and Nigeria in West Africa, Malawi and Zambia in Southern Africa, and Uganda in Eastern Africa. USAID/Washington provided the seed money; whereas, other donors provided country-specific partial support for these assessments. These assessments have led to market development projects in Ghana, Nigeria, Uganda, and Malawi; project preparation work is underway for Zambia and Tanzania.

II. An Assessment of AIMs in Tanzania

In spite of market liberalization and private sector participation, AIMs remain underdeveloped and fragmented in Tanzania. As a result, farmers face high prices, limited accessibility, and poor quality products. It is easier to find "Coca-Cola" than seed and fertilizers in rural areas. The constraints affecting the performance of AIMs are divided into three broad groups, namely, macropolicy, market development, and technical.

Macropolicy Constraints

Macropolicy constraints include exchange rate depreciation, high interest rate, and poor rural infrastructures. The depreciating exchange rate of the 1990s created risk and uncertainty for suppliers and high prices for farmers and thereby discouraged development of well-functioning markets. This situation also led to high interest rates, which made input business development costly and risky. Poor conditions of rural infrastructure increase transaction cost and reduce incentive for suppliers to reach out to rural areas.

Market Development Constraints

Market development constraints relate to policy, human capital, access to finance and market information, and regulatory frameworks. An assessment of these factors revealed that the policy environment is non-conducive, human capital is inadequate, access to finance and market information is limited, and enforcement of regulation is ineffective, as elaborated below. These five constraints refer to the five pillars of market development.

Non-Conducive Policy Environment—The policy environment confronting the private sector remains non-conducive. Actions by both government and donors (including NGOs) send wrong signals. First, there is a "mindset" problem. Some policymakers do not have faith in the efficacy of the private sector and, therefore, call for a return to distribution of subsidized inputs. Such an announcement during the 2003/04 season created uncertainty in the market and forced traders to postpone their imports and supply of inputs in rural areas. Second, the delay in the auction of KR II fertilizers and sale of inputs at below the market price by NGOs disrupt the sale of inputs by small dealers. Although the government and donor interventions are well-intentioned, they create distortions in the marketplace and thereby prevent the realization of the full potential of the private sector.

Inadequate Human Capital—There is a paucity of dealers in rural areas. Most wholesalers and dealers are concentrated in cities and big towns. The four Ps of marketing (price, product, place, and promotion) imply that the product should be sold closer to the farmer. However, in Tanzania farmers must travel 20-30 kilometers to buy inputs. The unavailability of inputs near the farmgate creates disincentives for farmers. Furthermore, technical and business training of traders involved in the input business is limited. To be a successful entrepreneur, the dealer must have sound knowledge of different aspects of products and business acumen. Technical knowledge of extension workers and quality control inspectors is also limited. Thus, both quality and quantity of human resources involved in the input business are inadequate.

Limited Access to Finance—Due to high interest rates and stringent collateral requirements, it is not easy to borrow funds from commercial banks to develop input business. Although the Government of Tanzania (GOT) has created an Input Trust Fund to help small input dealers, the Fund's outreach has been limited. Consequently, most small dealers continue to depend on their own limited funds and incur high transaction costs because they cannot buy large quantities. Their frequent trips to the town to get inputs increase transaction costs and reduce the scale of their business. One dealer in Kigoma travels twice a week to the town to get 5-10 bags of fertilizers. Another has to travel frequently to Dar es Salaam to purchase a few tons[2] of fertilizers. If these dealers had access to finance, they could easily purchase large quantities in one trip (rather than making several trips), save on transportation charges, and thereby sell inputs at a lower price.

Insufficient Market Information—Well-functioning markets require that the actors involved in the market are fully informed about prices, quantities, stocks, and transactions in various market segments. Although MAFS collects information about prices and input use, due to funding constraints, coverage is inadequate and dissemination is limited. Many dealers and farmers are not fully informed about prices and quantities in various parts of the country. The lack of market information prevents farmers and dealers from procuring inputs from the cheapest source and thereby forces them to pay higher prices.

Ineffective Enforcement of Regulations—Regulations on quality control and truth-in-labeling for seed, fertilizer, and CPPs are inadequate and not effectively enforced; as a result, farmers resort to using outdated CPPs and poor quality seeds. Enforcement of regulation at retail (point of sale) is weak, partly due to limited human and financial capital with regulatory agencies.

[2]All tons are metric tons.

Technical Constraints

Technical constraints encompass inadequate research and extension support, limited work on soil testing for developing sound fertilizer recommendations, and insufficient knowledge with farmers and dealers about proper use and sale of modern inputs.

III. Potential of the Private Sector

Given the mindset problem and a general distrust of the private sector, the team paid special attention to the potential of the private sector to supply inputs and concluded that **the potential of the private sector is "good but constrained."** There are many importers and retailers who could be strengthened to create well-functioning input markets. However, macropolicy, market development, and technical constraints mentioned earlier have constrained the private sector to realize its full potential. Unless a "proactive" approach is followed to build the capacity of the private sector and to create an enabling environment, the private sector may not realize its full potential and Tanzania may not develop well-functioning input markets.

IV. Measures Needed to Strengthen the Functioning and Performance of AIMs in Tanzania

Macropolicy and market development measures needed to strengthen the functioning and performance of AIMs in Tanzania are summarized in Matrix A. Measures related to market development are divided into two broad groups:

- The Five Pillars of Market Development.
- Other Supporting Measures.

These measures are based on the concept of "shifting the supply curve to the right" (SCCR). A shift in the supply curve (of inputs) to the right increases supply of inputs to farmers at a lower price by reducing transaction costs.

The Five Pillars of Market Development

Well-functioning markets need an enabling policy environment, adequate human capital, improved access to finance, market transparency, and effective enforcement of regulatory frameworks. The following actions are proposed in each area.

Policy Environment—An enabling policy environment should be created. Policymakers and donors should refrain from sending the "wrong signal" and creating distortions in the market, have confidence in the potential of the private sector, and devote resources to strengthen its capacity to perform efficiently in a competitive environment. If socially desirable interventions are needed, they should be implemented in a market-friendly manner. Rather than distributing inputs, the concerned entity should distribute "purchasing power," so that one can "kill two birds with one stone," namely, market development and poverty alleviation.

Human Capital—The lack of independent dealers in rural areas is the single most critical constraint depriving farmers of obtaining quality inputs on time and at cost-effective prices. Human capital should be developed by focusing efforts on both quantity and quality of input dealers. Through training and technical assistance, a large cadre of independent dealers should be created. These dealers should be trained in both technical and business skills and linked to commercial banks and wholesalers for procuring inputs for farmers in the village. Training and technical assistance should also be provided to wholesalers and importers so that they can develop business

Matrix A. Action Plan Matrix: Policy and Market Development Issues

Issues/Constraints	Actions Recommended	Stakeholder Responsibility
I. Macropolicy Issues		
1. Devaluation of domestic currency has a negative impact on both input use and supply	• Ensure macroeconomic stability by appropriate management of monetary, fiscal, and exchange rate policies	The Bank of Tanzania, Ministry of Finance, and donors
2. High interest rates and stringent collateral requirements discourage investment in agri-input business development	• Ensure low interest rates by controlling inflation and money supply • Introduce innovative mechanisms, such as warehouse collateral and risk management funds, to reduce collateral requirements	The Bank of Tanzania, Ministry of Finance, commercial banks, and donors
3. Poor quality of rural roads adds to transportation costs and discourages traders from penetrating rural areas	• Long-term development programs to construct all-weather rural roads should be implemented.	Ministry of Communication and Transport, Ministry of Works, Ministry of Finance, and donors
II. Market Development Issues		
A. The Five Pillars of Market Development		
1. Non-conducive policy environment resulting from government and donor interventions and the mindset problem-distrust of private sector by policymakers	• Government should refrain from sending wrong signals that discourage private sector involvement in market development. • Implement all well-intentioned donor interventions in a market-friendly manner • Organize policy workshops and policy dialogue forum to improve interactions among policymakers and private sector participants	MAFS, MCM, donors, and project entity
2. Inadequate human capital for competitive markets	• Conduct large-scale short-term and long-term training programs for importers, bankers, wholesalers, and retailers • Create a cadre of dealers or 'village entrepreneurs' in rural areas near the farmers' door steps • Facilitate the development of Tanzania Agri-input Dealers Association (TADA) • Arrange study tours for policymakers and private sector participants to developed and developing countries for exposure to new ideas • Develop business linkages among all actors in the supply chain	MAFS, MCM, donors, specialized institutions, and project entity

Matrix A. Action Plan Matrix: Policy and Market Development Issues (Continued)

Issues/Constraints	Actions Recommended	Stakeholder Responsibility
3. Limited access to finance for imports and business development	• Work with bankers and viable or potentially viable input dealers to develop rapport among them • Create Agricultural Input Import Fund (AIIF) - to share risks among importers (30%), commercial banks (40%), and society-at-large (government) (30%) • Establish Agri-input Business Development Fund (ABDF) to share risks among input dealer (30%), commercial bank (40%), and society-at-large (30%) • Encourage banks to use warehouse collaterals	The Bank of Tanzania, Ministry of Finance, commercial banks, donors and project entity
4. Lack of market information about global, regional, and national markets	• Strengthen the existing market information system with the Inputs Unit of MAFS and make sustainable arrangements for collection and dissemination of information on a wider scale	MAFS, MCM, TADA, and project entity
5. Ineffective enforcement of regulatory frameworks	• Strengthen capacity with TPRI and other governmental institutions to enforce existing laws about seed and CPPs • Draft and enact fertilizer law and build necessary capacity for its implementation	MAFS, MCM, TPRI, TBS, and project entity
B. Supporting Conditions		
1. Lack of integration of multi-country markets	• Develop business linkages among traders of neighboring countries to realize economies of scale in procurement—Mbeya on TAZARA railway line could become a supply center for farmers and dealers in Mbeya, Kasama (Zambia) and Karonga (Malawi)	MAFS, MCM, and project entity
2. Resource-poor farmers lack purchasing power to participate in the marketplace	• Create market-friendly safety nets to help resource-poor farmers • Promote the use of vouchers to empower farmers with purchasing power to participate in the marketplace	MAFS, Donors, and project entity
3. Limited technology transfer efforts—poor farmer knowledge and inappropriate use of fertilizers	• Strengthen research and extension and soil testing services to develop site-specific recommendations • Establish dealer-oriented demonstrations for educating farmers about appropriate use of inputs • Strengthen capacity for breeder and foundation seed production	MAFS, ARIs, private sector, donors, and project entity
4. Underdeveloped output markets	• Develop crop markets by training, market information, standards and measures, and producer association development	MAFS, MCM, donors and project entity
5. Inadequate supply of covered wagons with TAZARA and TRC	• Increase the supply of covered wagons to reduce transportation costs and insecurity	MAFS, Ministry of Transport, donors and project entity

linkages with global and regional partners. An association of input dealers called Tanzania Agri-input Dealers Association (TADA) should be created to help small dealers in acquiring marketing skills and information.

Access to Finance—Finance is the lifeblood of business development. Although commercial banks are endowed with liquid funds, they are risk-averse and afraid to lend to small agri-business entrepreneurs. To improve access to finance by importers and dealers and to encourage commercial and development banks to lend funds for agri-input import and business development, two risk-sharing funds should be established: Agri-input Import Development Fund (AIDF) and Agri-input Business Development Fund (ABDF). Under each fund, interested importers or dealers will be required to contribute 30% of the required capital; whereas, commercial banks will provide the remaining 70% funds, but 30% of this 70% will be "guaranteed" by the AIDF or ABDF. These funds will be managed by reputable banks in the country but allow the commercial banks to venture into advancing funds to input dealers. Warehouse collateral in inputs should also be encouraged.

Market Intelligence and Transparency—To promote competition and improve efficiency, MAFS's capabilities in market information and dissemination should be strengthened by creating and operating a Market Intelligence and Transparency System (MITS). Under this system, not only will the information about prices and available quantities be collected and disseminated but also this will serve as a tool for MAFS to monitor the situation in every district so that any shortage or price hike can be corrected. Also, MAFS could monitor the arrival of imports to avert potential shortages.

Enforcement of Regulation—Ensuring quality inputs to farmers is a public sector responsibility in a free market situation. Not only does capacity for enforcing regulation dealing with seed and CPPs need strengthening at the point of sale but also fertilizer legislation needs to be drafted and enacted and then capacity should be built to enforce it.

Other Supporting Conditions

In addition to strengthening the five pillars of market development, additional work is needed on the supporting conditions dealing with technology transfer, integration of multi-country markets, infrastructure and output market development, and market-friendly safety nets for hunger and poverty alleviation.

Technology Transfer—Although strengthening input supply is essential, helping farmers to use inputs efficiently is also critical. To improve the farmers' knowledge base, research and extension must be strengthened and soil testing should be conducted to improve fertilizer recommendations, especially for **grain-legume rotations**. To help poor farmers financially, grain-legume rotations should be encouraged because such rotations reduce nitrogen requirements for grain crops and give farmers a source of cash income (groundnuts, beans, and peas). Capacity for breeder and foundation seed production needs strengthening.

Integration of Multi-Country Markets—Tanzania has borders with several countries, and with its port in Dar es Salaam, it is a **global gateway** to various landlocked countries. Such a privileged position should be used to generate economies of scale in procurement of inputs, especially fertilizers, by developing cross-border trade. For example, a wholesaler in Mbeya should plan to sell fertilizers not only in Mbeya but also in Kasama in Zambia (on TAZARA route) and Karonga in Malawi. Such regional integration of markets could create a win-win situation for all—economies of scale in procurement and reduced prices for farmers. Such cross-border trade synergies should also be harnessed in other border areas.

Improved Infrastructure—Although roads in rural areas need to be improved, improvement in railway wagon capacity is urgently needed to reduce transportation costs for Southern Highland districts. The supply of **covered wagons** should be increased so that fertilizers can be shipped in bulk from the port to the consuming areas without hiring a security guard to protect fertilizer bags in open wagons. Also, existing storage capacity should be used to store inputs for areas far away from Dar es Salaam.

Output Market Development—The demand for inputs is a derived demand; therefore, output, especially grain, markets should be developed by promoting storage, grading, standards, market information, and warehouse collaterals.

Market-Friendly Safety Nets—Although resources should be devoted to make input markets function more efficiently and effectively, the needs of the resource-poor farmers who would remain *excluded* even from well-functioning AIMs should be addressed. For such people, the GOT should design market-friendly safety nets and empower the farmers to participate in the market process.

V. Institutional Arrangements

Holistic Approach—As various measures are implemented, proper sequencing and phasing should be observed. However, to realize synergy in implementation, the five pillars of market development should be implemented in a holistic manner through public-private partnerships.

Linkages—The action plan has linkages with several on-going or proposed programs such as PADEP, Agricultural Sector Development Program (ASDP), and other donor programs. Improved input supply will also support producer organizations proposed by USAID/Tanzania for various commodity groups. The ASDP Secretariat should take the lead in liaising with action plan implementation.

Commitment—The implementation of the action plan requires strong commitment by both GOT and donors.

Resource Requirements—The implementation of the action plan will require $11.3 million in operating costs, $3 million (in local currency) for ABDF and $15 million for Agricultural Input Import Fund (AIIF) in capital funds over a 5-year period.

VI. Conclusion

- The development of input markets is the beginning, not the end. Well-functioning AIMs will lay the foundation for a productive and prosperous agriculture in Tanzania.
- With strong government commitment and long-term donor support, well-functioning AIMS can be established.

An Action Plan for Developing Agricultural Input Markets in Tanzania

I. Introduction

Tanzania is a naturally rich but economically low-income country with a per capita income of $277 in contrast to sub-Saharan Africa's $450/person. The incidence of poverty and hunger is high. The PRSP (Poverty Reduction Strategy Paper) estimated that 48% of the Tanzanian population lived below the poverty line (earning less than $0.65/day) in 2000. In rural areas the incidence of poverty was more than 57%, and in some districts it exceeded 75%. Likewise, incidence of hunger and malnutrition was more than 40%, with an average daily calorie intake of less than 2,000 calories/person. Because most of the poor and malnourished people live in rural areas where agriculture is the main source of livelihood, accelerated growth in agricultural output is essential to reduce poverty and eliminate hunger and malnutrition.

The agricultural sector is a dominant sector of the Tanzanian economy. It accounts for 45% of the gross domestic product (GDP), more than 80% of rural employment, and 60% of export earnings. Food crops dominate crop production in Tanzania, accounting for more than 55% of agricultural production. The main food crops are cereals, especially maize, followed by rice, sorghum, and millet. Among cash crops, cotton, coffee, tobacco, tea, and cashews are important.

The Government of Tanzania (GOT) has implemented bold initiatives in liberalizing agricultural input and output markets. There are no price controls, subsidies, or state regulation of marketing activities. Nevertheless, food production is not keeping pace with population growth. Cereal production has shown little growth since the mid-1990s. From 1997 to 2002, the annual average cereal production was 4 million tons. Similarly, cereal yields have been stagnant at an average of 1.3 tons/ha in the 1990s and per capita cereal production has been decreasing (Figure 1).

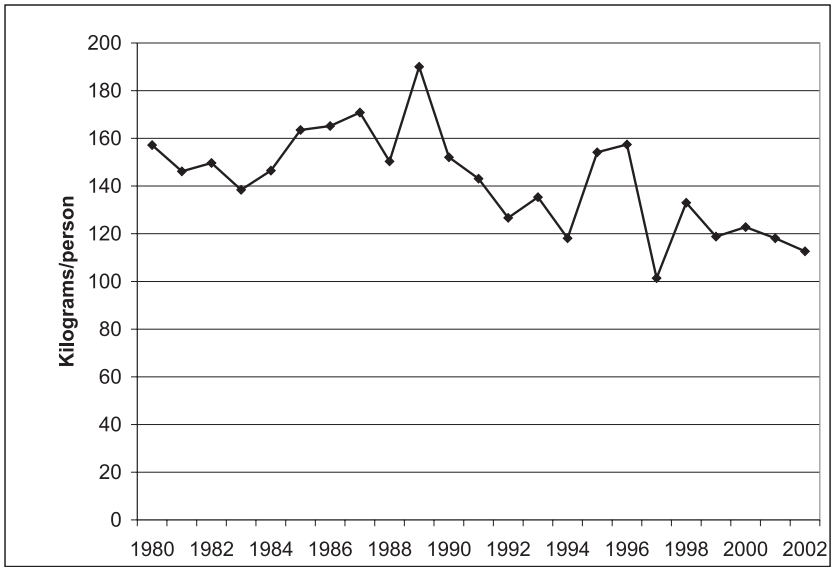


Figure 1. Cereal Production Per Capita, Tanzania, 1980–2002

One reason for the stagnation in agricultural production and productivity is that the adoption of seed-fertilizer technologies has followed a downward trend since the early 1990s and has remained at low levels. Fertilizer use decreased from more than 147,000 product tons (51,200 nutrient tons) in the early 1990s to approximately 60,000-63,000 product tons (20,000-22,000 nutrient tons) during the 1999-2001 period (Figure 2). The use of high-yielding variety (HYV) maize seed (open pollinated and hybrids) decreased from more than 6,000 tons in the mid-1980s to less than 1,000 tons in 1996/97. The decrease in fertilizer use was particularly significant in the food crop sector. In the early 1990s, food crops accounted for 70% of fertilizer use and tobacco for 10%. In 1998/99, the share of food crops dropped to 32% whereas that of tobacco increased to 50%. The decrease in fertilizer use on food crops is alarming because Tanzania has to feed more than 32 million people now and approximately 54 million in 2020. The U.S. Department of Agriculture (USDA) Food Security Assessment estimated a food gap of 1 million tons of cereal-equivalent in 2001. Moreover, the low fertilizer use (less than 10 kg of nutrients per hectare) has contributed to nutrient mining. It was estimated by IFDC that nutrient depletion exceeded more than 60 kg/ha during the mid-1990s (Map 1).

Several factors may have contributed to the low use of modern inputs, but high prices and poor accessibility are critical factors. Inadequate research and extension support for technology transfer have also contributed to this poor state of affairs. Like many African countries, Tanzania's policy reform was top-down and failed to create the necessary human and institutional capacity for market development. As a result, an *organizational vacuum* developed. Although old parastatals were closed, new efficient input supply enterprises did not quickly replace them. The GOT's ASDS (Agricultural Sector Development Strategy) paper noted in October 2001: "The private sector is still relatively

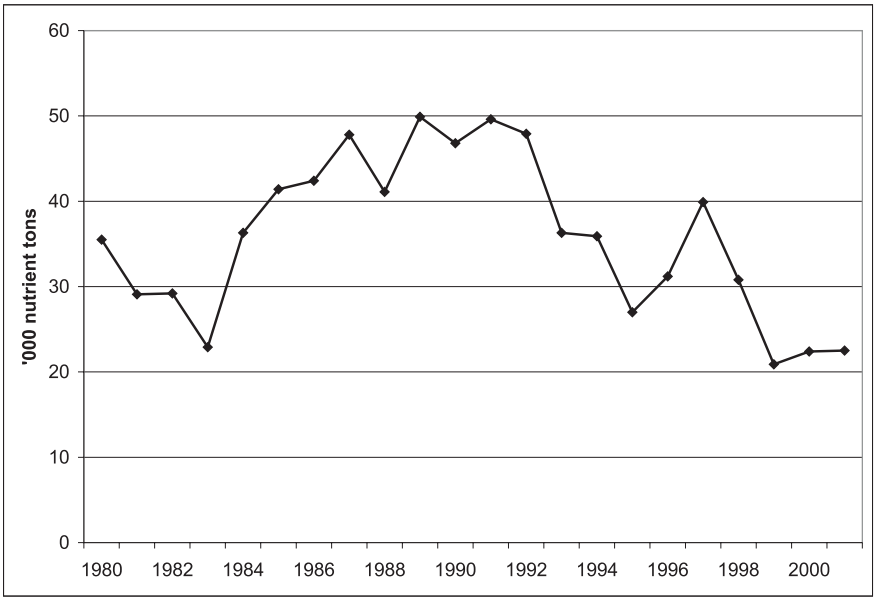
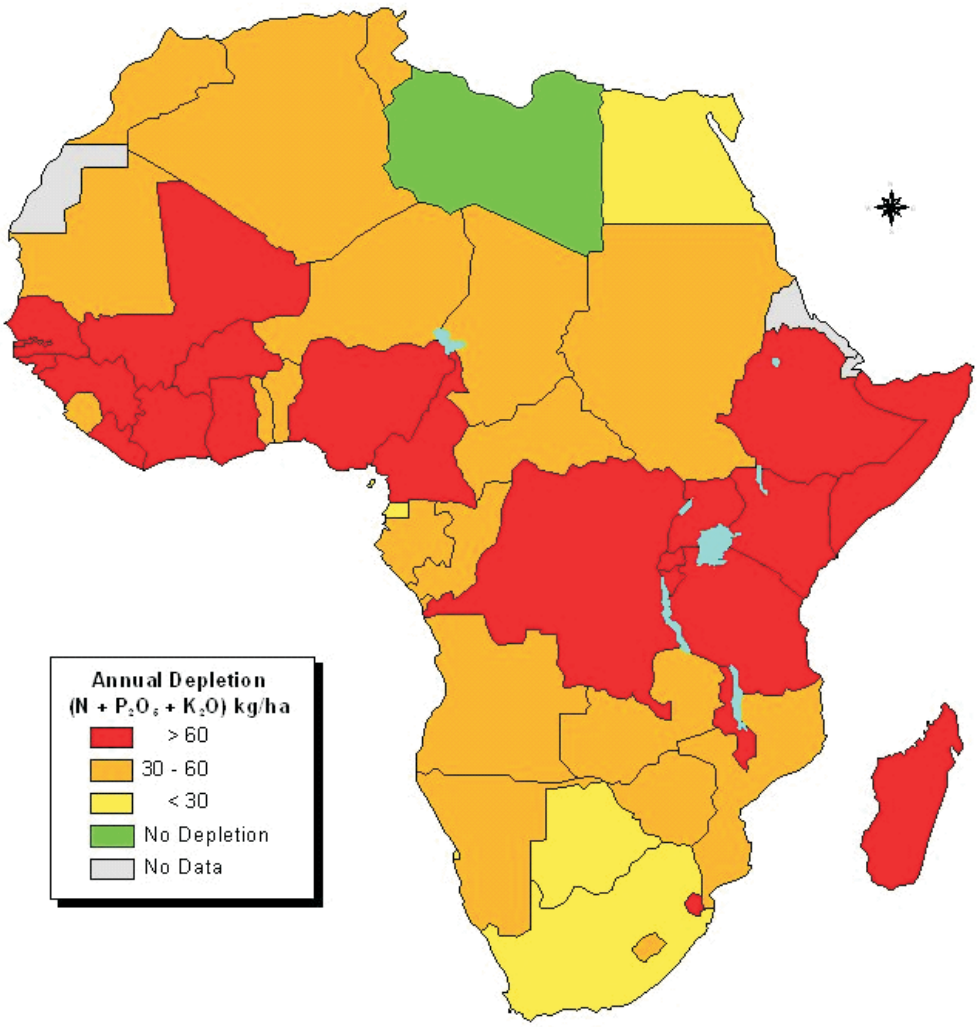


Figure 2. Total Fertilizer Use, Tanzania, 1980–2001



Source: Henao and Baanante (1999).

Map 1. Average Annual Rates of Nutrient (NPK) Depletion in Africa (Years 1993-95)

undeveloped and many of those currently involved in agribusiness lack entrepreneurial skills, information, and capital to expand their agribusiness." It further noted that "a common complaint is that, with the collapse of cooperative societies, it is difficult to obtain agricultural inputs in rural areas…"

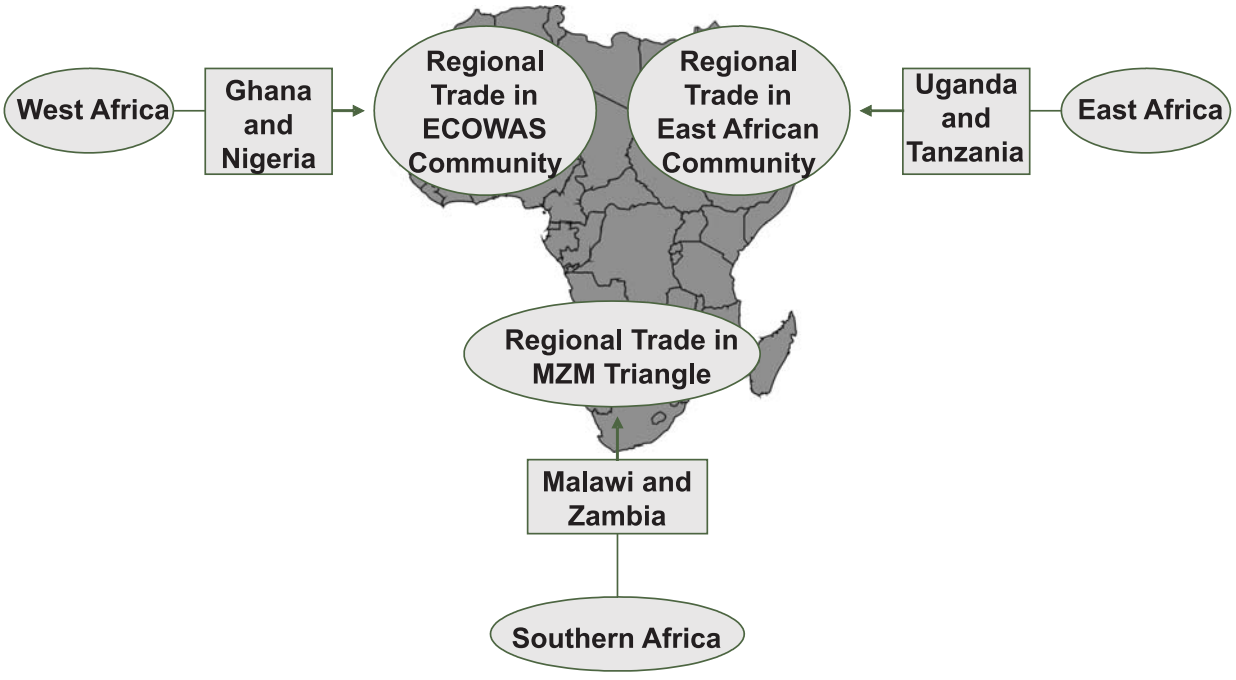
The GOT and its developmental partners have recognized the need to promote agricultural development to improve the "quality of life." USAID/Tanzania also plans to devote more resources toward increasing rural incomes by emphasizing agricultural productivity, agribusiness competitiveness, market friendly policies, producers' organizations, and expanded trade and market linkages. While accelerated growth in agricultural output is essential to reduce poverty and eliminate hunger and malnutrition, such growth cannot be achieved unless farmers have access to modern technologies embodied in improved seeds, mineral fertilizers, and other related practices. Certainly, farmers cannot access these inputs in an affordable way without well-functioning input markets in rural areas.

Background

This action plan is a part of the series of activities undertaken by IFDC for promoting well-functioning input markets in Africa. In 1998/99, with funding support from 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 the measures needed to strengthen the functioning of agricultural input markets (AIMs) in Africa. It was also necessary to lay foundations for integrating regional markets through cross-border trade in inputs so that the economies of scale could be realized in input procurement and production (Map 2). 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 has been finalized following the stakeholders' workshop in April 2004.

These action plans focused on the functioning and performance of AIMs—seed, fertilizer, and crop protection products (CPPs), constraints affecting the private sector participation in these markets, and the measures needed to make them more effective and efficient. Action plans recommend a holistic approach to market development. Suggested measures deal with policy environment, human capital development, access to finance and information, enforcement of regulatory systems, and technology transfer activities. Public-private partnerships are encouraged in implementing various measures. Of course, specific recommendations differ from country to country, but the Ministry of Agriculture in each country owns the action plan and uses it to generate project funding for market development.

USAID/Washington has provided the seed money for all action plans. Other donors who have contrib-



Map 2. Rationale for Country Selection

uted 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 included International Institute for Tropical Agriculture (IITA), West African Rice Development Association (WARDA), Development Alternatives, Incorporated (DAI), Masdar Technology Limited (MTL), SG 2000, and the national ministries of agriculture.

Agricultural Policy—Recent Developments and New Initiatives

To further the gains in economic growth made under the economic recovery programs of the 1980s, the GOT has adopted the Tanzania Development Vision 2025 (TDV 2025). The primary objective is to reduce poverty significantly by 2025 through ensuring basic food security, improving income levels, and expanding export earnings. The Poverty Reduction Strategy Paper (PRSP) 2000 provides the framework for the TDV. The PRSP identifies agricultural development as critical to poverty reduction due to its substantial contribution to GDP, the high incidence of rural poverty, and the fact that it is the main source of income for the majority of the rural population. The poverty reduction strategies will be implemented through the Rural Development Strategy (RDS), the ASDS, and other development programs. The RDS has the overall objective of reducing poverty through multisectoral interventions and local government reforms. The complementary ASDS is the blueprint guiding the government's efforts to address the problems in the agricultural sector and move toward agricultural transformation. It seeks to complement the ongoing economic reforms with a sector-specific action to enhance their impact on farm incomes and poverty reduction in rural areas. The Agricultural Sector Development Program (ASDP) includes many instruments for operationalizing ASDS.

Tanzania's agricultural transformation cannot occur without increased use of modern productivity-enhancing inputs (fertilizers, improved seed, and CPPs) and better management practices. This approach is embodied in the ASDS. However, since improved technologies are yet to be adopted by the majority of smallholder farmers in Tanzania, the ASDS will "focus on improving the dissemination of viable farm production technologies to smallholder farmers and livestock keepers as a matter of priority. Improving agricultural productivity and commercializing farm production among smallholder farmers is the linchpin of the ASDS." Accordingly, the priority areas for the ASDS with respect to agricultural inputs are:

- Strengthening the institutional framework for managing agricultural development, particularly defining public and private sector roles.
- Creating a favorable environment to increase private sector participation in agricultural development.
- Clarifying public and private roles in improving support services.
- Improving the marketing of inputs and outputs to enhance net farm returns in the short-run and commercialize agriculture in the long run.

The Participatory Agricultural Development and Empowerment Program (PADEP) is one of the instruments used by the ASDP for the implementation of the ASDS by supporting agricultural development and capacity building. It will be gradually implemented in 28 districts and targets smallholder households in 840 villages. The project has two main components: the Community Agricultural Development Subprojects (CADS) component and the Capacity Building and Institutional Strengthening (CBIS) component. The CADS component consists of Community Investment Subprojects (CIS) and Farmer Group Investment Subprojects (FGIS) whereby communities and farmers' groups will have the primary responsibility for implementing participatory investment activities supported by the project. The activities include identification and planning of subprojects, implementation of technical recommendations, local procurement of inputs, contracting of service providers, and monitoring and evaluation. Possible subprojects include agricultural investments and technologies and input-output marketing. To reduce the risks involved in adopting the new improved technologies needed to implement the subprojects, purchases of goods and services by communities and farmers' groups will be complemented by direct transfers of financial resources to them from the project on a matching-grant basis. For CIS, beneficiaries will contribute at least 20% of the total subproject costs and the project

will contribute the difference. For FGIS, at the beginning of each season participating farmers will be required to deposit at least 50% of the cost of consumable inputs (seeds, fertilizers, and CPPs) to be purchased. The project will contribute the remainder in cash per household. For innovations benefiting the whole group or the village, the project will contribute 80% of the cost of technological innovations other than agricultural inputs per village. The requirement of a prior deposit by farmers before they receive the matching grant from the project is aimed at encouraging farmers to save in order to purchase inputs for the next season. This will also build relationships with financial institutions and input dealers. For both the CIS and FGIS, the project will contribute 100% of the cost of technical assistance and training up to a predetermined level. The project contributions per household/village will also be up to a predetermined maximum level. The CBIS component will focus on capacity building at all levels—local, district, and national—on issues related to policy and regulatory frameworks, project preparation, management and implementation, and funding of additional analytical work to underpin ongoing reforms. Specifically, the project will support further development and updating of the agricultural sector monitoring and evaluation system and improvement of its MIS. The project will also support the training for the private sector development and the implementation of the Seed Act (1973) and the Plant Breeders Rights Act (2002), which provides the regulatory framework for the seed industry including the establishment of a Seed Executive Agency.

During the first year of its implementation (2003/04), PADEP selected eight districts, namely Arusha, Arumeru, Singida, Hai, Masasi, Nachingwea, Iringa, and Morogoro, and the process of farmers' group formation and local project selection started. In two districts, Hai and Morogoro, the matching grant of 50% for input purchases was implemented. In other districts, formation of groups is moving slowly, but training activities for district officers and other stakeholders have been initiated. Due to unexpected increases in fertilizer prices, farmers in both Hai and Morogoro districts have underestimated resources needed for input purchases.

Role of Agricultural Input Markets in Promoting Agricultural Development

The GOT recognizes that it can no longer rely on extensive agriculture as the main source of agricultural growth necessary to meet the goals of poverty reduction, food security, and increasing farm incomes. Instead, greater adoption of modern agricultural input technologies via efficient markets supported by appropriate government policies and facilitating institutions must be the cornerstone of the strategy to achieve these goals. Well-functioning input markets lead to the timely availability and the affordability of appropriate and quality inputs. In addition, they increase the farmers' choice of products, and eventually lead to improvements in farmers' knowledge and use of inputs as traders develop their clientele.

In the past, state-owned enterprises in Tanzania directly imported, distributed, and set prices for agricultural inputs. To the degree that private firms participated in input supply, their activities were controlled or the firms were limited to specific segments of the input market. The economic reform programs of the 1980s and 1990s have resulted in the liberalization of agricultural input markets. However, a number of constraints continue to hamper the performance of the private sector and as a result, high prices and non-availability of inputs in rural areas continue to be a concern.

Nature, Scope, and Objectives of the Action Plan

Guided by the need for improving the supply of inputs for smallholders in rural areas, the Ministry of Agriculture and Food Security (MAFS) invited IFDC and SG 2000 to conduct an assessment of input supply systems in the country and prepare an action plan for developing well-functioning input markets in Tanzania with a focus on the following themes:

- 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, and regulatory frameworks.
- 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.
- Prepare an action plan incorporating the suggested measures to strengthen the functioning of input markets.

The assessment team visited Tanzania during October 27–November 19, 2003, and interacted with over

200 stakeholders from all domains—policymakers, donors, non-governmental organizations (NGOs), private sector, farmers, bankers, and others. In addition to interacting with stakeholders in Dar es Salaam, the team traveled to several regions including Arusha, Kilimanjaro, Kigoma, Tabora, Morogoro, Iringa, and Mbeya. The team also participated in a 1-day workshop on Enhancement of Agricultural Development for Sustainable Food Security and Poverty Reduction in Tanzania organized by the MAFS on October 28, 2003. Interactions with policymakers at this workshop helped the team to focus on critical issues.

During the field visits, few stakeholders including importers complained about input demand, especially fertilizer demand. Many opined that adequate and timely supply of fertilizers is a constraint to meet existing effective demand of 120,000 to 180,000 tons. With the exception of tea and tobacco growers who use specialized NPK products, most farmers use standard products like urea, AS, CAN, DAP, and TSP. Nevertheless, during the last 10 years, the supply of these products (traded globally) never exceeded the demand at a given time in the season. In terms of marketing terminology, the fertilizer market was never saturated. Guided by this and other observations, the team paid special attention to the issues related to input supply in preparing this action plan. The team's initial impressions were discussed at a debriefing at MAFS and at a meeting at USAID/Tanzania on November 17, 2003. The draft action plan was prepared during December 2003-March 2004

On August 26, 2004, the MAFS organized a stakeholders' workshop to validate the draft action plan (Annex I). The workshop was attended by over 100 stakeholders from both public and private sectors, NGOs, and the donor community. After the opening session, stakeholders were grouped into three working groups (Seed, Fertilizer, and CPPs) to review the recommendations included in the action plan. With minor modifications, the workshop participants approved the action plan. Comments received at the workshop are reflected here.

The main goal of the action plan is to develop *a set of measures* that will make AIMs function effectively and efficiently so that farmers have easy access to inputs and pay lower prices. The emphasis is laid on the policy environment, human capital, access to finance and market information, and enforcement of regulatory systems. Issues related to technology transfer, safety nets, and output market development are also analyzed.

Outline of the Report

The next section provides an assessment of the functioning and performance of AIMs in Tanzania with a focus on constraints related to macropolicy, market development, and technology transfer that affect the performance of seed, fertilizer, and CPP markets. Section III deals with the potential of the private sector in supplying inputs efficiently and effectively. Measures needed to strengthen the functioning of AIMs are elaborated in Section IV and the institutional arrangements necessary to implement the action plan are covered in the last section.

II. An Assessment of Agricultural Input Markets[3]

Tanzania has made substantial progress in liberalizing and deregulating its agricultural input markets (AIMs). The role of crop marketing boards and other state-owned entities in the marketing and distribution of seed, fertilizers, and CPPs has been eliminated or curtailed. It was anticipated that these policy reforms would encourage the development of agricultural input markets and increase agricultural intensification particularly among smallholder farmers growing food crops. Although there has been a marked increase in the number of private firms involved in the marketing of agricultural inputs, these emerging input markets remain underdeveloped and fragmented and access to inputs is a challenge for smallholder farmers.

Constraints Affecting the Performance of Agricultural Input Markets

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

1. Macropolicy.
2. Market Development.
3. Technical.

[3]Annexes II, III, and IV include the assessment of the fertilizer, seed, and CPP markets, respectively.

Macropolicy Constraints

Macropolicy constraints affecting the performance of AIMs in Tanzania are the depreciating exchange rate, high interest rate, and poor conditions of rural infrastructures. Tanzania's exchange rate changed from Tsh 195/US $ in 1990 to over Tsh 1,050/US $ in 2003. Because Tanzania depends on imported fertilizers and CPPs, the depreciating exchange rate directly affects the local prices of fertilizers and CPPs. As a result, fertilizer (urea) prices increased from Tsh 595/bag in 1990 to over Tsh 14,500/bag in 2003. Depreciating exchange rate creates risk and uncertainty for input import business development and adversely affects the use of inputs on non-traded crops. It also creates inflationary pressures and high interest rates. During the last few years, Tanzania has managed its monetary and fiscal accounts better and decreased inflation to 4%/year in 2003. However, interest rates are still high in the range of 12% to 18%, especially for rural financing. Such high interest rates are detrimental to input business development. Generally, main highways and inter-city roads are well maintained in Tanzania, although the main roads linking Tabora to Kigoma and Kigoma to the Burundi border are in poor condition. Feeder roads linking main cities to rural villages are not in good condition and add to transportation costs and make inputs costly. Improvement in rural road networks is essential to promote social and agricultural development and reduce transaction costs. Only through well-maintained roads could the isolation of rural areas be eliminated. In this context, the work done by the USAID-funded Rural Road Project (1998-2003) on building gravel roads in the Big Four regions (Iringa, Mbeya, Rukwa, and Ruvuma) is noteworthy. Under this program, 1,175 km have been built in 18 districts at an average cost of Tsh 8.4 million. These road networks seem to have helped in linking rural communities to towns and market centers and have generated significant benefits for the community in terms of increased production and incomes. However, in other parts of the country, especially western Tanzania, rural roads are in very poor condition.

Market Development Constraints

Well-functioning markets need an enabling policy environment, adequate human capital (embodied in marketing, financial, and technical skills), easy access to finance and market information, and effective enforcement of regulatory systems. In contrast, policy environment is uncertain, human capital is inadequate, access to finance and market information is limited, and the enforcement of regulations is ineffective. As a result, input markets are constrained and underdeveloped.

Uncertain Policy Environment—Through liberalization and privatization efforts, Tanzania has removed price and marketing controls and the private sector has made significant inroads. Private sector dealers are involved in the marketing of all CPPs and most of the fertilizers and improved seeds. However, there is a lingering fear in some quarters of the government and the parliament *(bunge*) that the private sector is not capable of supplying inputs in a cost effective manner. Following the 1998 bad weather resulting from El Niño, some members of the parliament demanded that the old system of fertilizer subsidies and public sector distribution be restored. The GOT wisely avoided the temptation of derailing from the course of market reforms. Again in 2002/03, when Tanzania was hit by poor rainfall and low crop production, some members of the *bunge* requested that the government take charge of distributing fertilizers at a subsidized price. The Tanzania Fertilizer Company (TFC) was requested to shoulder this responsibility. Realizing that adequate resources were not available for distributing fertilizers all over the country, the GOT announced that subsidized fertilizers will be available to the Big Four regions (Iringa, Mbeya, Rukwa, and Ruvuma) of the Southern Highlands (the breadbasket of Tanzania). Such an announcement in October/November created uncertainty in the marketplace at both the farmer and the dealer levels. Realizing that the government would supply fertilizers at a subsidy, farmers justifiably refused to purchase fertilizers at the market price and waited for subsidized inputs to be delivered. As farmers postponed their purchases, dealers were left with excess inventory and abstained from purchasing additional stocks. This sent a signal to the wholesalers and importers that the market demand for fertilizer was curtailed. Such a message impacted imports and the future supply of fertilizers in the country. In the end, an arrangement was made to pay transportation charges to contracted distributors for supplying fertilizers in these provinces. However, this arrangement came too late to minimize the impact of uncertainty on the market planning and the country faced urea shortages in February/March 2004 (the end of the application season in the majority of the regions in the country). This experience clearly demonstrates that there is a **mindset problem** in the

country. It is critical that Tanzania develops competitive and sustainable input supply systems enabling farmers to get quality inputs on time at cost effective prices. To make this happen, the policymakers should refrain from sending wrong signals, have confidence in the potential of the private sector, and devote resources to strengthen its capacity to perform efficiently in a competitive environment. The measures needed to strengthen private sector capacity are elaborated in Section IV of this report. Efforts are also needed to raise the awareness of policymakers and administrators about the functioning of markets and the roles they can play in making it function better. It is essential that policymakers be informed and trained about various stages of market development and functioning so that they have a better understanding of the market process and help in designing and implementing proper policies and programs for market development.

Direct involvement of the government in the management **of KR II grant fertilizers** (14,000 tons of TSP, AS, Urea, CAN, and DAP) and the production of foundation seed has had an unintended impact on the market. A small proportion of Tanzania's fertilizer requirement is supplied through KR II grants. Since KR II fertilizers are subsidized, they should be integrated with commercial imports in such a way that they do not disrupt the market. In the past, KR II fertilizers were auctioned through a public tendering system. However, last year this system somehow broke down for two reasons: KR II fertilizers arrived late, near the end of the cropping season, and could not be auctioned until May 2003. These developments created uncertainty in the marketplace and delayed the planning of imports by dealers. These delays created a shortage of fertilizers and contributed to increased prices, which created a panic in the government circles and fueled the mindset problem mentioned earlier.

Likewise, the production of foundation seed at the state-owned Foundation Seed Farms (FSFs) is problematic for two reasons: First, due to the lack of funding, the FSFs have not been able to supply quality seed on time. Second, its presence in the seed production discourages the production of foundation seed by the private sector. The involvement of NGOs in seed production and input distribution also creates distortions in the marketplace by making the playing field unleveled. Moreover, to keep certified seed prices affordable for farmers, the MAFS has been controlling the prices of breeder seed through ministerial directives. Thus, the private sector remains constrained to realize its full potential due to these policy-related interventions.

Inadequate Human Capital—A developed input marketing system is served by an extensive dealer network into the rural interior that makes inputs available to farmers at affordable prices and in a timely manner. There are over 500 input dealers in Tanzania selling all types of agricultural inputs. Although this is commendable, it is still a small number for a country the size of Tanzania. For example, in Kenya there are over 5,000 dealers. Moreover, these dealers are concentrated in the district and regional capitals along the main tarmac thoroughfares. Therefore, there is a scarcity of dealers in the rural interior near smallholder farms. As a result, farmers have to travel 30-50 km to purchase fertilizer, seeds, and CPPs. This raises the cost of inputs to farmers, either limiting the quantities they can afford to purchase or rendering them unable to purchase any inputs at all.

There have been limited efforts by the public sector or private organizations in Tanzania to provide input dealers with the necessary business skills and product knowledge to conduct the input business in a profitable and responsible manner. Importers have no incentive to train input dealers because once they do, the knowledge imparted becomes a "public good." There is no guarantee that the input dealer will work for the importer and use the knowledge acquired for the importer's benefit. Government institutions such as TOSCA and TPRI have made some efforts to provide dealers with technical knowledge, but they are constrained by inadequate funds and personnel. The MAFS has also started a modest program to train stockists. In 2003/04, it trained 210 stockists. PADEP has a provision for building private sector capacity for market development.

As a result of limited dealer networks, there is a **dual** agricultural input marketing system serving smallholder farmers in Tanzania. One consists of a private sector led input marketing system servicing smallholders growing food crops. Another is based on a contract-farming model wherein certain institutions procure inputs and provide them on credit directly to

smallholder farmers growing coffee, tobacco, cotton, and cashew nuts. Some of these companies purchase inputs in wholesale from private traders and others import directly. Since these same institutions also purchase the crops at harvest time, loan recovery is guaranteed by deducting the money owed from sale proceeds. Cash crops account for 91% of CPPs and 40% of the fertilizers used in the country. The Cotton Lint and Seed Board imports CPPs. The Coffee Board has established a coffee input voucher scheme to finance the provision of CPPs and other inputs for coffee farmers and separate input funds have been established in the cashew-growing regions to do the same for cashew farmers. In the case of coffee, farmers use their vouchers to purchase inputs from authorized dealers, and in the case of cashew nuts, a private company (Abbas Exports) imports CPPs for the cashew industry and distributes them to the input funds. The Cotton Lint and Seed Board imports CPPs and sprayers on behalf of the Cotton Development Fund for direct distribution to farmers. The two private tobacco firms—Tanzania Tobacco Leaf Company and Dimon—import or purchase all the necessary agricultural inputs and distribute them to their farmers using integrated crop loan schemes to guarantee loan recovery. These companies also use private agents to purchase tobacco from farmers. Moreover, the Tanzania Farmers Association procures agricultural inputs locally and distributes them to its members (smallholder farmers growing food and cash crops) via its field offices; CPPs comprised 90% of its purchases in 2002/03. In the past, Tanganyika Farmers Association (TFA) imported fertilizers for its members.

Ideally, if the demand for inputs by both food and non-food crops could be satisfied directly by input dealers, investment in input business development will flourish. Importers and dealers would have the incentive to extend their marketing network into the rural interior to service the smallholders growing cash crops since they would have an assured market with higher effective demand. Furthermore, since smallholders all over Tanzania grow maize and other food crops, including those in traditional cash crop growing areas, smallholders growing food crops would benefit from the improved accessibility and lower prices.

Dar es Salaam is the main port for importing fertilizers; most of the storage capacity is concentrated there. Consequently, dealers from Kigoma, Mbeya, Arusha, Tabora, and other far-off districts come to Dar to buy 5-10 tons of products. Although there are storage facilities in the districts, such as TFC-owned warehouse in Tabora, these facilities have not been used to spread the availability of products nearer to the retailers and farmers.

Limited Access to Finance—AIMs are capital intensive and access to finance is an important determinant of the importers' and dealers' ability to conduct their business activities. The banking sector in Tanzania is relatively well developed, but has limited outreach in rural areas; it is not constrained by a lack of liquidity, and the real interest rate is not very prohibitive for input dealers. Nevertheless, banks have a low percentage of loans to the agricultural input business because stringent collateral requirements and exchange rate risks combine to discourage borrowing for investment in the input business. The strict collateral requirements are due to poor loan recovery (due to the high rate of default in the country) and the lack of mechanisms for contract enforcement in rural areas. Importers and dealers find the collateral and other lending terms unattractive given the seasonality of agriculture, the relatively low returns from the inputs business and the high level of risk due to the vagaries of the weather. Regarding contract enforcement, there is a Commercial Court of Tanzania to adjudicate business disputes, but it is located in Dar es Salaam and does not have branches in rural areas. Second, it only handles disputes with a minimum value of Tsh 25 million; smaller claims have to go to the magistrate's court, which is not as efficient in ruling and enforcement.

Although microfinance facilities are widely available in the regions, the size of the loan ($50 to $500) given by these institutions is too small to help input business development. As a result, input dealers have limited access to finance for investing in the input business. The majority use their own cash from savings or other business ventures to finance part or all of their input purchases. This limits the size of their orders (uneconomical sizes) and increases transportation costs resulting from frequent trips to the town. It also reduces the funds available to invest in market development activities such as extending credit to farmers and providing services such as technical support and delivery.

After liberalization and subsidy removal, the GOT created an **Input Trust Fund** to help the private dealers in acquiring inputs on credit to develop input business. The experience of this trust fund was discouraging during the first three years (1997-99) because of poor loan recovery and misuse of funds resulting from poor lending procedures. More recently, the management of the trust fund has been given to one commercial bank, Exim Bank. The Kilimanjaro Cooperative Bank, Mufundi Community Bank, and Kagera Cooperative Bank are also involved in advancing loans under the input trust fund. Although this system may lead to a better loan recovery, it suffers from several drawbacks. First, input dealers applying for a loan have to travel to Dar to submit an application and supporting information. Long distances and transportation costs become an obstacle for dealers to access this fund. Second, commercial banks require 150% to 200% of the loan amount as collateral of tangible property. Small dealers are reluctant to mortgage their only property—a house—to borrow funds. As a result, the input trust fund has not been fully utilized. Third, it adds considerable transaction costs for the banks to do proper assessment of the loan requirement and the needed collateral. The inclusion of agricultural machinery this year has created additional complications. Even the available funds are too inadequate to have a significant impact on input supply. The commercialization of the politicized trust fund is a desirable move, but it fails to "reach out" to the emerging entrepreneurs in rural areas, in spite of serious efforts by Exim and other banks. An innovative approach is needed to improve the financial constraints faced by the input dealers. Such an approach is proposed in Section IV.

Lack of Market Information—Market information is important for market development because it creates market transparency. This enables planning and reduces transaction costs, which facilitates long-distance trade. Although the MAFS' inputs division has information on inputs, the data on prices, availability, and consumption in various market segments are limited and, due to limited resources, the dissemination is weak. The Seed Unit of the MAFS maintains data on both actual and potential demand, but these data require economic screening to estimate effective demand. Moreover, there is no comprehensive data set on CPP use nationally, by type of product, crop, district, or by type of farmers.

After liberalization, no central body has been responsible for collecting and disseminating data and information about the input use and supply. However, systematic import data are available from Cotecna that collects these data for the Tanzania Revenue Authority (TRA). Because this data set includes only the product entering the country via formal channels, it is not recorded in a format that easily lends itself to market analysis. Furthermore, Cotecna cannot account for inputs that enter Tanzania through cross-border trade from Kenya and other neighboring countries because it only operates at the ports. Another reason for the absence of a comprehensive data set is the poor communication among various public institutions responsible for regulating and supporting the agricultural sector and lack of clarity regarding responsibilities. There is no requirement that district officers provide data to the MAFS, that the various public institutions share their data, or that importers and dealers provide data to the MAFS. For example, TPRI collects statistics of imported pesticides from importers and has a list of companies that are registered to import and distribute CPPs, but it does not make it available to the MAFS or for general public consumption.

The lack of an effective market information system in Tanzania poses a hindrance to the development of well-functioning input markets. Lack of data makes it difficult for the MAFS to plan ahead to address shortfalls or carryover stocks in the next season; for the private sector to keep abreast of market requirements and shortages in different parts of the country and plan their marketing strategy accordingly to meet farmers' needs and maximize their returns; and for market participants to be aware of the current market situation beyond his or her immediate geographic area.

Weak Regulatory Systems—In a private sector-led input marketing system, one of the critical roles of government is to protect the interests of consumers and the general public by formulating and enforcing a legal and regulatory framework regarding quality, standards and measures, safety in use and disposal of inputs, and business ethics. In Tanzania, no regulatory framework exists for fertilizers. However, at the import level, several institutions including Cotecna and SGS are involved in pre-shipment of products, and the Tanzania Bureau of Standards (TBS) formulates national standards for quality and measurement and

enforces quality standards at the import level. However, little quality control work is done beyond the import level. Fertilizer sales are governed by the Fertilizers and Animal Food Stuffs Act, 1962, but this law has not been operational. There is a need to prepare a new law governing fertilizer activities.

Regulatory laws and statutes are available for seed and CPPs, but their enforcement is weak due to lack of resources (funds and personnel) and poor delegation of responsibilities and coordination among the various government institutions governing the seed and CPP markets. Although there is no spot-checking of fertilizer products sold in the country, few complaints were received by the team about adulteration or short weights. Many retailers were found selling fertilizers from the open bags in small quantities of 1, 2, or 5 kg. Because fertilizers are hygroscopic, such practice can lead to caking and reduced utility of fertilizers. Although there is no quality problem with straight products, there is a danger of poor quality with NPK mixtures or blended products. Proper checking and regulation is needed to ensure truth-in-labeling and quality control. A comprehensive regulatory system should be developed for fertilizers.

In both the seed and CPP markets, there are elaborate legal and regulatory frameworks, but these are poorly enforced due to lack of finances, understaffing, and low work morale, which renders the responsible institutions unable to efficiently supervise their respective industries. In the CPP market, there is a lack of clarity among stakeholders regarding the inspection functions performed by Cotecna and TPRI, and inadequate facilities and equipment prolong the registration process and delay the release of new products on the market. Both the seed and CPP markets have poor monitoring systems for quality control at the point-of-sale. In the seed market, there is too much emphasis on varietal release and registration, none on quality control. Similarly, enforcement in the CPP market focuses on registration and training with very little attention paid to quality control. The result is a proliferation of fake and substandard seeds and CPPs. A related issue that needs to be addressed in the CPP market is the ineffectiveness of actellic super dust, an insecticide used by smallholder maize farmers to reduce post-harvest losses of grain. The reasons are unclear but include fake and/or substandard products as well as incorrect application, mishandling by traders, which reduces the quality of the products, and the buildup of chemical resistance by pests.

This poor enforcement of the regulatory framework delays the introduction of new seed varieties and CPPs into the market and denies farmers greater choice at lower prices, yet leaves room open for unscrupulous traders to exploit farmers. Moreover, it discourages honest traders from investing in input business development because they can be easily outbid and undersold by unscrupulous dealers selling substandard products at cheap prices. Tanzania needs to improve its legal and regulatory framework to make it more market-friendly. The country should also pay attention to outdated CPPs. One study estimated 1,200 tons of outdated pesticides. In some areas, dealers sell the products that are banned in the developed countries. In this context, the FAO has taken a lead in making arrangements for the disposal of outdated and dangerous CPPs in approved containers, but more work is needed to prevent the entry of banned products and the sale of outdated CPPs. Efforts to clean up the outdated and dangerous CPPs will be undertaken under the African Stockpile Program (ASP).

Technical Constraints

Weak enforcement of regulations is exacerbated by poor farmer knowledge regarding the correct use of agricultural inputs. Smallholder farmers growing food crops in Tanzania mostly use topdressing fertilizer; very few use basal fertilizers due to knowledge and economic constraints. Some farmers use a mixture of DAP and CAN for topdressing, but such a practice leads to a waste of resources because topdressed DAP provides little benefit. There is a need to update the fertilizer recommendations and make them more appropriate to the different agroecological zones and input and output market realities faced by farmers. Farmers are advised to use open-pollinated varieties (OPVs), instead of hybrids, because these are regarded as cheaper and recyclable. However, there are new varieties of hybrids that can outperform OPVs, but due to lack of funding and other constraints, extension staff is not fully cognizant of these developments. This only perpetuates subsistence farming and prevents the development of commercial farming using high-yielding seed varieties.

With respect to CPPs, farmers mix and apply CPPs without using the correct mixing ratios and protective gear (clothing, masks), are unaware of handling and storage guidelines, and are unaware of the hazards of using CPP containers for carrying drinking water or food. Second, farmers use new products in the same way as they used old products, which can be unproductive as well as dangerous. This lack of knowledge not only prevents farmers from realizing the full benefit of these expensive products, it also poses a serious health risk.

The continuous cultivation without proper and adequate use of fertilizers or the use of N for topdressing without basal application of NPK fertilizers is leading to soil infertility and degradation problems. As a result, in some areas P deficiency is so acute that a small dose of phosphate fertilizers or Minjingu phosphate rock can lead to increased crop yields. This lack of P has been confused with soil acidity and lime application. Since 1993, no new soil analysis and testing have been done to develop better fertilizer recommendations for food crops.[4] New soil tests are needed to establish proper recommendations for fertilizers and lime, if needed. In this context, PADEP could take a lead in funding these tests through its planned installation of soil-testing laboratories.

III. Potential of the Private Sector

The mindset problem mentioned earlier suggests that there is an on-going debate in the country about the efficacy and capacity of the private sector to supply inputs in a cost-effective manner. The proposed TFC-based intervention also indicates that the country is still struggling to reach a consensus about this matter. 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 is an emerging private sector in the country. Several companies are involved in marketing fertilizer and CPP imports and also seed production and marketing. These companies include both national and international enterprises. Given the opportunity, support, and enabling environment, these entities can venture into supplying inputs in a cost-effective manner.

In the fertilizer sector, since liberalization, 19 private sector companies have been involved on and off in importing fertilizers from the international markets. A few emerging companies in the provinces have recently entered the market based on imports from the international markets and also through multinationals in Kenya (Nairobi and Mombassa). There are over 20 registered seed companies and at least 15 large and small importers of CPPs. CPP importers have their own dealers. At the district level, there are several retailers, though not fully skilled and equipped, who engage in input marketing. Given the potential of the market, the private sector has the capability to increase its activities. This potential can be realized if there are no disruptions or interventions in the market by the donors or the government with subsidized or below full cost recovery prices of fertilizers or even threats of such action being taken. If TFC is to continue as a parastatal, it must compete on a commercial basis with the private sector without any overt or covert financial assistance from the government. This includes the write-off of losses and provision of funds without collateral at low interest rates for conducting commercial activities; there must be a level playing field for the private and public sector companies.

It should, however, be stressed that "potential" refers to "*latent energy,*" which could be unleashed if the policy environment is conducive and supporting marketing institutions and infrastructures are in place. Nevertheless, because of the non-conducive policy environment and other constraints identified in Section II, this potential has not been realized and may not be realized in the short-to-medium term unless a **proactive approach** is adopted to modify distorted policies, create greater incentive for private sector participation, and make public sector investments in capacity building and infrastructure development. Policy, capacity building, and other related measures and programs needed to create well-functioning input markets are elaborated in Section IV.

[4]Tobacco companies have conducted their own soil tests and based on these tests, they have developed new NPK fertilizer 20-18-24 for tobacco crops.

IV. An Action Plan for Developing Agricultural Input Markets

Rationale for the Action Plan[5]

The proposed action plan for strengthening the liberalized input markets and for encouraging greater participation of the private sector is based on both the historical perspective and the SSCR (shifting the supply curve to the right) approach.

The Historical Perspective—The agricultural lending experience of the World Bank and other donors in Africa during the 1960s indicated that there was no active private sector to assume responsibility for marketing and investment in the agricultural sector. This experience induced donors to create and support activities of state-owned enterprises (SOEs) in many developing countries. Additionally, when SOEs were created, they were given monopolistic power over marketing and investment in the agricultural sector, and the private sector was barred from marketing agricultural products, especially inputs. However, by the early 1980s it became clear that many SOEs were not operating efficiently and had become a burden on the national budget. Unsustainable fiscal imbalances and inefficient use of resources by SOEs forced several developing country governments to move towards privatization of the SOEs. By the early to mid 1990s, many SOEs in the agricultural sector in Africa withdrew from marketing and investment activities or were no longer in a monopolistic position. The private sector was allowed to participate in the marketing of inputs and outputs. However, due to structural constraints, the response from the private sector was slow. Macroeconomic instability leading to devaluation and high interest rate, lack of marketing skills and finance, and inadequate regulatory systems and market transparency continued to limit the active involvement of the private sector in the input business.

This slow response from the private sector may wrongly convince some policymakers, donors, and others to move back to the public sector monopoly in input distribution, as illustrated by the mindset problem explained earlier. Such a move will be premature because it will divert the attention away from removing structural constraints to the private sector participation. Macroeconomic stability, access to finance, business skills, market information, and regulatory frameworks are still not in place. Many of these constraints have prevented the development of well functioning input markets in sub-Saharan Africa in general and in Tanzania in particular. *Deregulation and liberalization are necessary, but not sufficient to encourage the private sector participation in agricultural markets.* Years of discrimination and neglect have left the private sector underdeveloped and the input markets fragmented. Rather than returning to the old SOE system, African countries and donors should invest resources in building the capacity of the private sector and supporting infrastructure. As explained earlier, the private sector has considerable latent potential to perform marketing activities in an efficient manner; but to realize that potential, structural, and capacity constraints restricting its performance should be removed.

The SSCR Approach—Figure 3 illustrates the typical supply and demand curves used by economists in explaining the behavior of prices in a free (competitive) market situation. On the horizontal axis, quantity of input, e.g., fertilizer, is measured and on the vertical axis the price of the same input. The demand curve D slopes downward from left to right indicating that the

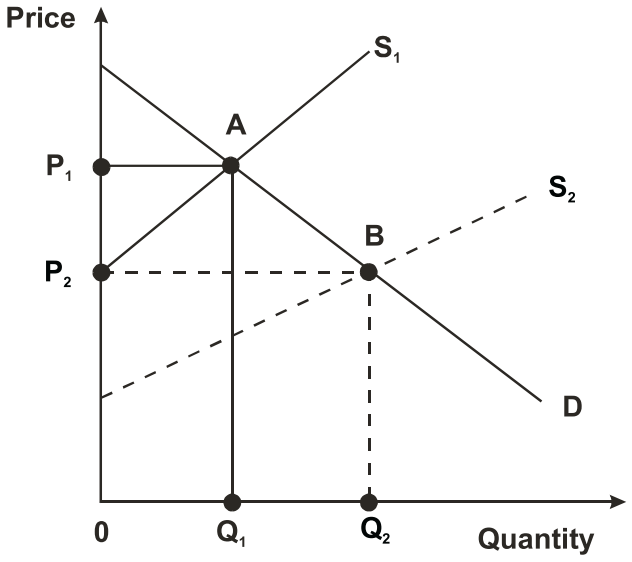


Figure 3. Reducing Fertilizer Price by Shifting the Supply Curve to the Right (SSCR)

[5]This section is adapted from IFDC, DAI, and MTL, An Action Plan for Developing Sustainable Agricultural Input Supply Systems in Malawi, IFDC, 2002.

quantity of fertilizer demanded by farmer increases as the price of the fertilizer decreases and vice-versa. The supply curve S1 slopes upward from left to right indicating that as the price increases, the quantity of fertilizer supplied increases. At price OP1, quantity demanded equals quantity supplied (OQ1) and therefore, OP1 is referred to as an equilibrium price and point A as an equilibrium point. The price OP1 is very high (say, $300/ton of urea) and therefore the quantity traded is low (e.g., 50,000 tons of urea). Since the resource-poor farmers in Tanzania and other developing countries cannot afford to purchase fertilizers at such a high price, one possible solution is to provide a subsidy of, say, $100/ton and reduce the price to $200/ton of urea. Now at this price, the demand outstrips the supply and therefore some mechanism for rationing is required to allocate this limited quantity among all farmers. Such a solution was tried by many African countries, but could not be sustained. Also, it introduced distortions in the market and led to an inefficient use of resources.

The position of the supply curve S1 on the vertical axis indicates that the minimum price at which the suppliers are willing to offer any quantity is very high. This is so because the size of the market is small and suppliers incur high costs in procuring and shipping small quantities, thereby not benefiting from the economies of scale in procurement and transportation. Also, the suppliers are not procuring their product from the cheapest source in the global market due to various constraints faced in accessing information and finance. Because of these constraints, supply price is generally high. Rather than following the subsidy route, the price of fertilizers could be reduced by shifting the supply curve to the right—from S1 to S2. Such a shift in the supply curve is possible if the economies of scale in procurement and shipping could be realized and the fertilizers could be procured from cheaper sources through better access to information and finance. By shifting the supply curve to the right (point B), the price can be reduced and the quantity of fertilizer used by farmers can be increased, thereby promoting food security at both household and national levels. Such a move also reduces the need for subsidies and ensures higher return on the capital invested in business (because under S2 supply situation, fixed cost per unit sold is lower). Thus, by shifting the supply curve to the right, benefits could be created for all stakeholders—farmers, traders, and the country at large.

Can the supply curve for agricultural inputs in general and fertilizers in particular be shifted to the right in Tanzania? The analysis of various constraints in this report suggests that these constraints have kept the supply curve at S1 position in the country. The removal of these constraints can help in shifting the supply curve to the right. Therefore, the proposed action plan embodies the measures needed to shift the supply curve to the right, thereby realizing the latent potential of the private sector in supplying various inputs efficiently in a sustainable manner. The activities proposed in the areas of policy reform, human capital development, improved financial services, market information systems, and regulatory frameworks are all geared to shifting the supply curve to the right thereby helping the private sector to realize its potential.

The primary focus of the action plan is on shifting the supply curve, which will help the farmers by reducing prices and making inputs easily accessible. Technology transfer efforts and other measures are also expected to support the farmers in realizing more income and higher yields from efficient use of inputs.

It is recommended that the existing free market system should be strengthened to supply inputs in rural areas because it is efficient and sustainable and, more importantly, does not strain the fiscal resources of the country. Various policies and programs needed to strengthen the functioning of AIMs in Tanzania are summarized in Table 1 and elaborated below. Macropolicy factors are identified to create an overall conducive macropolicy environment for market development. The market development measures are broadly divided into two groups:

1. The Five Pillars of Market Development.
2. Other Supporting Measures.

The Five Pillars of Market Development

1. Creation of an Enabling Policy Environment

Although the GOT has liberalized input markets and allowed private sector participation in input supply, occasional interventions in input supply continue to create obstacles to the development of well-functioning input markets. The GOT should refrain from interfering in the marketplace and work with the private sector to build the market. Even in the case of

Table 1. Action Plan Matrix: Policy and Market Development Issues

Issues/Constraints	Actions Recommended	Stakeholder Responsibility
I. Macropolicy Issues		
1. Devaluation of domestic currency has a negative impact on both input use and supply	• Ensure macroeconomic stability by appropriate management of monetary, fiscal, and exchange rate policies	The Bank of Tanzania, Ministry of Finance, and donors
2. High interest rates and stringent collateral requirements discourage investment in agri-input business development	• Ensure low interest rates by controlling inflation and money supply • Introduce innovative mechanisms, such as warehouse collateral and risk management funds, to reduce collateral requirements	The Bank of Tanzania, Ministry of Finance, commercial banks, and donors
3. Poor quality of rural roads adds to transportation costs and discourages traders from penetrating rural areas	• Long-term development programs to construct all-weather rural roads should be implemented.	Ministry of Communication and Transport, Ministry of Works, Ministry of Finance, and donors
II. Market Development Issues		
A. The Five Pillars of Market Development		
1. Non-conducive policy environment resulting from government and donor interventions and the mindset problem-distrust of private sector by policymakers	• Government should refrain from sending wrong signals that discourage private sector involvement in market development. • Implement all well-intentioned donor interventions in a market-friendly manner • Organize policy workshops and policy dialogue forum to improve interactions among policymakers and private sector participants	MAFS, MCM, donors, and project entity
2. Inadequate human capital for competitive markets	• Conduct large-scale short-term and long-term training programs for importers, bankers, wholesalers, and retailers • Create a cadre of dealers or 'village entrepreneurs' in rural areas near the farmers' door steps • Facilitate the development of Tanzania Agri-input Dealers Association (TADA) • Arrange study tours for policymakers and private sector participants to developed and developing countries for exposure to new ideas • Develop business linkages among all actors in the supply chain	MAFS, MCM, donors, specialized institutions, and project entity

Table 1. Action Plan Matrix: Policy and Market Development Issues (Continued)

Issues/Constraints	Actions Recommended	Stakeholder Responsibility
3. Limited access to finance for imports and business development	• Work with bankers and viable or potentially viable input dealers to develop rapport among them • Create Agricultural Input Import Fund (AIIF) - to share risks among importers (30%), commercial banks (40%), and society-at-large (government) (30%) • Establish Agri-input Business Development Fund (ABDF) to share risks among input dealer (30%), commercial bank (40%), and society-at-large (30%) • Encourage banks to use warehouse collaterals	The Bank of Tanzania, Ministry of Finance, commercial banks, donors and project entity
4. Lack of market information about global, regional, and national markets	• Strengthen the existing market information system with the Inputs Unit of MAFS and make sustainable arrangements for collection and dissemination of information on a wider scale	MAFS, MCM, TADA, and project entity
5. Ineffective enforcement of regulatory frameworks	• Strengthen capacity with TPRI and other governmental institutions to enforce existing laws about seed and CPPs • Draft and enact fertilizer law and build necessary capacity for its implementation	MAFS, MCM, TPRI, TBS, and project entity
B. Supporting Conditions		
1. Lack of integration of multi-country markets	• Develop business linkages among traders of neighboring countries to realize economies of scale in procurement—Mbeya on TAZARA railway line could become a supply center for farmers and dealers in Mbeya, Kasama (Zambia) and Karonga (Malawi)	MAFS, MCM, and project entity
2. Resource-poor farmers lack purchasing power to participate in the marketplace	• Create market-friendly safety nets to help resource-poor farmers • Promote the use of vouchers to empower farmers with purchasing power to participate in the marketplace	MAFS, Donors, and project entity
3. Limited technology transfer efforts—poor farmer knowledge and inappropriate use of fertilizers	• Strengthen research and extension and soil testing services to develop site-specific recommendations • Establish dealer-oriented demonstrations for educating farmers about appropriate use of inputs • Strengthen capacity for breeder and foundation seed production	MAFS, ARIs, private sector, donors, and project entity
4. Underdeveloped output markets	• Develop crop markets by training, market information, standards and measures, and producer association development	MAFS, MCM, donors and project entity
5. Inadequate supply of covered wagons with TAZARA and TRC	• Increase the supply of covered wagons to reduce transportation costs and insecurity	MAFS, Ministry of Transport, donors and project entity

occasional contingencies, the government should approach the private sector and work out a feasible solution so that its actions are not retarding growth. Not only should the government not be involved in direct physical distribution or import of fertilizers or other inputs, but it should also create a level playing field for all players. In this context, the government should privatize TFC and clear its past debts and obligations. By keeping TFC in "suspended animation" mode, the government is hurting both the TFC and the development of a private sector-based efficient fertilizer market. As a privatized entity, TFC should be able to operate more efficiently and also make better use of its assets such as storage and warehousing facilities. Another area, which requires improvement, is the production of foundation seed. The current involvement of the government in the production of foundation seed discourages the entry of the private sector and distorts the timely supply of quality seed. The State Foundation Seed Farms are rarely well funded to produce an adequate supply of seeds. A study should be conducted to assess the status of state-owned FSFs and develop a scheme for their orderly privatization. The new thinking of creating a public sector agency to produce and procure seed is a wrong idea. What the government should do is to help the private sector by training and technical assistance in quality seed production. However, the government should continue to supply breeder seed by strengthening agricultural research and breeder seed production facilities, as explained below.

Another area where careful planning and implementation is needed is the use of a 50% matching grant in the PADEP project areas. Unless this matching grant is managed carefully, it has the potential to disrupt the nascent private sector development in rural areas. In the absence of institutional infrastructures for implementing a sound voucher scheme, this was a reasonable solution to help farmers in acquiring inputs. However, in the long term, PADEP should use its resources to build capacity for the implementation of a voucher scheme to disburse this 50% matching grant. Similarly, if KR II inputs are received, they should be marketized through a transparent and timely tendering system, preferably in small lots so that small dealers can participate in the auctioning process.

The voucher approach[6] gives farmers a "freedom of choice" in selecting the products they need and allows better interaction between the farmer and the dealer. Under PADEP, the committee chairman or secretary does the bargaining for the group. Under such conditions, there may be tendency to bypass the local dealer and get inputs from outer sources. Also, the PADEP project will be unnecessarily burdened with marketing and distribution arrangements of inputs, an activity that can be handled more efficiently by dealers and farmers. Since the PADEP already has plans for developing the private sector, the project could use the earmarked resources for organizing training for both farmers and dealers in using the voucher system.

2. 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 be needed in the public sector as well, especially in the area of market information and quality control enforcement explained below.

Training and technical assistance for importers is needed to promote better business linkages with other traders in the regional and global markets. Also, these dealers should be trained about developing regional markets, such as the MKK area (Mbeya in Tanzania, Kasama in Zambia, and Karonga in Malawi), so that the economies of scale can be realized in procurement and transportation.

[6]See pages 20-21 for details.

To sustain the efforts in human capital development, an association of input dealers called the Tanzania Agri-Input Dealers Association (TADA) should be established. TADA staff members should be trained in administrative and technical matters and the association should be empowered to conduct training for dealers, operate market information systems, and do socially responsible policy advocacy for market development.

3. 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. The team's discussion with commercial banks, including Exim, NMB, and CRDB[7] and their branches in the districts, indicated that these banks were willing to participate in a scheme that would spread the lending risks among various stakeholders. Therefore, to improve access to finance by importers and dealers by sharing risks, two funds should be created. The first fund will be called Agricultural Input Import Fund (AIIF). This fund will be maintained at the Reserve Bank of Tanzania in foreign exchange. Any importer interested in importing fertilizers or other inputs will have access to this fund to get a letter of credit (LC) from the commercial bank. The fund will be managed in such a way that the importer will provide 30% of the needed funds for an LC, the commercial bank will provide 70% as a loan, but the Reserve Bank of Tanzania 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 financial guarantee for developing retail networks in rural areas. Any dealer who is trained and knowledgeable about the technical and commercial aspects of the input business will be able to use guarantee from this fund to invest in 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 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. The existing input trust fund should be converted into ABDF, with a better outreach. In addition to these risk-sharing mechanisms, the local banks will be trained in using a "bonded warehouse" as collateral for an input business loan. Such an arrangement could reduce the working capital needed to start or expand an input business. This would allow a retailer to bring larger quantities of inputs from the town, store them in a bank-supervised warehouse, and draw down in small lots as his or her sales increase.

4. 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 know about prices and quantities available in different segments of the market. This means that if prices are high in Iringa or Arusha and low in Dar, then buyers or dealers can move quantities from Dar to Iringa or Arusha and reduce the unreasonable gap between prices in these locations. During the initial stages of market development, MAFS should assume the responsibility of collecting and disseminating information about prices, quantities, stocks, and products in different locations. Although the MAFS/inputs unit is maintaining data on crop and input prices in different locations, the coverage is inadequate and dissemination is limited. As a result, different segments of the market are not 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 web site are also desirable. The MAFS should work with TADA to establish public-private partnership in this area.

5. 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 abuses. This calls for efforts to develop product standards and enforce truth-in-labeling. In the long run, TADA should be strengthened to provide quality control service for members, so that the TADA seal becomes a sign of quality and quantity.

[7]Formerly Cooperative and Rural Development Bank.

The regulatory capacity of public sector agencies, such as TPRI, TBS, and TOSCA should be strengthened to enforce quality control standards at the point of sale. The MAFS has started working on the Fertilizers and Animal Feed Act, revising a similar Act of 1962. However, given the increased role of the private sector in fertilizer marketing, MAFS should consider designing a separate Fertilizer Law and developing capacity for its implementation.

Supporting Measures

6. Integration of Multi-Country Markets—Developing Business Linkages

Tanzania shares borders with several countries including Zambia, Malawi, Rwanda, Burundi, Uganda, and Kenya. Except Kenya, all other neighboring countries are landlocked and could benefit from Tanzania's coastal port—Dar es Salaam. In developing input markets, private dealers could take two approaches. One way is to focus only on the domestic market and develop market infrastructure to satisfy domestic requirements. Given the economies of scale in fertilizer procurement and the small size of the Tanzanian market, such an approach is not very efficient because it leads to higher procurement costs and farm gate prices. Another way is to look at cross-border trade among neighboring countries and develop regional markets by supplying the input needs of the farmers in neighboring countries. Since Tanzania has a port, the private sector should consider supplying inputs to "segments of multinational markets." For example, a wholesaler in Mbeya could plan to supply fertilizers not only in Mbeya or other regions in Tanzania, but also in border areas of Zambia (Mbala, Kasama) and Malawi (Karonga, Chipita, and possibly the Mzuzu region). Expanding the market to cover these neighboring areas can generate economies of scale in procurement and distribution. Moreover, the Kasama region of Zambia is served by the same TAZARA railway line; therefore, getting fertilizers from Dar to Mbeya and Kasama could be done in one large shipment. Thus, Mbeya could become a significant trading center to supply farm inputs in these three countries. Likewise, Kigoma could be developed to supply inputs in Burundi and Rwanda. In the North, Arusha is linked to Nairobi and Mombasa and wholesalers in Arusha can benefit from large imports made in Kenya. Thus a "multi-country" approach in market development will create a win-win situation. However, these business linkages should be developed by providing training and technical assistance and financial and informational support to dealers in Tanzania and neighboring countries.[8]

7. Poverty Alleviation and Market-Friendly Safety Nets

Many government interventions in input supply are guided by the need to help the resource poor farmers who suffer from transitory or chronic food insecurity. Likewise, donor and NGO programs for free distribution of inputs (seed and/or fertilizers) are also guided by greater humanitarian goals of poverty alleviation or helping the poor people during an emergency caused by natural or manmade disasters. As long as one out of every three Africans suffer from hunger and malnutrition and over onehalf of the population suffer from poverty (earning less than $1/day), it will be difficult to make a case that programs addressed to reduce hunger and malnutrition should not be implemented because they have a "distortionary" impact (e.g., resulting from free or subsidized input distribution) on input markets. On the other hand, if poverty alleviation programs are not implemented in a marketfriendly manner, there is a modest chance that Africa will have sustainable input supply systems in the short to mediumterms. Thus, there is a need to develop a mechanism, which can support both poverty alleviation and market development.

The twin objectives of poverty alleviation and market development can be achieved if the support programs are implemented by transferring the purchasing power to the needy persons, as it is done in the United States through food stamps. Rather than giving free or subsidized seed or fertilizers, the targeted farmer should be given a voucher, which the farmer can exchange for inputs from a dealer in the village. The voucher can have either the full or the partial value of inputs. The dealer who sells inputs for vouchers should be

[8]In March 2004, Malawian dealers and policymakers visited Mbeya to explore options and avenues for procuring inputs from Mbeya for Northern Malawi. This visit is a byproduct of the field work done for the Tanzania action plan during October/November 2003 and was facilitated by IFDC/Malawi in March 2004. With a strong program on developing such business linkages, many other options could be explored.

guaranteed to receive full payment from an authorized bank, which gets its funds from the implementing agency (government or donor or NGO). IFDC has implemented such programs successfully in Afghanistan and Malawi. In Tanzania, some agencies, such as the coffee and cashew boards, have used vouchers for inputs. However, as monitoring mechanisms were not well designed and executed for coffee vouchers, the program suffered from fraud and misuse. Better monitoring mechanisms should be designed to minimize misuse and fraud. Therefore, it is recommended that the GOT, donors, and NGOs should *marketize* their input support programs through the use of vouchers.

The voucher system kills two birds with one stone—it empowers the food-insecure farmers to produce more food for the family, facilitates their "inclusion" in the marketplace, and also strengthens the market development process by injecting additional purchasing power in the system. There are different variations of the voucher system that could be adapted to local conditions depending on whether the farmers deserve full or partial subsidy or seasonal credit to buy inputs and repay it in kind or cash at harvesting or contribute labor to public work programs in exchange of vouchers.

8. Technology Transfer Efforts

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.

As mentioned earlier, farmers are using fertilizers in an inefficient manner. Very few farmers use basal fertilizers and some use NPK fertilizer products for topdressing. To educate farmers about the proper use of fertilizers and management practices, farm level demonstrations about use practices should be organized. Field days and 1-day training programs for farmers, dealers, and extension workers should be organized. Soil testing facilities should be provided to fine tune fertilizer recommendations. In this context, soil testing laboratories and soil testing facilities proposed under PADEP should be used to improve fertilizer recommendations.

To improve crop yields while minimizing the cost of fertilizers for smallholders, MAFS 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 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. Thus, not only the money spent on N fertilizers is reduced, but also the legume crop 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.

9. Development of Crop Output Markets

Dependable crop markets are imperative both to sustain and stimulate improvements in AIMs. Improvements in the performance of AIMS lead to the adoption of modern technologies resulting in increased productivity and marketable surpluses. Farmers need access to reliable output markets in order to sell this additional output and recover their investments, thus sustaining their incentive to use these improved technologies. The existence of stable and reliable output markets can also provide the incentive for farmers to increase the use of productivity-enhancing technologies in order to benefit from assured returns from the sale of their marketable output.

While the markets for export crops are well integrated and catered to, the markets for food crops are still poorly developed and fragmented. As a result, farmers do not get a good price and especially at harvest time, prices collapse. Such low prices make food crop production unattractive and unprofitable and reduce the incentive to use modern inputs. The marketing of food crops could be improved by promoting the development of producer associations, dissemination of market information, grading and standards for quality produce, improved storage and agro-processing facilities,

and warehouse collateral for facilitating the purchase of grains at the harvest time. All these improvements will go a long way in improving the prices received by farmers. To safeguard against collusion among traders, the MAFS should install an intelligence and monitoring system and use anti-trust laws to prevent such collusions. Through training and technical assistance, producer associations should be encouraged to take a lead in conducting training for farmers, maintaining and disseminating market prices, installing and operating agro-processing facilities, bargaining good prices for inputs and outputs, and encouraging savings and banking habits among farmers. Promoting cross-border trade and trading among regional blocks like the EAC and COMESA will further enhance opportunities for exporting firms to trade products in which Tanzania has a comparative advantage. Improving rural roads and other infrastructures will contribute significantly to the development of crop output markets.

10. Infrastructure Development—Strengthening of Railway Capacity

The poor condition of feeder roads in rural areas adds significantly to the transportation cost of supplying inputs, especially fertilizers, in rural areas. Investment in building and maintaining good roads in rural areas should receive priority in the development budget. As mentioned earlier,[9] USAID has devoted resources for developing feeder roads in the Southern Highlands. There is a need to develop feeder roads in other parts of the country.

However, in the short to medium term, the government should pay attention to strengthening the railway capacity on its railway lines because over long distances, railways are much cheaper than road transport. From Dar, the railway line goes in both north/east and south/west directions. However, on both routes the availability of the "covered" wagons is a serious problem. Transporting fertilizers or seed in an "uncovered wagon" poses the risk of insecurity and losses by theft and pilferage. Such risk discourages the dealers from using railways for shipping inputs and forces them to rely on costly road transport. The GOT and donors should make an investment in improving the supply of wagons and storage capacity at railway stations. Another area that needs attention is the improvement of a trucking fleet in the country. Non-availability of trucks can add significantly to transportation costs.

Action Plan Matrices for Fertilizer, Seed, and CPP Markets

In addition to the market development efforts proposed above, there are certain input specific measures that should be implemented to strengthen the functioning of input markets. Tables 2, 3, and 4 summarize such measures for fertilizer, seed, and CPP markets, respectively.

V. Institutional Arrangements

Holistic Approach

This action plan includes several measures to strengthen the functioning of input markets in Tanzania. These measures deal with the issues related to both the demandside and supplyside of the market equation. While 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 could 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 4).

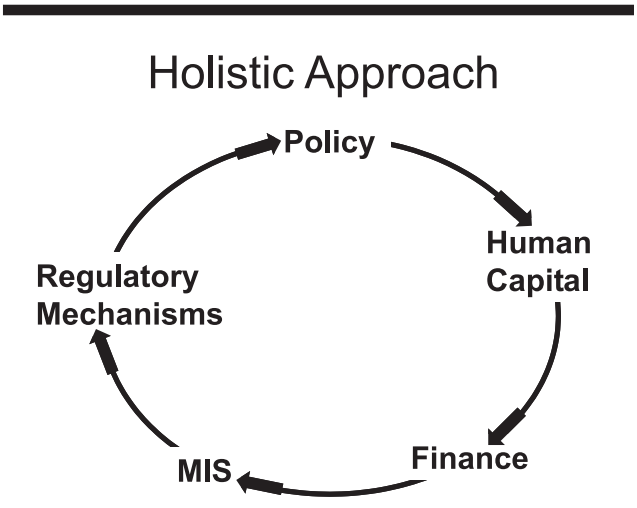


Figure 4. The Market Development Process

Table 2. Tanzania Action Plan Matrix: Fertilizers

Issues/Constraints	Actions Recommended	Responsibility
1. Policy Constraints While the agri-input markets, including fertilizer markets were liberalized in 1994/95, these are not completely open and free as yet. • There were interventions in the past with KR II material. • Announcement of subsidized imports through TFC in 2003 created market uncertainty. • Provision of funds for fertilizer imports to TFC leads to an uneven playing field vis-à-vis the private sector.	• The government policy of deregulation, liberalization, and privatization should be adhered to and a level playing field provided to the public and private sectors. • If interventions in the market place are absolutely necessary in the national, farmer, or small trader interests, the interventions should be market friendly, designed in a fashion that they do not adversely affect the ongoing efforts at liberalizing the markets.	MAFS/MCM MAFS/MCM
2. Human Capital—Fertilizer Distribution Networks • There is a need for more importers and improvement in the knowledge of existing importers about the world markets. • Technical and business knowledge of wholesalers and retailers is limited. • The number of retailers in rural/remote areas is limited.	• Train existing importers and interested entrepreneurs in international fertilizer trading and help develop links with suppliers. • Provide training to wholesalers/retailers in fertilizer and crop technology, marketing, and business management. • Create a cadre of dealers in rural areas.	MAFS/MCM/Donors/ Project Entity MAFS/MCM/Donors/ Project Entity
3. Financial Constraints • Limited credit available to agri-input wholesalers/retailers especially in rural areas. • Commercial lines of credit for importers are at high interest rates and stringent collateral requirements.	• Provide National Micro Finance Bank (NMFB) money for a revolving fund for agri-input traders in rural/remote areas. • Examine ways to ease provision of commercial lines of credit at competitive interest rates to the importers.	MAFS/NMFB/ Donors/Project Entity MAFS/Donors/Large Commercial Banks in Dar
4. Market Information System is Inadequate • Inadequate flow of information—it is scattered over a number of organizations.	• Set up fertilizer cell in MAFS as central place for collection, analyses, and dissemination of data. • Set up a monthly meeting of MAFS, TFC, private sector fertilizer organizations, and farmers for planning and review.	MAFS to initiate private sector involvement MAFS to form suitable committee including private sector and farmers
5. Regulatory Inspections • With the involvement of TBS, COTECNA, and SGS, inspections and checks for quality appear adequate. However, the cost of pre-shipment and later inspections is high and adds to cost finally paid by farmer.	• Rationalize the pre-shipment and later inspection charges for agri-inputs as a special category.	MAFS/MCM

Table 2. Tanzania Action Plan Matrix: Fertilizers (Continued)

Issues/Constraints	Actions Recommended	Responsibility
6. Infrastructure		
• Number of covered railway wagons (net capacity 40 tons) is low and severely restricting shipments by rail.	• MAFS to work with other ministries and the Tanzania Railway Corporation to procure more rail wagons.	MAFS/Donors
• Roads (for example, Dodoma to Kigoma) are in poor condition and inhibit road shipments to west and northwest. Rough road freight 20% higher than normal.	• MAFS to work with other ministries and Ministry for Infrastructure to have some of the important main roads repaired/re-surfaced.	MAFS/Donors
• Limited number of weigh bridges, low tolerance for over weight and high penalties all add to difficulties and costs in road shipment.	• Encourage more weighbridge installations by private sector; introduce 5% tolerance in weight and lower penalties.	MAFS/Ministry of Transport
• There is a 20% VAT on road freight adding to cost of road shipments.	• Conduct study on the possibility of removal of VAT on road freight for shipment of fertilizers.	MAFS/Ministry of Finance
7. Packaging		
• Fertilizers are not available in smaller packages.	• Fertilizers should be packed in smaller packages: 5–, 10–, and 25-kg packages.	MAFS and private sector

Table 3. Tanzania Action Plan Matrix: Seed

Issues/Constraints	Recommended Actions	Responsible Institution	Comments
1. Research and production of breeder and basic seeds.	• GOT should increase funding for agricultural research. • Agricultural Research Institutes (ARIs) should be allowed to generate and use own revenue, including royalties on their varieties and charging a commercial price for BS. • Efforts should continue to find a solution for use of FSFs by private sector say, through leasing or sale. • Private sector should take a more active role in the production of basic seeds.[a]	GOT, Donors, Seed Industry	
2. Policy inconsistencies and lack of clarity.	• GOT should avoid the temptation to get involved in commercial seed production. • Steadfast policies reassure the private sector and encourage them to invest. The proposed intervention to create the "National Seed Agency," ostensibly to cater for the seed of "orphan crops," should be done with the full knowledge of the private sector.	MAFS	
3. Public/private sector cooperation.	• Establish and cultivate trust between seed companies and MAFS. • Hold regular pre-season planning meetings and exchange information. • Establish and strengthen linkages between the ARIs and seed companies—sharing technical information, genetic resources, variety trial facilities, etc. • GOT should involve the industry in formulation and implementation of relevant policies. • Establish closer linkages between seed companies and NGOs involved in seeds.	MAFS, Private Sector, NGOs	
4. Limited efforts in developing seed markets by all stakeholders.	• MAFS and seed companies combine efforts to expand input network through training, networking, and credit guarantees. • Establish technology transfer sites with complete technology packages. • Extension messages should be focused and supportive of private sector efforts in creating demand for improved seeds.	MAFS, Seed Industry, and Banks	
5. Weak local companies and poor market information.	• GOT should develop strategies to support development of local seed enterprises and encourage local seed production. • GOT and TASTA should conduct a market survey and establish a market information system. • TASTA should be strengthened to collect, analyze, and disseminate market information.	MAFS, Donors, Seed Industry	
6. Integration of formal and informal seed systems.	• Encourage private seed companies to get involved in QDS scheme. • Lay down clear exit strategies for informal seed systems—developing into small and medium enterprises (SMEs), contract seed growers, seed stockists, etc. • MAFS should coordinate NGOs involved in seed to minimize market distortions.	MAFS, Seed Industry, NGOs	

Table 3. Tanzania Action Plan Matrix: Seed (Continued)

Issues/Constraints	Recommended Actions	Responsible Institution	Comments
7. Weak quality control system, with traditional emphasis on variety release and production control.	• GOT should strengthen the operational capacity of TOSCA, and develop quality assurance systems in the organization. • TOSCA should develop capacity for point-of-sale monitoring, and scale down its involvement with informal seed production. • TOSCA should generate and retain revenues from its activities. • More district seed inspectors should be trained and re-oriented to participate in seed market development and monitoring. • TOSCA should train and accredit company staff to do inspection.	GOT, Donors, TOSCA	
8. Regional cooperation and trade.	• Pursue the implementation of the harmonized seed issues in East Africa (EA). • Establish collaboration between the local companies in the regions—EAC, SADC, etc. • Networking between the EA Seed Associations.	GOT, Seed Industry	

a. A study should be conducted to review the situation with respect to basic (foundation) seed production.

Table 4. Tanzania Action Plan Matrix: CPP

Constraints	Recommendations
1. Weak Agrochemical Association of Tanzania.	• Importers and dealers should not be forced to join the Agrochemical Associations of Tanzania (AAT), but they should be sensitized about the value of being members.
2. Weak market information.	• Information should be categorized to provide stakeholder group specific information. • Improve the Farmer's Gazette to include information on the CPP market. • Produce information leaflets and distribute them to the district officers.
3. Cumbersome and weakly enforced regulatory framework.	• Need to make the regulatory framework simple and implementable. • Speed up the revision of the existing laws in order to reduce the time required for registration.
4. Lack of clarity about the functions of COTECNA and TPRI in the CPP market.	• The duties of COTECNA and TPRI need to be published and made available to stakeholders.
5. Duty on packaging for CPPs, which increases the price for farmers (VAT 20%).	• More information is needed with respect to removing duties to identify the winners and the losers in order to come up with a specific recommendation.
6. Due to limited human and financial resources TPRI is unable to monitor and enforce regulations.	• Accreditation of inspectorate responsibilities to other institutions by TPRI.
7. Lack of farmer knowledge about the correct use and handling of CPPs.	• TPRI, MAFS, and importers should collaborate to provide training to farmers.
8. Some farmers are using outdated formulations whereas new formulations may be obtained from neighboring countries.	• Harmonize CPP policies and regulations in the EAC.

Note: Overall recommendation: There is a need to hold a CPP specific stakeholder consultative meeting.

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 access to finance and information, then they cannot use their skills to develop retail networks. If all these measures are implemented, but the government is not effectively enforcing quality control and regulatory measures, then many honest, hardworking entrepreneurs, (especially women) 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.

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 of 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. The MAFS can focus its limited resources on subject matter specialists and organize joint training programs 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 in a hostile environment. In this context, both sectors should work hard to overcome the mindset problem mentioned earlier and learn to trust each other for a broader social goal of ensuring food security and reducing hunger and poverty in the country.

Implementation Arrangements

Through ASDS, ASDP, PADEP, and other programs, the GOT has recognized the need to strengthen the functioning of input and output markets for the agricultural sector. The ASDP Secretariat is responsible for coordinating projects in the agricultural sector. Any project designed to implement this action plan should be well integrated in the ASDP system. However, given the mindset problem and to solicit maximum cooperation of the private sector, the AIMs Development Project should be implemented by an autonomous project entity. To improve coordination between the project and the ASDP Secretariat, various departments of MAFS, and other relevant ministries (e.g., the Ministry of Marketing and Cooperatives) and to reflect the concerns of the GOT in project implementation, the MAFS/ASDP should appoint a liaison officer and create a small project advisory committee. This committee would consist of policymakers, donors, private sector dealers, and other relevant stakeholders. In selecting the districts for market development activities, special attention should be paid to those districts where synergy from other ongoing projects (PADEP, SG 2000, USAID, and others) could be realized.

Linkages

Actions proposed in this action plan will have strong linkages with market development and technology transfer activities implemented by the MAFS and other ministries in collaboration with donors. Notable among such programs are the projects funded by SG 2000, IFAD, The World Bank (PADEP), FAO, and USAID. PADEP's technology and infrastructure development programs, matching grant, private sector development, and soil testing facilities will complement the proposed activities in the area of technology transfer and market development. For example, the proposed training for dealers could be integrated with PADEP's capacity building programs for the private sector development and association building.

The proposed action plan will also contribute to the achievement of USAID/Tanzania's Strategic Objective (SO 5) of "Incomes increased in selected agricultural commodity subsectors," by promoting agricultural growth through input market development and strengthening the legal and regulatory environment for agricultural inputs. Two Intermediate Results support the achievement of SO 5: IR 9.1 "Increased Productivity of Selected Agricultural Commodities," and IR 9.2 "Increased Trade of Selected Agricultural Commodities." Although the SO 5 recognizes the important role to be played by agribusiness and trader associations,

the "centerpiece" of SO 5 will be the development of producer associations to strengthen farmers' productive and business capacities. Improved input supply resulting from the implementation of the action plan will help producers associations by supplying inputs on time and at cost effective prices. The second activity identified by SO 5 to support the achievement of its objectives is improving the policy and regulatory environment in order to increase market efficiencies. The proposed actions on improving policy environment and regulation for input markets will strengthen the efficiency of output markets and producers associations by reducing transaction costs.

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 removing existing distortions and misperceptions and creating 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.

Resource Requirements

Tanzania will need a 5-year program to implement the core recommendations of the action plan for market development. A preliminary estimate of the resources needed is indicated in Table 5. The implementation of the action plan will require $11.3 million in operating costs and $18 million in capital funds—$15 million for AIIF and $3 million for ABDF. Both of these funds will be used for sharing risks among various stakeholders.

Table 5. Estimated Resource Requirements for Implementing the Action Plan: 5-Year Program

Activity	Cost
	('000 $)
A. Project Operating Costs	
Policy reform activities	1,500
Human capital development (training, study forms, association building, enterprise development)	5,100
Improved access to finance	1,000
Market information and transparency	500
Strengthening of regulatory systems	900
Technology transfer activities	1,200
Seed sector development	1,100
Total Operating Costs	**11,300**
B. Capital Funds	
Agricultural input import fund (AIIF)	15,000
Agri-input business development fund (in local currency)	3,000
Total Capital Funds	**18,000**

Source: Action Plan Team Estimates.

Annex I
Workshop Program and Deliberations

UNITED REPUBLIC OF TANZANIA

MINISTRY OF AGRICULTURE AND FOOD SECURITY

PROCEEDINGS OF THE NATIONAL STAKEHOLDERS' WORKSHOP ON DEVELOPING AGRICULTURAL INPUT MARKETS IN TANZANIA

ROYAL PALM HOTEL DAR ES SALAAM

26 AUGUST 2004

Ministry of Agriculture and Food Security
P.O. Box 9192
DAR ES SALAAM
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NATIONAL STAKEHOLDERS' WORKSHOP ON DEVELOPING AGRICULTURAL INPUT MARKETS IN TANZANIA

Workshop Programme

THURSDAY, 26 AUGUST 2004		
TIME	**ACTIVITY**	***RESPONSIBLE***
08:30	Registration	
09:00	Opening Address	*PS, Ministry of Agriculture and Food Security*
09:20	Presentation by USAID Representative	*T. McAndrews, Leader, Economic Growth Program, USAID*
09:30	Presentation by SG 2000	*Dr. Marcos A. Quinones, Regional Director*
09:35	Action Plan for Developing Agricultural Input Markets: An Overview	*B. L. Bumb Team Leader, Action Plan*
10:10	Discussion	
10:30	TEA / COFFEE BREAK	*All*
11:00	Group Discussion	*Dr. N. P. Sicilima, Director, Crop Production, MAFS*
13:00	Lunch	*All*
13:45	Plenary Session	*Group Leader*
15:00	TEA / COFFEE BREAK	*All*
15:45	Closing Remarks	*PS Ministry of Coop. and Marketing*

PROCEEDINGS OF THE NATIONAL STAKEHOLDERS' WORKSHOP ON DEVELOPING AGRICULTURAL INPUT MARKETS IN TANZANIA ROYAL PALM HOTEL, DAR ES SALAAM 26 AUGUST 2004

1.0. OPENING SPEECH OF THE PERMANENT SECRETARY – MINISTRY OF AGRICULTURE AND FOOD SECURITY

The Permanent Secretary of the Ministry of Agriculture and Food Security opened the workshop by thanking the workshop participants. He said that the workshop was organised by IFDC in collaboration with the Ministry of Agriculture and Food Security (MAFS). He thanked the workshop sponsors, namely, Global 2000, USAID, and IFDC, and indicated that the purpose of the workshop was to review the draft action plan on developing the agricultural input markets in Tanzania.

In his opening address, he stressed that the agricultural sector is the biggest contributor to the national economy, accounting for about 50% of the gross domestic product (GDP), 66% of foreign exchange earnings, and employs about 80% of the total labour force. For the past five seasons, agriculture has been growing at around 4.4%. This growth rate was higher than the population growth (of 2.9% - 2002 Census). However, for agriculture to act as an engine of economic growth in the Tanzanian economy, it has to grow at about 11% per annum. He informed the participants that Tanzania is currently using approximately 7 kg of fertiliser nutrients per hectare in comparison to an average of 16 kg/ha for the SADC countries, 16 kg/ha in Malawi, 51 kg/ha in South Africa, 103 kg/ha in India, 279 kg/ha in China, 365 kg/ha in Vietnam and 578 kg/ha in the Netherlands. Therefore there is a need to increase fertiliser use in Tanzania if we have to increase agricultural production and productivity. The fertiliser requirement in Tanzania was estimated at 385,000 tonnes for the 2004/2005 season. However, with improved marketing and full participation of the private sector, fertiliser use could go up to 600,000 tonnes. The use of other agro-inputs and seed is also on the lower side.

In conclusion, the Permanent Secretary called upon workshop participants to take an active role in reviewing and refining the proposed action plan for the input marketing system (Attachment I).

2.0. SHORT REMARKS BY REPRESENTATIVE FROM USAID

The representative from USAID said that the USAID/Tanzania Country Strategic Plan 2005-2014 has now been prepared. The plan focuses on areas that will have a wider impact on the community. It focuses on cash crops in special areas, such as the Southern Highlands. The purpose of the Economic Growth Strategic Objective was to increase incomes of rural families by increasing their productivity, market access, and trade opportunities for selected agricultural commodities. In increasing productivity, supply of inputs is crucial. He concluded his remarks by saying that the strategy is well positioned to play a strategic role in the overall effort to expand market driven agricultural growth in Tanzania to support the government in its strategic approaches and policy areas via the Poverty Reduction Strategic Plan (PRSP) and Agricultural Sector Development Strategy (ASDS).

3.0. SHORT REMARKS BY THE REPRESENTATIVE FROM SASAKAWA AFRICAN ASSOCIATION/GLOBAL 2000

The Sasakawa Africa Association representative highlighted the program and strategies that are undertaken by his organisation and the linkages to the development of agricultural input markets in Tanzania. He also underscored the need for linking inputs and output markets for improving productivity, economic growth, and poverty reduction. He concluded his remarks by saying that, in order to increase production and productivity, agricultural input should be delivered in a timely manner, should be affordable, and of recommended quantities and qualities.

4.0. PRESENTATION OF THE PROPOSED ACTION PLAN

The Team Leader from IFDC highlighted the social economic challenges of food security, poverty alleviation, and environmental protection. Concern was raised with regard to cereal production decline in association with low levels of fertiliser use and the role of agricultural inputs in solving some of these problems.

He elaborated on the functioning and performance of agricultural input markets, factors constraining its performance, the potentials of the private sector in supplying inputs in a reliable and cost effective manner and suggestions to improve efficiency and effectiveness of input markets. An effective action plan should include conducive and stable policies, developing human capital, access to finance, access and dissemination of market information, and strengthening regulatory systems.

Other supportive measures he proposed included integration of regional markets, development of infrastructure, technology transfer efforts, output market development, poverty alleviation, and safety nets. The proposed action plan underscored the importance of commitment of both government and development partners in order to achieve the intended objectives.

5.0 COMMENTS BY WORKSHOP PARTICIPANTS

The draft action plan was discussed in the plenary session and the following comments were recorded:

S/N	COMMENTS
1.	Agricultural producers (particularly farmers) are not given their rights. We see increased participation of nations, international organisations, and eminent people in the sector policy discussions. What is hindering agricultural revolution? Measures should be taken to ensure increased private sector participation in the agricultural sector. Why can't we farmers have our own bank? Why doesn't the private sector participate fully in agriculture? Agricultural sector stakeholders' plans and proposals should be given priority. Instead of giving us Food Aid, the international community should help Africa to produce its own food.
2.	There is a need to accelerate irrigation development in Tanzania.
3.	Profitability and marketability of agro output determine the sustainability and development of input utilisation. Hence, there is a need to link this program with: • Land use–profitable, socio-economic, and appropriate land use–focusing on local import substitution agro-products (like rice, wheat, and cooking oil). • Credit facilities to farmers and output marketing, and agro-processing should be improved. • Market Information System should also include information about output markets at local, regional, and international levels.
4.	The proposed fertiliser subsidy by the government for the 2004/05 season is welcome but we need immediate clarity on its timing and extent so as not to negatively affect the purpose it was intended for.
5.	We should address international constraints both on the side of outputs and inputs. Such issues as international markets accessibility, etc. But importantly, the way international companies control the supply of inputs through intellectual property rights, especially on the seed industry. All these issues should be part of the analysis in order to get the intended results.
6.	On decline in fertiliser consumption–Analyse more on demand side, e.g., low subsidy of 2000s versus high subsidy of 1980s, output prices, changing agro-ecological systems. On financing agricultural sector, it is important to use market-led solutions, e.g., guarantees. Government banks are not sustainable. Note that the voucher scheme is good for targeting, but comes with high administrative and transaction costs.
7.	Stabilise farmer incomes through government intervention–by so doing, farmers will continue to purchase fertilisers in a sustainable manner.

6.0. DISCUSSION GROUPS' RECOMMENDATIONS AND COMMENTS

The workshop participants were divided into three discussion groups: fertiliser, seed, and crop protection products. The groups' deliberation results were presented in the plenary session as outlined below:

6.1 GROUP No 1: FERTILISER

The group deliberated on policy, human capital development, transportation and infrastructure, finances, regulatory systems, packaging and fertiliser market information systems and made the following recommendations:

6.1.1 On Policy Issues

- Government policy uncertainty.
- Clear, consistent, long term agricultural (input) marketing policy is required (e.g., subsidy: countrywide? refund? regional price?).
- Management of KR II Fertilisers.
  - Amount to be imported to reduce uncertainty.

- Done in market friendly manner.
- Market in small lots to avoid distortions in the markets.
- Taxes and duties relief, but value added tax (VAT) on transport, wharfage, Tanzania Central Freight Bureau (TCFB) fees, shore handling, and packaging materials.
- Tanzania Inspection Service Company (TISCAN) inspection fees (1.2%) on fertilisers be removed.

6.1.2 On Human Capital Issues

- Dealers' skills development.
- Creating more dealers' network.
- Extension services capacity building.
- Develop interaction fora.

6.1.3 On Transportation Infrastructure

- Inland logistics—road, rail (Tanzania-Zambia Railway [TZR] and Tanzania Railway Corporation [TRC]), and waterways.
- Adequate and covered wagons (TAZARA and TRC).
- New modalities to invest in public goods.
- Prioritisation problems (western: exports to west, food aid, and fertiliser).
- Emergence measures (air freight?).

6.1.4 On Access to Finance

- Guarantee schemes (importers and dealer).
  - 30% Trader, 30% Fund, 40% Bank.
  - Fertiliser in warehouse becomes a collateral.
- Warehouse receipt systems (output markets).
- Commercial banks mandated to allocate funds to agriculture.

6.1.5 On Regulatory Systems

- Institute workable regulatory systems.
  - Quality control.
  - Truth in labeling.
  - Weight controls.
  - Overlapping regulatory bodies.
  - TCFB, TISCAN, Tanzania Bureau of Standards (TBS).

6.1.6 On Packaging

- Small lots (to meet consumer needs and purchasing power).
- Done to ensure no loss in quality.
- Forming importers and dealer associations (to bulk order, ensure quality and standards).

6.1.7 On Fertiliser Market Information Systems

- Provide adequate information on inputs and output markets.
- Government should play a leading role but partnership with private sector is necessary.
- Extension services improved.
- Increase approved list of stockists (important in accessing finance).
- Develop proper dissemination mechanisms.

6.1.8 Issues Raised

- Regional integrations on issues regarding inputs distribution.
- Legislation of Fertiliser: commented that we have the Fertilisers and Animal Foodstuffs Act, 1962; however, it has not been in operation. Currently, MAFS is preparing the bill, which will review the Fertiliser and Animal Feed Act.

6.2 GROUP 2: SEEDS

The group discussed the issues related to policy, seed production and marketing, and regulations.

6.2.1 On Policies, Laws, and Regulations

The group said that policies, regulations, and laws are in place, but there is inadequate enforcement, lack of capacity, lack of clarity, and therefore more public awareness is needed. Other observations included:

- Lack of knowledge by private sector of government policies, regulations, and laws for seed sub-sector.
- Lack of knowledge by government of private seed sub-sector constraints and operation modalities.
- Solutions to seed sub-sector constraints: government and private sector cooperation is needed.

6.2.2 On Breeder and Foundation Seed Production

- Government-based pricing.
- Low level of private sector interest in foundation seed production.
  - Seed production at Breeder and Foundation levels remain with government.
- Review of this production sector is needed.

6.2.3 On Commercial Seed Production and Marketing

- Strength of local companies.
  - Lacks capacity.
  - Lacks breadth.
  - Needs leadership, strategies for development.
- Deliberate effort needed to support the local private sector.
- Public/private partnership should be established.

6.2.4 On Seed Certification and Control

- Traditional system of seed variety release needs review and "streamlining."
  - Testing—greater distribution of labs (more of them and placed closer to seed sources).
- Government workers that oversee this program need funds (industry sourced) for operations and incentives to improve performance.
  - Training of District Extension Officers to become seed inspectors.

6.2.5 On Other Issues

- Regional Cooperation and Trade.
  - Private sector better suited to initiate activities.
  - Government policy needs to support private sector in this area.

6.3 GROUP 3: CROP PROTECTION PRODUCTS

The group analysed the constraints and gave the following recommendations:

Constraints	Recommendations
Weak Agrochemical Association of Tanzania (AAT)	- Importers and dealers should not be forced to join the AAT, but they should be sensitised about the value of being members.
Weak market information	- Information should be categorised according to provide stakeholder group specific information. - Improve the *Farmer's Gazette* to include information on the CPP market. - Produce information leaflets and distribute them to the districts
Cumbersome and weakly enforced regulatory framework	- Need to make the regulatory framework simple and implementable. - Speed up the revision of the existing laws (Plant Protection Act [PPA] and Tropical Pesticides Research Institute [TPRI]) in order to reduce the time required for registration.
Lack of clarity about the functions of COTECNA and TPRI in the CPP industry	- The duties of COTECNA and TPRI need to be published and made available to stakeholders.
Duty on packaging for CPPs, which increases the price for farmers (VAT 20%)	- More information is needed with respect to removing duties in order to identify the winners and the losers in order to come up with a specific recommendation.
Due to limited human and financial resources TPRI is unable to monitor and enforce regulations	- Accreditation of inspectorate responsibilities to other institutions by TPRI.
Lack of farmer knowledge about the correct use and handling of CPPs	- TPRI, MAFS, and importers should collaborate to provide training to farmers.
Some farmers are using outdated formulations whereas new formulations may be obtained from neighbouring countries	- Harmonise CPP policies and regulations in the East African community.

Overall recommendation: After this national agricultural-input stakeholder consultative meeting, there is a need to hold a CPP-specific stakeholder consultative meeting.

7.0 CLOSING REMARKS BY THE PERMANENT SECRETARY FOR THE MINISTRY OF COOPERATIVES AND MARKETING

During the closing ceremony, the Permanent Secretary of the Ministry of Cooperatives and Marketing reminded the participants of the low levels of agricultural inputs use as earlier elaborated by the PS-MAFS during the opening speech. He reminded the participants that as the population of Tanzania grows so will the requirement for more food. As income grows, demand for high value agricultural produce such as fish, meat, dairy products, fruits, and vegetables will also grow. Increasing farmers' incomes therefore would be a priority in order to meet these challenges/demands.

He informed the workshop that the government has instituted measures aimed at promoting agricultural inputs' use. These measures include abolition of duties on agricultural inputs and machineries, providing fertiliser subsidies, and establishment of the agricultural input trust fund. On the output side, he informed the participants that government has introduced an export credit guarantee scheme and enforced the cap of 5% of the local

government levies charged on farm produce. The government is also in the process of finalising the preparation of an Agricultural Marketing Policy, which will guide marketing of agricultural inputs and outputs in the country. He further called on the private sector to be proactive in taking up the challenges in developing agricultural input markets. He promised government interventions in case of market failures. Fostering public-private partnership is an important government policy (Attachment II).

Attachment I

THE OPENING ADDRESS BY THE PERMANENT SECRETARY FOR THE MINISTRY OF AGRICULTURE AND FOOD SECURITY

PRESENTED AT THE STAKEHOLDERS' WORKSHOP ON DEVBELOPMENT OF AGRICULTURAL INPUT MARKETS IN TANZANIA, HELD ON AUGUST 26, 2004 AT ROYAL PALM HOTEL, DAR ES SALAAM

Permanent Secretary–Ministry of Cooperatives and Marketing

Coordinator for IFDC, Dr. Balu Bumb

Representatives from Donor Organisations

Regional Administrative Secretaries

Representatives from Farmers Associations

Agricultural Inputs Dealers

Distinguished Guests

Ladies and Gentlemen

1. Dear participants, I feel greatly honoured to address this important Workshop. I sincerely thank all you distinguished participants for allocating your precious time for this workshop. Your attendance is a clear testimony of your concern and firm commitment to the development of agriculture in Tanzania. Furthermore, on behalf of the Government of the United Republic of Tanzania, we do extend our appreciation and thanks to USAID and the Sasakawa-Global 2000 (SG 2000) for sponsoring the preparation of the draft Action Plan for Developing Agricultural Input Markets in Tanzania, which will be tabled and discussed in this workshop. I also wish to recognise the excellent work and dedication by the experts from IFDC who in collaboration with the national experts, under the able leadership of Dr. Balu Bumb, prepared the draft action plan.

2. Dear participants, agriculture is the biggest contributor to the economy of Tanzania. Agriculture contributes about 50% of the GDP, about 66% of foreign exchange earnings, and employs about 80% of the total work force in the country. Over the last five years the agricultural sector grew at an average rate of 4.4% per annum. In 1999

the sector grew at 4.1%, in 2000 3.4%, in 2001 5.5%, in 2002 5.0% and in year 2003 by 4.0%. This growth rate is higher than the population growth rate of 2.9% (2002 Census). However, given the importance of agriculture in the growth of the economy, food security, and poverty reduction, it must grow by at least 11% per annum if poverty reduction is to be realised. This rate of growth will be achieved if farmers will be able to access adequate agricultural inputs, farm implements, agricultural markets, and other support services. In recent years, the government has embarked on putting in place conducive policies and strategies with a view of ensuring effective exploitation of the country's abundant agricultural potentials. This includes the removal of taxes and duties on agricultural produce and inputs.

3. Dear participants, the current levels of agricultural growth are attributed to low productivity resulting from inadequate utilisation of production inputs—particularly fertilisers, improved seeds and plant protection products and low levels of mechanisation. About 70% of the land is prepared by using hand hoes; this limits the average size of the farms to between 0.2 and 2 ha. Use of draught power is estimated to be about 20% and use of tractors is about 10%.

4. Dear participants, this workshop is taking place at the time when our country has just started implementing the Agricultural Sector Development Strategy (ASDS) of year 2001 and its implementation programme—the Agricultural Sector Development Programme (ASDP) of 2002. The Programme aims at helping producers increase agricultural productivity, production, and profitability. However, it should be noted that improved marketing and timely availability of agricultural inputs—particularly fertilisers, improved seeds, implements, and machinery—are key to the successful implementation of the ASDP.

5. Dear participants, the study conducted by the Ministry of Agriculture and Food Security in collaboration with experts from IFDC further confirmed that there is a considerable depletion of plant nutrients in the soil as a result of both crops harvested and crop residues removal. The excessive removal of nutrients (currently estimated at 60 kg/ha) can be reversed by proper use of fertilisers. Currently, Tanzania uses about 7 kg/ha of fertilisers compared with 16 kg/ha in Malawi, South Africa 51 kg/ha, India 103 kg/ha, China 279 kg/ha, Vietnam 365 kg/ha, and The Netherlands 578 kg/ha. The average fertiliser use in the SADC region is currently 16 kg/ha plant nutrients. Fertiliser and other inputs usage in Tanzania could be increased if agricultural input marketing is improved.

6. Dear participants, currently, the agricultural input markets in our country are underdeveloped and fragmented. Consequently, the markets are characterised by inadequate and untimely supply, high prices, poor quality and inaccessibility to input credit. Most of the agricultural inputs used in Tanzania are imported. Currently**,** the country imports an average of about 100,000 tonnes of fertilisers annually. The fertiliser requirement for the 2004/05 season is estimated at 385,000 tonnes. This estimate is based on the trend of fertiliser use mainly in some crops. However, with an improved marketing system and development of the private sector dealers, fertiliser use in the country could increase to 600,000 tonnes per annum.

7. Dear participants, low farm productivity is further exacerbated by low use of improved seed and plant protection products. The potential demand for the improved seeds is about 120,000 tonnes per annum. However, the average annual supply for the past four years (1994/95-2003/04) has been 10,000 tonnes. The amount of improved seeds used by farmers is estimated to be 8,000 tonnes. The current government policy is to encourage the private sector to invest in the production and distribution of seeds in the country. With regard to agricultural chemicals, the annual demand for the past 2 years has been 4.0 million litres of liquid formulations and 21,000 tonnes solid formulations. While the average availability is about 2.1 million litres and 6,000 tonnes respectively.

8. The government is actively addressing the agricultural input availability issues in collaboration with the stakeholders. In recent years there has been intensive dialogue and collaboration between the government and the private sector that deal or trade in agricultural inputs. Policies and other related issues that enhance a conducive environment for private sector participation have been discussed, and this has led to the removal of taxes and duties on agricultural inputs. Additionally, the government has established the Agricultural Inputs Trust Fund to avail credit to the private sector and is looking into the formation of an Agricultural Credit Bank for the private sector to access credit. This is yet another initiative, which will support these efforts.

Dear participants, in conclusion, I would like to underscore the fact that accessibility of production inputs to farmers is vital for the realisation of rapid agricultural growth. Nonetheless, we haven't as yet developed a properly functioning agricultural input marketing system in Tanzania. We have invited you to this workshop based on your rich experience in agriculture and rural development in general. I am sure you will actively participate in reviewing the draft action plan in order to come up with a refined and pragmatic Action Plan for Developing Agricultural Input Markets in Tanzania. I expect that your deliberations would lead to the establishment of an efficient agricultural input market to ensure that farmers get access to necessary inputs at cost effective prices, on time, and at convenient locations.

I now declare this workshop officially opened.

Thank you.

Attachment II

Closing Remarks by Dr. Ladislaus C. Komba, Permanent Secretary for the Ministry of Cooperatives and Marketing at the National Stakeholders Workshop on Developing Agricultural Input Markets in Tanzania at Royal Palm Hotel, Dar es Salaam, August 26, 2004

Mr. Wilfred Ngirwa, The Permanent Secretary—Ministry of Agriculture and Food Security and also the Chairman of this Workshop

Dr. Balu Bumb, The Coordinator – IFDC

Representatives from Donor Community

Regional Administrative Secretaries

Representatives from Farmers Associations

Agricultural Input Dealers

Distinguished Guests

Ladies and Gentlemen

Mr. Chairman, May I take this opportunity to thank workshop organisers for giving me an opportunity to say closing remarks at this important event. Let me also take this opportunity to recognise the efforts made by IFDC in collaboration with the Ministry of Agriculture and Food Security for organising this workshop.

Mr. Chairman, I have been informed that this workshop is being organised from the premise that agricultural productivity is declining. To a great extent, this has been due to decreased use of superior production technologies and, more importantly, low use of fertilisers, seeds, and CPPs. Tanzania uses relatively lower levels of these inputs compared with the regional average. For example, fertiliser use stands at 7 kg/ha of nutrients against the average of 16 kg/ha in the SADC region; use of crop protection products is estimated to be about 6,000 tonnes of sold products against the requirement of 21,000 tonnes. On the whole, low agricultural productivity resulting from the failure to use adequate amounts of these inputs threatens the achievement of poverty alleviation and food security as well as environmental protection objectives.

Mr. Chairman, I have been made to understand that this workshop aims at developing an action plan on improving agricultural input markets. There are many reasons why agricultural input markets are important in the overall agricultural development strategy. In the first place is the fact that the growing population will require a commensurate growth in agricultural production to provide food. As incomes grow, demand for high value

agricultural products such as fish, meat, dairy, fruits, and vegetables also grows. Betterment of the road network has also meant more interactions between traders and producers and more likelihood of increased vulnerability of the less powerful farmers. The facts are that the majority of the poor are located in rural areas and that farmers are poorer than non-farmers. This means that getting the majority of the rural people out of poverty requires deliberate efforts to increase incomes. Rural farmers need well-functioning agricultural (inputs) markets to increase income. Thus, it goes without saying that improvement in agricultural input markets has an important role of increasing agricultural productivity that will in turn increase incomes, alleviate poverty and enhance food security.

Mr. Chairman, the workshop has shown that regulatory systems for seeds and crop protection products do exist. Fertilisers do not have adequate regulatory systems despite the existence of some provisions in other areas that could cater for fertilisers (Tanzania Bureau of Standards Provisions, Weights and Measures Act, etc.). On the whole, there is a need to develop adequate regulatory systems that will aid the development of sustainable agricultural input markets and thus enhance agricultural input use.

Mr. Chairman, I am informed that stakeholders in this workshop have generally agreed that there is a need for creating an enabling environment for the agricultural inputs markets to function. This would entail effort to improve the policy environment, regulatory systems, transportation infrastructure, and access to finance and market information systems. On the other hand, I am glad to inform you that the government has instituted a number of measures aimed at promoting agricultural input use. These measures have included abolition of duties on agricultural inputs and machineries and also providing fertiliser subsidies. An agricultural input trust fund has also been established. On the output side, the government has introduced an export credit guarantee scheme and plans to enforce the cap of 5% of the local government levies charged on farm produce. The government is also in the process of finalising the preparation of the agricultural marketing policy, which will guide marketing of agricultural inputs and outputs in the country.

Mr. Chairman, this workshop provides an impetus to the development of agricultural input markets. A number of issues have been raised during this workshop. I strongly believe that these will help the team of experts to sharpen the draft action plan that was earlier put forward so as to produce a realistic Action Plan in Agricultural Input Markets that will enhance a judicious use of agricultural inputs. A holistic approach will be necessary. The private sector must take up the challenges in developing agricultural input markets because the development of the agricultural sector in this country is private sector led. However, some issues will require government intervention due to market failures. I would like to assure workshop participants that the government will do whatever possible to ensure that the environment is conducive for the private sector to take its position in agricultural development. Fostering public-private partnership is an important government policy.

Mr. Chairman, once again, I would like to take this opportunity to thank all of you for allocating your precious time and effort and actively participating in this workshop. I would also like to take this opportunity to thank the Ministry of Agriculture and Food Security, IFDC, and Sasakawa-Global 2000 for organising this workshop. Last but not least, my sincere gratitude goes to USAID for supporting and funding this initiative.

Mr. Chairman, having said all this, I now declare this workshop officially closed. Thank you very much for your attention.

Annex II
An Assessment of the Fertilizer Market

An Assessment of the Fertilizer Market

Since 1994/95 the fertilizer market in Tanzania stands fully liberalized with the subsidies withdrawn. Any company or individual registered with the Tanzania Revenue Authority is free to import fertilizers and market and distribute them anywhere in the country with full freedom to set prices. Despite liberalization, the fertilizer market in Tanzania is still struggling to grow and fertilizer consumption (at less than 10 kg total nutrients per hectare) is very low when compared with the world average of 100 kg/ha and the Asian average of 150 kg/ha. While fertilizer consumption has taken off in several countries in the world and particularly in Asia in the developing world, this has not happened in Tanzania. There are several reasons for this. Some of the main reasons are discussed in this annex.

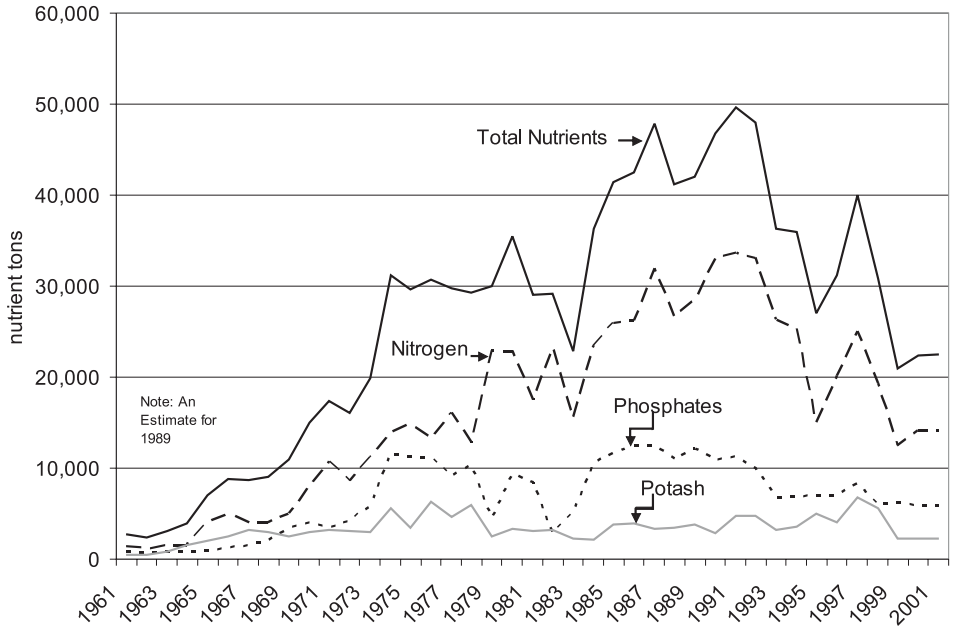
Fertilizer Consumption

Fertilizer consumption in Tanzania over the past 12 years has decreased as shown in Figure II.1. According to FAO data, fertilizer consumption reached a peak in 1990/91, when about 50,000 nutrient tons (N, P_2O_5, and K_2O), equivalent to about 150,000 product tons, of fertilizers were used. Since then, consumption has declined. Although in the recent past there is once again an upward trend, consumption has still not reached the peak of 1990/91. Presently, about 35,000-40,000 nutrient tons are being used in the country. Given the fact that fertilizers have been used in Tanzania since the 1960s, the use in terms of kilograms of nutrients per hectare is still very low in comparison with several countries in Asia (Figure II.2). For example, in contrast to over 140 kg nutrients per hectare of arable land in a year in Bangladesh, about 130 kg in Pakistan, over 100 kg in India, and about 80 kg in Indonesia, the use in Tanzania at less than 10 kg/ha is still very low. This indicates that over the years there has been a serious depletion of crop nutrients from the soil without adequate replenishment. If this situation continues, soil infertility could become a major issue in many areas in Tanzania.

Demand for Fertilizers

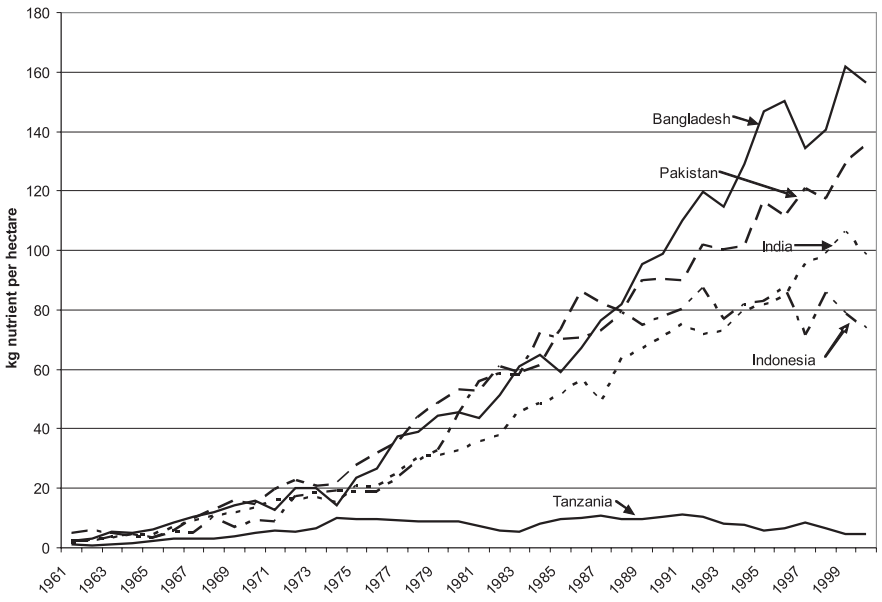
According to FAO data, the population in Tanzania has been growing rapidly since 1961 from a total of 10.5 million to over three times that number (36 million) in 2001 at an annual growth rate of 3.1%. The food production in Tanzania in terms of total cereals for this period has been growing as shown in Table II.1.

While the growth rate of food production has been slightly faster (3.4%) than the growth in population,



Source: Derived from FAO data.

Figure II.1. Tanzania Fertilizer Consumption



Source: Derived from FAO data.

Figure II.2. Fertilizer Consumption in Tanzania in Comparison With Selected Developing Countries, 1991/92 to 2000/01

Table II.1. Tanzania: Cereal Production (1961 and 2001)

Year	Area	Production	Yield
	(million ha)	(million tons)	(tons/ha)
1961	1.2	1.1	1.0
2001	2.8	4.2	1.5

Source: Based on FAO data.

this has been attained more due to an increase in the area cultivated (1.6 million ha additional area, increasing at 2.1%/year) than due to increase in yields that have grown by only 1%/year during this period. The increase in area was brought about with the clearing of forestland; this has serious consequences that can lead to environmental problems. Therefore, there is a need to increase crop yields per hectare to feed the growing population. Table II.2 shows the area, production, and yields of cereals in Tanzania. The yields of almost all the cereals have remained stagnant during the 1990-2002 period with an average yield of cereals of 1.5 tons/ha compared with a world average of 3.0 tons/ha and several countries obtaining yields of 4-7 tons/ha. Of this, maize is the main cereal crop grown on about 1.6 million ha with a production of 2.7 million tons. The other cereals grown are sorghum, rice, millet, and wheat. In addition to cereals there are a number of cash crops that are grown in Tanzania such as cashew, coffee, cotton, pyrethrum, tea, tobacco, sisal, and sugarcane (Table II.3). There is also considerable production of tomatoes, potatoes, onions, and bananas. The potential demand for fertilizers for all these crops is about three to four times the present use of about 120,000 product tons. The proper and balanced use of fertilizers, among other factors, will be crucial to attain improved yields and quality.

Based on MAFS data on fertilizer consumption, urea accounts for 29.2%; AS for 21.4%; CAN for 16.1%; NPKs 6-20-18 and 101824 for 19.1%; DAP for 5.5%; and TSP, MOP, and other NPKs for the balance of 8.7% of the consumption during 1994/95-2002/03 (Table II.4). MAFS estimated that the demand in 2003/04 would be about 185,000 tons[9] of all products with demand for urea (80,000 tons) at 43% of the total as shown in Table II.5. According to this estimate, Iringa (16.9%),

[9]Actual fertilizer consumption in 2003/04 was 92,000 tons.

Table II.2. Tanzania Food Crop Production (1990 and 2002)

	Tanzania Cereal Production					
	1990			2002		
	Area	Production	Yield	Area	Production	Yield
	('000 ha)	('000 tons)	(tons/ha)	('000 ha)	('000 tons)	(tons/ha)
Maize	1,630	2,440	1.5	1,580	2,700	1.7
Sorghum	380	464	1.2	610	700	1.1
Rice	384	744	1.9	401	514	1.3
Millets	178	200	1.1	250	300	1.2
Wheat	52	106	2.0	60	77	1.3
All cereals	2,629	3,960	1.5	2,853	4,147	1.5

Note: Cereals may not total since other small production not taken into consideration and also due to rounding.

Source: FAO.

Table II.3. Production of Major Cash Crops in Tanzania (1981/82 to 2002/03)

Year	Cashew	Coffee	Cotton	Pyrethrum	Tea	Tobacco	Sisal	Sugar
	('000 tons)							
1981/82	44.3	55	133.1	1.9	15.5	16.2	60.6	124.3
1982/83	32.6	53.5	128.2	1.6	17.4	13.6	46.2	104.8
1983/84	47.6	49.1	140.7	1.4	15.3	11	38.3	131.5
1984/85	32.5	49	155.1	1.5	16.8	13.4	32.3	108.5
1985/86	20.5	52.8	108.2	1.4	15.5	12.6	30.2	100.3
1986/87	16.5	41.5	216.9	1.2	14.1	16.5	33.2	94.9
1987/88	24.3	49.1	253.7	1.4	13.8	12.9	33.3	101.3
1988/89	19.3	57.8	191.7	1.3	15.9	11.6	33.3	96.2
1989/90	17.0	53.4	112.5	1.6	20.2	11.8	32.2	95.7
1990/91	29.8	44.8	141.0	1.7	18.1	16.4	33.7	116.1
1991/92	41.2	48.0	267.0	2.2	19.5	23.3	36.0	111.4
1992/93	39.2	50.6	300.2	2.0	21.0	23.3	24.3	113.0
1993/94	46.6	34.2	140.0	0.5	22.3	25.8	29.6	123.7
1994/95	63.4	42.5	122.3	0.5	25.3	22.6	28.9	104.1
1995/96	81.7	52.4	250.2	0.4	21.2	28.4	25.0	116.3
1996/97	63.0	43.6	252.9	0.4	19.8	35.4	30.0	116.1
1997/98	99.9	38.0	208.2	0.4	26.2	50.3	15.3	79.9
1998/99	106.4	40.6	105.4	0.1	25.0	37.8	24.0	113.4
1999/00	121.2	47.8	100.6	1.0	23.6	24.7	20.6	116.9
2000/01	122.3	58.1	123.6	1.85	26.4	28.0	20.5	135.5
2001/02	67.4	36.2	149.1	3.5	26.8	31.7	23.5	164.0
2002/03	90.0	46.6	190.1	3.0	28.0	32.7	23.6	190.1

Source: MAFS Statistics Unit.

Table II.4. Tanzania Fertilizer Consumption (1994/95 to 2002/03)

Types	1994/95	1995/96	1996/96	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03	**Total**
AS	18,016	31,923	20,524	22,431	15,369	11,040	11,905	12,674	12,600	**156,482**
CAN	20,971	10,058	14,779	9,892	9,134	15,460	8,149	16,455	12,577	**117,475**
UREA	25,680	35,327	2,114	28,756	14,758	18,390	27,293	30,379	30,334	**213,031**
TSP	7,115	2,464	2,342	2,134	2,913	3,731	3,566	3,504	309	**28,078**
DAP	2,444	4,058	2,594	3,441	3,949	4,035	3,576	8,242	6,515	**38,854**
NPK1 (25-5-5)	7,493	558	1,300	388	204	2,002	78	2,028	186	**14,237**
NPK2 (20-10-10)	0	48	485	3,544	1,470	2,004	4,517	1,003	264	**13,335**
NPK3 (6-10-18 and 10-18-24)	8,760	23,001	19,841	38,825	13,187	10,508	10,228	3,976	11,725	**140,051**
NPK4	0	1,113	257	512	0	0	0	0	0	**1,882**
MOP	824	1,018	475	630	33	174	0	685	2,498	**3,183**
Others	0	0	0	1,940	272	0	1,228	1,990	549	**3,767**
Total	**91,303**	**109,568**	**64,711**	**106,493**	**61,289**	**67,344**	**70,540**	**80,936**	**77,557**	**730,375**

Source: MAFS Inputs Section.

Table II.5. Fertilizer Demand Estimates by Type and Region, Tanzania (2003/04)

Region/ Type	AS (21%N)	CAN (26%N)	UREA (46%N)	TSP (46% P_2O_5)	DAP 18N (46% P_2O_5)	NPK (25:05:05)	NPK (20:10:10)	NPK (6:20:18)	MOP/SOP	**Total**
Arusha	300	200	5,500	500	2,050	0	300	300	0	**9,150**
DSM/Pwani	0	300	2,500	100	400	0	0	400	100	**3,800**
Dodoma	0	0	400	100	100	0	0	300	0	**900**
Iringa	600	3,000	11,950	5,400	5,500	1,000	0	3,500	500	**31,450**
Kagera	0	0	550	300	100	0	100	250	0	**1300**
Kilimanjaro	500	200	6,500	400	700	550	600	600	0	**10,050**
Lindi	0	0	500	100	100	0	0	200	0	**900**
Manyara	0	200	2,500	500	1,400	0	200	0	0	**4,800**
Mara	0	0	700	200	100	0	100	0	0	**1,100**
Mbeya	700	2,800	11,250	4,600	3,500	700	1,400	4,000	200	**29,150**
Kigoma	0	100	1,100	1,200	100	0	100	100	0	**2,700**
Morogoro	500	300	5,900	200	2,000	550	400	500	0	**10,350**
Mtwara	0	0	500	100	250	0	0	0	0	**850**
Mwanza	500	150	4,000	1,200	1,250	0	0	0	0	**7,100**
Rukwa	1,000	100	6,500	1,500	3,700	200	200	2,000	0	**15,200**
Ruvuma	1,500	1,750	9,100	2,100	4,800	400	500	3,200	100	**23,450**
Singida	0	0	600	100	150	0	300	1,000	0	**2,150**
Shinyanga	100	400	4,000	600	2,500	0	0	500	0	**8,100**
Tabora	700	500	5,200	800	900	0	0	12,950	0	**21,050**
Tanga	100	0	750	0	400	100	300	200	100	**1950**
Total	**6,500**	**10,000**	**80,000**	**20,000**	**30,000**	**3,500**	**4,500**	**30,000**	**1,000**	**185,500**

Source: MAFS Inputs Section.

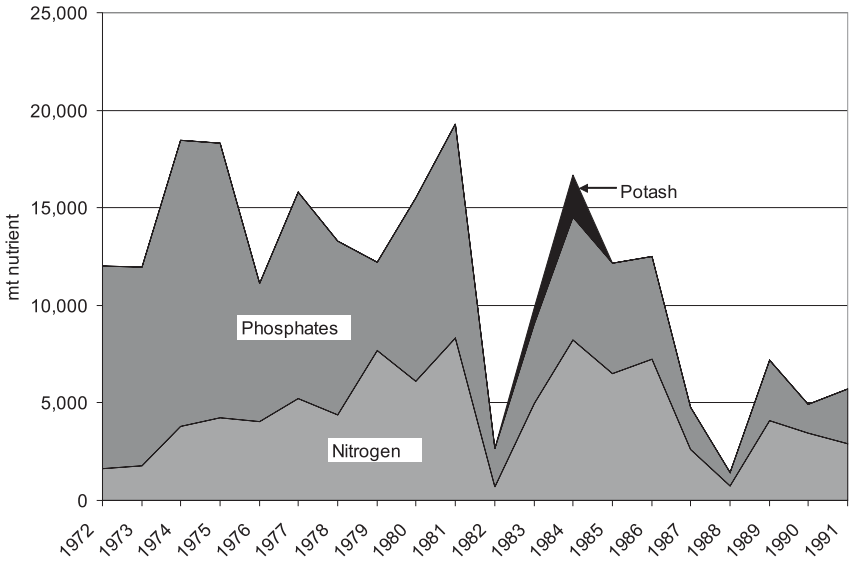
Mbeya (15.7%), Ruvuma (12.6%), Tabora (11.3%), and Rukva (8.2%) are the "big five" regions in fertilizer consumption and in food and tobacco production in Tanzania. The remaining 15 regions account for the 35.3% balance of the demand. Five other regions of these 15 regions with significant demand are Morogoro (5.6%), Kilimanjaro (5.4%), Arusha (4.9%), Shinyanga (4.4%), and Mwanza (3.8%).

Fertilizer Supplies

Since the Tanzania Fertilizer Company (TFC) plant in Tanga stopped production in 1991 (Figure II.3), all fertilizer requirements are met by imports (Figure II.4). There are a number of fertilizer importers—one in the public sector, TFC, and a few in the private sector like Premium Agro Chemicals, Export Trading Company, Shivlal Tank Company (STACO), Kibo Traders, Mohammed Enterprises, and others including the two tobacco companies. Between them they import and supply to the market 100,000-120,000 tons of fertilizers—mainly urea, NPKs (201010, 10-18-24, 17-17-17), CAN, AS, DAP, and TSP. Table II.6 indicates the estimated imports in 2003.

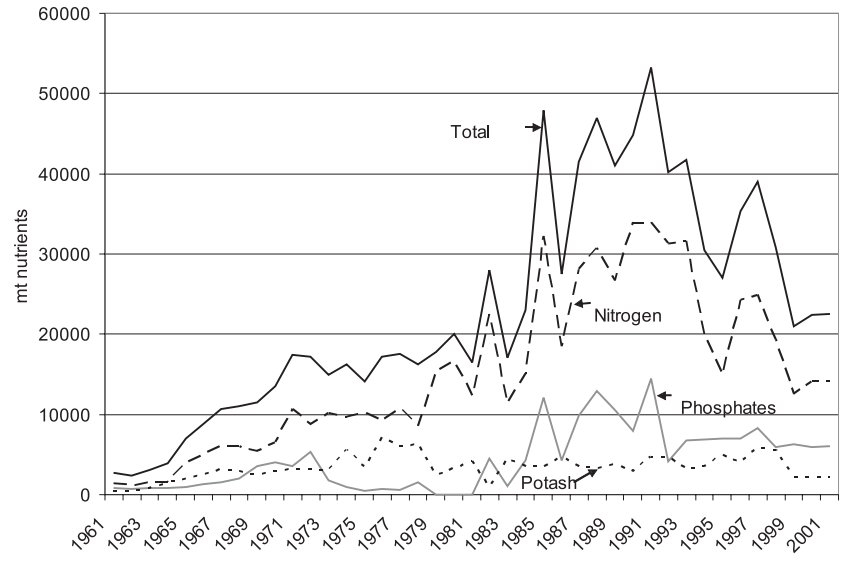
Fertilizer Enterprises

Tanzania Fertilizer Company—TFC is the only public-sector company and is 100% owned by the government. It had a monopoly position in the market until 1994; prior to that, it handled the marketing of all the imports (including the KR II) and the product manufactured at



Source: Derived from FAO data.

Figure II.3. Tanzania Fertilizer Production, 1972 to 1991



Source: Derived from FAO data.

Figure II.4. Tanzania Fertilizer Imports, 1991 to 2001

Table II.6. Estimates of Fertilizer Imports, Tanzania (2003)

Organization	Quantity
	(tons)
Premium Agro Chemicals (PAC)	70,000
Tanzania Fertilizer Company (TFC)	12,000
Dimon Tobacco	10,000
Tanzania Leaf Tobacco Company (TLTC)	10,000
Shivlal Tank Company (STACO)	8,000
Export Trading	6,000
Kibo Trading and Services	4,000
Mohammed Enterprises	4,000
Balton	3,000
Suba Agro-Trading and Engineering Company (SATEC)	2,000
Mupkar	1,000
Others	5,000
Total	**135,000**

Source: Based on information gathered during field visits.

Tanga. The blending plant at Tanga, which was established in 1972 based on imported material, ceased operations in 1991. TFC warehouse storage capacity at that time was about 140,000 tons, both owned and leased, and TFC had about 800 employees operating with subsidies and financial assistance from the government until these were withdrawn in 1994/95. Since then it has had to compete with companies in the private sector. TFC has shrunk and now operates with 40 employees. TFC estimates that there is an effective demand in the market for fertilizers of about 120,000 product tons, although the potential demand could be more than 400,000 product tons. Of the actual consumption in the market, the TFC share is approximately 18%-20%. The Tanga factory has been sold. The marketing operations (with about 70,000 tons of warehouse capacity and a few vehicles as the only assets) have been earmarked for privatization since 1996 but there are no buyers. To generate income, TFC has been leasing out the warehouses in Iringa, Mbeya, and Songea (10,000-ton capacity each), and at Tabora (30,000-ton capacity; 50% of which is leased to the tobacco companies). The commercial banks do not advance loans to TFC because of the substantial losses carried forward. TFC has therefore been making efforts to obtain suppliers credit and last year imported 2,500 tons of product in this manner. TFC's breakeven point is sale of 15,000 tons and this has been difficult to attain. TFC feels that the market has not grown due to the following reasons:

- Agricultural output does not fetch good prices.
- Farmers seem satisfied with the yields they obtain using natural material.
- Maize is not produced commercially in Tanzania.
- Long distances are involved from the point of imports (or manufacture in the past).
- Until recently, maize could not be exported.

Since the KR II imports came late in 2003, and the market had been waiting for these imports (that for the past few years had been auctioned in the open market), availability of urea and CAN for topdressing was low and there were several complaints from the farmers. The government overreacted to this and decided to avoid a similar situation in 2004 by arranging the imports of 8,000-10,000 tons through TFC and supplying this at subsidized (transportation subsidies) prices in the "four big" (agriculturally important) regions of Mbeya, Iringa, Rukuma, and Rukva. TFC was provided Tanzanian Shillings 3.5 billion in November 2003 to arrange these imports. In addition, TFC was hoping to

get suppliers credits for 10,000-15,000 tons of urea and 3,500 tons of CAN by providing suppliers with a lien on stocks.[10] TFC sales for 2001 and 2002 are shown in Table II.7.

Table II.7. Fertilizer Sales by Tanzania Fertilizer Company (TFC) (2001 and 2002)

Products	2001	2002
AS	2,758.75	2,534.83
CAN	2.23	-
Urea	4,813.40	2,188.65
NPK 25:5:5	10.00	3.03
NPK 6:20:18, 10:20:20	3,247.73	56.40
TSP	38.70	38.70
DAP	17.57	-
Total	**10,878.38**	**4,821.61**

Source: TFC.

Premium Agro Chemicals (PAC)—PAC, a private sector organization, is the largest fertilizer company in Tanzania. It started a few years ago and by 1998/99 it was importing and marketing about 15,000 tons of fertilizers. In 2003 PAC had imported about 70,000 product tons of fertilizers mainly from Norsk Hydro, Kemira, Transammonia, and other international suppliers. Product came from Europe, the Middle East, and Russia through international letters of credit established through Standard Chartered, Exim, National Bank of Commerce, and CRDB banks. There are no import duties on fertilizers. Estimates of other costs and charges on imports are shown in Table II.8.

According to PAC, its market share is about 60%-70%. It markets the product through a network of about 300 dealers (including sub-dealers) and operates four warehouses in the field at Makambako (600 tons), Njombe (2,000 tons), Mbeya (5,000 tons), and Songea (3,000 tons) in addition to its large excellent warehouses (one owned and one rented) in Dar es Salaam with a total capacity of about 50,000 tons (10,000 m^2). PAC offers quality product with guaranteed quantity at competitive prices in the market. All bags are marked with the PAC logo and bags containing different products have distinct identification colors. It offers product in 50-kg and 25-kg bags according to the market requirements. PAC is not in a position to offer agronomic services and advice to the farmers, but offers short-term credit (15 days) to a few of its larger reliable dealers in the provinces. PAC deals only in fertilizers and also sells to Zambia from its Mbeya regional operations. It enjoys a good reputation with the dealers in Tanzania and also with the importers in Zambia as reliable suppliers of competitively priced good quality products.

[10]During 2004/05, TFC has been able to borrow funds from commercial banks by using imported fertilizers as warehouse collateral.

Table II.8. Estimated Cost of Urea Imports in Tanzania (2003)

Line Items	$/ton
f.o.b. Middle East	170.00
Ocean freight	15.00
c. & f. Dar es Salaam	185.00
Wharfage 1.6% c. & f.	2.96
Port handling	4.00
Bags and bagging	8.50
20% VAT on wharfage, bagging, and handling	3.09
TCFB charge	0.20
COTECNA pre-shipment inspections 1.2% f.o.b.	2.04
TBS charge 0.2% c. & f.	0.37
Transport port to warehouse in Dar es Salaam	3.50
Landed cost Dar es Salaam warehouse or $11 per 50-kg bag Equivalent to Tanzanian Shillings 11,000 per 50-kg bag	209.66

Source: Based on information gathered during field visits.

Other Importers—STACO, Export Trading, Mohammed Enterprises, Kibo Traders, Balton, Suba Agro Trading and Engineering Company (SATEC), and Mukpar are other companies in the private sector that have been importing fertilizers through Dar es Salaam, Mombasa, and Nairobi sourced through Norsk Hydro and other international producing and trading companies. Their combined imports are estimated at about 25,000 tons.[11] A few of them also purchase locally from Premium Agro Chemicals. Unlike PAC, these companies deal in several other commodities and consumer goods in addition to fertilizers. A few of them are also

[11]See Table II.6 for details.

involved in the marketing of seed and agro-chemicals. Many of these companies like Balton, Mohammed Enterprises, and STACO have a number of branches with storage capacities, agents, dealers, and sub-dealers in the provinces.

Tobacco Companies—The two tobacco companies, Dimon and Tanzania Leaf Tobacco Company (TLTC), also import fertilizers. Between them they import about 20,000 tons every year. The products imported are NPKs (10-18-24, 6-20-18) and CAN for topdressing. The fertilizers are given to contract tobacco-growing farmers on credit with payment recovered at harvest time. The recommended dose is 10 bags of NPKs and 2½ bags of CAN per hectare. Agrochemicals are also provided to the farmers on need basis obtained from the importers in Tanzania. The Tobacco Association of Tanzania looks after the agronomic operations including research, testing, and trials; the individual companies support their farmer customers by having trained leaf technicians available in the field.

The Tanganyika Farmers Association—TFA (registered as a limited company in Tanzania) was one of the principal marketing agents of TFC before deregulation, distributing fertilizers with subsidy ranging from a highest of 85% at one time down to 25% in later years. TFA feels that there is not much of an effective demand for fertilizers since farm gate prices of outputs are low and fertilizer prices are high. The KR II imports in the initial years caused serious market distortions. Subsequent auctions of KR II material also have not been timely. TFA therefore did not participate and bought material from the successful bidders at retail prices. TFA had no plans to import fertilizers in 2004 because it was known in the market that TFC was promised funds to import and market (at subsidized prices) about 8,000-10,000 tons of fertilizers for the 2003/04 season. TFA has 13 depots with storage space of 1,000-4,000 m^2. It also has 14 sub-depots with adequate staff to take care of retail sales. In all they have 5,000 farmer members who have been provided inputs procured by TFA on seasonal credit since 1969/70. In addition, TFA has also been selling inputs (seed, fertilizer, and CPPs) to the non-member farmers against cash payments. At one stage TFA was also purchasing outputs, but is now restricting itself to the supply of inputs. TFA sales have been declining, and this year, 90% of the sales were accounted for by agrochemicals (insecticides, fungicides, and herbicides) and a small amount of local rock phosphate. In the past these agrochemicals were imported by TFA, but are now bought locally from Twiga, Balton, and others. The employees at all TFA depots and sub-depots have been adequately trained in the past in house by TPRI and MAFS.

Indigenous Products

Phosphate Rock—The Minjingu Rock Phosphate (MRP) deposits containing 28%-30% P_2O_5 are estimated at 10 million tons. Besides the P_2O_5 contents, other percentage contents of the rock are: CaO (41.7%), SiO_2 (9.4%), MgO (3.2%), Fluorine (3.1%), and Al_2O_3 (1.2%). It is reported that MRP has high values of total P_2O_5 and neutral ammonium citrate solubility and is therefore used for direct application. Since it sells retail for about Tanzanian Shillings (Tsh) 5,000-7,000 per 50-kg bag, it is promoted as a cheaper source of P_2O_5 compared with DAP or TSP. Although the production capacity of the mine is 100,000 tpy, only about 10,000-12,000 tons is produced and sold with about 7,000 tons of this being exported to Kenya and the balance being used in the country. The production facilities were privatized, and the operations are now managed by a company in the private sector. There is no aggressive market development effort by this company although most of the research centers make efforts to promote MRP not only as a source of P_2O_5 but also to reduce soil acidity in the southern provinces of Tanzania.

Fertilizer Imports

Since 1994/95, in addition to TFC, 19 companies in the private sector have been actively involved in the import of fertilizers (Table II.9). Many of these companies have continued to import steadily year after year. A few of these companies, like TFA, have the potential to import and market larger quantities of fertilizers. Table II.10 provides the level of imports, consumption, and inventories in the country according to the MAFS data (adjusted and rounded) for the years 1994/95 to 1998/99. According to these data, the import levels increased after liberalization in 1994/95 from approximately 50,000 tons to over 90,000 tons. Table II.11 indicates the fertilizer imports during the period November 2001 to November 2003, as reported by COTECNA (the international agency appointed by the government for pre-shipment inspections). The total

Table II.9. Fertilizer Imports by Organizations (1994/95 to 1998/99)

Organizations	1994/95	1995/96	1996/97	1997/98	1998/99
	('000 tons)				
Tanzania Fertilizer Co.	53,000	14,000	18,477	6,000	8,200
Topserve	900	4,000			
E. Usambara	1,200				
Fert & Chem	900	1,000	3,430	1,600	
KR II		19,788	11,401	4,561	19,944
Dimon		6,700	9,000		7,850
TLTC					9,500
Tobacco Companies				47,830	
STACO			4,800	9,600	9,000
Premium Agro Chem			4,000	8,000	15,000
Mohammed Enter.			3,600	4,500	12,000
Stancom			16,500		
TLP/Topserve			18,900		
Intabex			6,067		
BCS DSM			800		
Balton				7,400	3,512
Seif Impex				3,000	1,500
Collman				1,700	1,700
Ramwig					500
TFA		750			2,500
Total	**56,000**	**46,238**	**96,975**	**94,191**	**91,206**

Source: MAFS Statistics Unit Data.

Table II.10. Fertilizer Stocks and Imports by Years in Tanzania

Year	Opening Stocks	Imports	Availability	Consumption	Closing Stocks
	(tons)				
1994/95	151,300	56,000	207,300	91,303	115,997
1995/96	115,997	46,238	162,235	109,568	52,667
1996/97	52,667	96,975	149,642	64,711	84931
1997/98	84,931	94,191	179,122	106,493	72,629
1998/99	72,629	91,206	163,835	61,289	102,546

Source: Based on MAFS Statistics Unit using imports and consumption numbers and adjusting other figures.

Table II. 11. Tanzania Fertilizer Imports (Data Obtained From COTECNA) (November 1, 2001 to November 11, 2003)

HS Code	General Goods Description	Quantity	Value
		(tons)	(US $)
3102.21.00	Ammonium sulfate	31,010.02	2,566,468.48
3102.60.00	Double salts and mixtures of calcium nitrate and ammonium nitrate	26,188.02	2,791,538.50
3102.90.00	Mineral or chemical fertilizers, nitrogenous	2,360.55	495,785.70
3103.10.00	Superphosphates	5,200.00	693,200.00
3102.10.00	Urea	125,865.18	19,071,384.60
3102.21.00	Ammonium sulfate	1,094.00	65,963.46
Total		**191,717.77**	**25,684,340.74**

for these 2 years is 191,717 tons of fertilizer imports—averaging a little over 90,000 tpy. Supplies come in mainly through Dar es Salaam, although some fertilizers are also obtained from Mombassa and Nairobi in Kenya. Types of fertilizers in use in Tanzania are shown in Table II.12.

Import Costs—There are no import duties on fertilizers. However, the other charges relate to wharfage, port handling, bags, and bagging (in case products are imported in bulk), value added tax (VAT) on these charges, and charges of the inspection agency, the transport bureau and the Tanzania Bureau of Standards. For example, as shown in Table II.8 for an f.o.b. cost of $170/ton from the Middle Eastern suppliers, the landed cost into a Dar es Salaam warehouse would be about $209.66/ton or about Tsh 11,000/50-kg bag.

Fertilizer Inspections

There are a number of agencies involved in inspections and in ensuring quality control of the fertilizers that are imported:

- COTECNA is an international agency that has an exclusive arrangement with the Tanzania Revenue Authority (TRA) for the pre-shipment inspections of all commercial imports—quality, quantity, and price check. All imports of more than $5,000 require a pre-shipment inspection. A copy of the TRA Import Declaration Form (IDF) that each importer has to complete prior to importing goes to COTECNA. The importer also pays COTECNA 1.2% of the declared value of the goods. Since COTECNA has 150 offices in 50 countries and representatives in several other countries, they carry out a check on both product quality and prices charged. Of the total imports, only 25% of the files are checked. Pre-shipment inspections were meant to be a temporary phase. In 2004, COTECNA entered into an agreement with TRA to do destination (border/port) inspections and has the capability to screen 16 containers an hour through machines.
- SGS, an international inspection agency, is mainly involved with inspections at the port—quantity discharged from the ship and visual inspections for condition of the goods. The charge is $0.35/ton whether the fertilizer shipment is in bulk or in bags. SGS also supervises the bagging operation of the Tanzanian Harbor Authority (THA) for their clients.
- Tanzania Bureau of Standards (TBS) formulates national standards through National Technical Committees (NTC) and is also responsible for implementation and quality assurance activities. This covers engineering, electrical, mechanical, agri-inputs, textiles, chemicals, and other commodities. TBS started functioning in 1982 and now has over 500 standards for various products. TBS collects and tests samples from factories and imports in seven laboratories and issues certificates. Many local manufacturers use the TBS mark on their labels as an attestation of good

Table II.12. List of Chemical Fertilizers Used in Tanzania (Mineral Fertilizers)

Products	General Description (Nutrients)	End Use
Urea 46-0-0	Nitrogenous fertilizer	As a plant food for all types of agricultural crops—maize, cotton, rice, wheat, vegetables, fruits, etc.
Ammonium sulfate (AS) 21-0-0 +24 S	As above	As above.
Calcium ammonium nitrate (CAN) 27-0-0	As above	As above
Single superphosphate (SSP) 0-16-0	Phosphate fertilizer	As above
Triple superphosphate (TSP) 0-46-0	As above	As above
Diammonium phosphate (DAP) 18-46-0	Compound fertilizer	As above
N-P-K 10-18-24	As above	As above
N-P-K 20-10-10	As above	As above
N-P-K 17-17-17	As above	As above
N-P-K Other grades	As above	As above
Muriate of potash (MOP) 0-0-60	Potash fertilizer	As above
All other fertilizers	Nitrogenous, phosphate, potash, or compound	As above

quality. For importers, a batch certificate is issued after inspection. TBS has inspectors at the ports, airports, and on road borders' posts. They claim that all samples are cleared within 72 hours. There is harmonization with Kenya in the area of inspections and testing, and the Kenya Bureau of Standards certificates are accepted in Tanzania.

Transportation

According to the two large trucking companies in Tanzania—Cargo Star (also stevedoring, clearing and forwarding, and shipping agency) and Abri Transport—about 60%-70% of the goods from the port are transported by rail and the balance by road. The roads to the south are in good condition (Iringa, Mbeya), but the road from Dodoma to Kigoma and other roads in that area are in poor condition. Therefore, shipment to most of these areas is by rail.

Rail Transport—Two rail systems operate in Tanzania: Tanzania Zambia Railway Authority (TAZARA) and TRC. TAZARA caters for all the goods traffic for Zambia imported through Dar es Salaam. TRC caters to all the traffic within Tanzania, and also transit goods for land-locked countries of Burundi, Democratic Republic of Congo, Rwanda, and Uganda. Sometimes a number of wagons are dedicated to one particular country. Thus, availability of wagons (net capacity 40 tons) is a major constraint in rail shipments and clients have to wait a number of days to make shipments by rail. Since the port allows only a 7-day clearance period with a charge of $1/ton per day after that, most importers have to store goods in interim warehouses in Dar es Salaam ($3.5/ton transport cost from the port to the warehouse and $1/ton storage charge for 7-10 days). Open wagons are given for fertilizers; to prevent pilferage, which is fairly rampant, one security guard has

to be assigned for every five to six wagons, adding to the cost. Movement is slow and a wagon takes about 7 days from Dar es Salaam to Tabora. Since the tariff classification for fertilizers is in the lower rate category, rail transport, despite the problems, is cheaper for shipments to the west and northeast regions.

Road Transport—There are an estimated 2,000 road trucks operated by five to six large companies and several smaller ones. Of the 2,000 trucks, about 50% are with a net carrying capacity of 28 tons. Most of the trucks that are imported are 2-3 years old and the cost is about $100,000 each. Generally, the freight rates are $0.10/km per ton for rough roads and $0.08/km per ton for tarmac roads. The 28-ton capacity trucks were generally carrying up to 50 tons of goods; this practice has been curbed since the government introduced weighbridges and there are heavy penalties for overweight trucks. There is also a limit on the width, axle weight, and the number of axles of a truck. The configuration of the axle weight is also specified:

Front 1x8 tons	= 8 ton gross
Middle 2x9 tons	= 18 ton gross
Rear 3x8 tons	= 24 ton gross
Total	= 50 ton gross

There is no tolerance at the weighbridge, like 5% in Kenya, and the gross weight in Tanzania cannot exceed 50 tons. Also, since the number of weighbridges is limited, there are long queues and a waiting time of 5-6 hours is not uncommon. As a result, transporters are having problems with the weighbridges. The matter has been taken up with the Ministry of Works by the Transport Association of Tanzania (TAOTA) with the request that the regulations (SADEC) should be harmonized with those prevailing in other countries in East Africa (COMESA) so that cross-border movement is not hampered.

There is 10% import duty plus 20% VAT on trucks and spares and 25% duty on tires plus 20% VAT. On the freight, there is 20% VAT. The operating costs for a 27- to 28-ton truck net carrying capacity are shown in Table II.13.

Table II.13. Tanzania—Estimates of Prevailing Road Transportation Costs (November 2003)

(1) $0.10/km/ton on rough road.
(2) $0.08/km/ton on tarmac road; e.g., Mbeya 823 km from Dar transportation charge is $65.84/ton.

Estimated Costs for Operating a 27-ton Net Carrying Capacity Truck	Tsh/km
Diesel 0.8 L/km rough road (0.7 L/km tarmac road) at Tsh 650/L	455
Road toll	90
Wear and tear	114
Driver cost	40
Tire wear	5
Subtotal	**704**
Overhead (5% above)	35
Insurance and miscellaneous (7% of above)	50
Total	**789**

Note: Plus weighbridge charges and tips, road fines, and other charges.

Banking System

There are several banks operating in Tanzania. Among the larger banks are CRDB, Exim Bank, National Bank of Commerce (30 branches), National Micro Finance Bank (100 branches), Standard Chartered, Citibank, Barclays, and Stanbic. In terms of deposits, CRDB is the largest in the country.

In agriculture, banks finance the purchase of coffee, cotton, etc., and provide financing to the big tobacco farmers. Of production loans, 80% (with 10%-12% interest rates) is given to the tobacco farmers or tobacco farmer cooperatives with the farm as collateral. The balance goes to the small coffee and cotton growers (and also cooperatives) with urban property as collateral. Interest rates vary from 12% to 15% for medium loans and from 15% to 19% for the smaller loans (risk factor) and with collateral at least 150% of the loan amount. Collateral management companies provide services in handling all aspects of collateral including auction and recovery.

Commercial lines of credit are available for the importers of agri-inputs like any other commercial

importer. There is a 1% commitment fee for credit lines extended. For opening an L/C for imports, an IDF form is a must and has to be completed by the importer.

The Savings and Credit Cooperatives (SACCOs)—with 800 members—provide input supplies on credit to its members with an agreement with the sugar mills to pay at harvest time. Interest rates are low at 12%.

SMEs in agriculture get loans from the CRDB by going through Private Agriculture Sector Support (PASS—a limited company by guarantee financed by the Tanzanian and Danish governments). PASS helps prepare business plans (1.5% fee) and provides a 30%-40% guarantee to the bank on behalf of the SME. Of the interest rate of 18%, CRDB gets 12% and 6% goes to PASS. (For comparison, fixed deposit rates are 2%-3%, treasury bill rates in Tanzania are 5.7%, and interest rates generally charged are 18% since default is high.)

Regional banks like the Kilimanjaro Cooperative Bank in Moshi also extend production credit to the farmers through cooperatives with inputs supplied by local stockists. The farmers are not given cash. The bank selects known stockists and provides them funds to import/purchase inputs. The inputs are given by the stockists to bank-selected cooperative societies who in turn provide the input to the farmers. The preferential interest rates are 12% and collateral is either land or hypothecation of stocks. This activity has been funded by the International Monetary Fund (IMF) and EEC in the past.

National Micro Finance Bank provides micro-finance loans in the regions to small businesses, but not in agriculture, livestock, and transport sectors since these sectors are considered high risk and not fully covered by insurance. The lending starts at 50,000 Tsh ($50) in the first stage and goes though six stages at which the SME could be given a credit limit of 3.5 million Tsh ($3,500). All SMEs (ongoing businesses only) start at Stage 1 and move upwards based on performance record and credit history. Interest rate charged is 2.5%/month simple interest. If payments are regular, then only 2%/month interest is charged at the end of the term. Collateral in the form of houses, household equipment, motor vehicles, etc., are accepted at 150% of the loan value. Majembe Auction Mart is utilized to collect bad debts for 10% in fees of the amount collected. Bad debts run about 1.5%-2.0% though these were also at one time about 4%.

Dealer (Retailer) Network

There is a sizeable network of agri-input dealers in Tanzania in the provinces. However this network is all in the cities and small towns and there are not many dealers in the rural areas. There were several retailers in every town visited: Morogoro (14 dealers), Arusha-Moshi (5 dealers), Mbeya, Iringa, and others. There were also branches of the importers that were mainly in the wholesale business.

Many of the dealers stocked fertilizers, agrochemicals, seeds (cereals as well as vegetables and flowers), and veterinary medicines. In addition, some had sprayers, pumps, sprinklers, and farm tools. Quite a few of the dealers claimed that they had been trained by TPRI but mainly in the proper and safe use of CPPs. They were not so knowledgeable about fertilizers or seed. Most of the retailers did business with their own or informally borrowed capital. They felt that the institutional credit process is tedious and the interest rates are high. They all purchased from suppliers like Premium, STACO, TFC, Twiga, Balton, East Africa Seed, SATEC, Multi-flower, and Abkomi. They reported that some of the farmers were very knowledgeable, but most did not know much about the use of modern agri-inputs. A few of the retailers who had been dealing for many years with Premium and TFC were given material on short-term credit (15 days). Almost all other suppliers did not extend any credit.

Market Prices

The pricing is reasonably competitive with no indication of any collusion. Prices are distance related from Dar es Salaam reflecting the freight by rail or road. Fertilizers (different from other commodities) are moved mainly by road since the bulk of the requirements are in the southern regions of Iringa, Mbeya, Ruvuma, and Rukva where the roads are good. Supplies to the northeastern regions are by rail since the roads are not in good conditions. For example, urea, based on the present international market, would cost about Tanzanian Shillings 11,000/50-kg bag landed at Dar es Salaam. Including port handling charges and margins, it is sold ex-Dar es Salaam at 13,000 Tsh/bag and is available in most of the regions at between 14,000

Tsh/bag and 16,000 Tsh/bag including the freight and distributor/retailer margins. Retailer margins vary between 200 Tsh/bag and 500 Tsh/bag. Retail fertilizer prices in Tanzania are presented in Tables II.14, II.15, and II.16.

Constraints Affecting the Fertilizer Market

Some of the major constraints affecting the performance of the fertilizer market are listed below:

- Disruptions in the market caused by ad hoc policy announcements that subsidized fertilizers are to be supplied at half the normal price (as of 2004).
- Uneven playing field with TFC being provided financial support by the government to organize its imports.
- Donor fertilizer supplies like KR II being sold in the past to a few traders and supplies finding their way into the market at low prices affecting open pricing mechanisms.
- High transportation costs due to 20% VAT on fuel, bad roads, rigid weighbridge regulations, inadequate supply of covered wagons, and use of open wagons with attendant security costs.

Table II.14. Retail Fertilizer Prices Reported by Dealers in November 2003, in Tanzanian Shillings per 50-kg Bag

	Urea	CAN	AS	DAP	TSP	NPK (20-10-10 and others)	Phosphate Rock (30%)
Dar es Salaam	13,000	13,000	10,500	15,000	13,500	12,000	-
Morogoro (1st dealer)	18,000	14,000	12,000	15,000	16,000	15,000	-
Morogoro (2nd dealer)	17,000	18,000	-	19,000	19,000	19,000	-
Morogoro (3rd dealer)	18,000	18,500	14,000	19,000	-	19,000	-
Moshi (1st dealer)	15,000 Granule 14,000 Prill	16,000	12,500	17,000	15,000	16,500	-
Moshi (2nd dealer)	13,500	15,000	12,000	18,000	-	17,000	5,000
Arusha (Dealer)	16,000 Japan 15,000 Saudi Arabia	16,000	13,000	17,400	17,000	17,000	5,000
Mbaye (Agri Dept)	14,000	14,000	12,000	-	17,500	17,500	7,500
Mbaye (1st dealer)	14,600	15,500	12,000	16,500	-	16,000	-
Mbaye (2nd dealer)	16,000	16,000	13,000	19,000	18,000	-	7,500
Kidamale Village (Dealer)	15,600	16,500	-	17,500	-	17,000	-
Iringa (Dealer)	14,500	15,500	12,500	18,500	15,000	17,000	-

Note: Freight in Tsh per 50-kg bag from Dar es Salaam to (a) Iringa Tsh 1,000; (b) Mbeya Tsh 2,000; (c) Songea Tsh 2,500; (d) Arusha Tsh 1,500.

Table II.15. Retail Fertilizer Prices by Regions in Tanzanian Shilling Per 50-kg Bag (2001/02)

Sales Center	AS	CAN	Urea	DAP	TSP	NPK 25:5:5	NPK 20:10:10	NPK 6:20:18
Dar es Salaam	7,900	8,500	10,000	11,700	7,500	9,000	12,500	13,750
Iringa	9,000	9,500	10,500	12,000	8,500	10,000		14,500
Makambako	8,900	10,000	10,600		8,500	10,000		14,500
Njombe	9,000	10,000	10,600		8,750	10,300		14,500
Mbeya	9,000	10,500	11,280	13,300	8,800	10,300		14,500
Songea	9,800		12,500	13,500	9,400			16,350
Tunduru	11,920		14,000		12,600			
Mtwara	9,950		12,000		10,400			15,750
Tabora	9,800		12,200		10,250		14,500	14,500
Mwanza	10,290		12,650		10,700			14,950
Arusha	9,500		10,500		10,000			15,150
Moshi	9,000		10,000		9,900			15,000
Tanga	8,900	9,000	10,000		9,650	9,750		14,800

Source: MAFS Inputs Section.

- Inadequate business, technical knowledge, and skills at the distributor and retailer levels of fertilizers.
- Insufficient credit facilities for small-scale farmers as well as for agribusinesses—importers, wholesalers, and retailers—due to stringent collateral requirements and high interest rates.
- Insufficient extension activities in the field despite the efforts of some NGOs, private sector organizations, and the extension department staff, which is handicapped by paucity of funds.
- Inadequate knowledge on the part of farmers about the proper use of inputs and its economics.
- Very little market promotion being done by the private sector.
- Inadequate flow of market information—information is available scattered over a number of organizations without a system for the regular collection, analysis, and dissemination of this information in the market to key players.
- Private and public sector relationships need improvement to provide mutual trust and confidence. This will also help in coordination and working towards improving the public/private sector partnership.

Measures Needed

Measures are needed to strengthen the functioning and performance of the fertilizer markets—policy, human capital, finance, market information, regulation, and others:

- The Government of Tanzania should follow a consistent marketing policy. Ad hoc announcements or interventions should be avoided.
- Donor supplies like KR II should be "marketized" in the future—auctioned through specialist auctioneers in Dar es Salaam or in the regions in small lots to enable participation by small traders at or above full costs.
- Level playing field should be maintained without providing TFC any tangible or intangible benefits.
- An intensive training program for the retailers, wholesalers, and importers in the basics of mineral fertilizer and crop production technology, and fertilizer marketing and business should be implemented to develop human capital. This is particularly necessary at the retailer and wholesaler levels in the rural areas to develop and strengthen the distribution network

Table II.16. Retail Fertilizer Prices by Regions in Tanzanian Shilling Per 50-kg Bag (2002/03)

Regions	AS	CAN	Urea	DAP	TSP	NPK 25:5:5	NPK 20:10:10	NPK 6:20:18
Dar es Salaam	8,750	9,100	9,750	12,250	10,000	12,500		13,000
Iringa	10,750	11,250	11,400	14,700	14,000	13,500	11,000	11,000
Mbeya	12,000	12,250	12,700	16,000	16,000	13,850	16,000	16,000
Songea	12,250	14,500	14,250	13,500	11,000	14,450	15,000	15,000
Mtwara	13,500		16,000					15,700
Tabora	12,250	14,250	14,750	18,000	17,000			17,300
Mwanza	14,500	14,500	15,000		17,500		18,000	13,000
Arusha	13,250	10,850	13,500	13,000	15,500	13,400		14,600
Tanga	10,750	13,250	11,500	16,000	17,850	12,500	16,300	20,000
Kagera		18,500	20,000		19,250			
Mara		17,500	17,00		18,000		19,000	19,000
Dodoma		14,000	13,500		14,000			
Rukva	14,000	14,250	14,500	17,250	15,750			
Morogoro	11,500	13,250	14,500	17,000	15,000		17,000	17,000
Lindi	17,500	17,500	17,500		17,500			
Singida	20,000	20,000	25,000					
Shinyanga	11,500	14,250	15,000				17,500	16,500
Kigoma	14,000	16,000	15,500		18,000			16,000
Pwani		15,500		17,500	17,000		17,500	17,500
Moshi		10,500	10,300			13,200		

Source: MAFS Inputs Section (average values used when a range of prices was given).

and enable them to participate in extension activities by advising the farmers in the proper use of agricultural inputs.

- Linkages of importers with international markets need to be strengthened. Linkages of importers with wholesalers and dealers should be improved through regular sponsored meetings and subsequently the formation of fertilizer dealer associations.
- The linkages of the fertilizer business with financial institutions need to be improved to facilitate extension of commercial lines of credit especially in the rural areas to small private independent dealers. This could be done through the creation and management of a risk management fund.
- VAT and other charges in the port handling and transportation of fertilizers should be reassessed to reduce the cost of operations and prices to the farmers. A study should be conducted to evaluate these matters.
- Infrastructure improvements are particularly required to provide more rolling stock to the railways in terms of covered wagons and encouragement to the trucking industry through reduced import tariffs on trucks, spares, and tires.
- Market information systems need to be organized to collect the existing data from various sources and to make this available in time to all the stakeholders.
- Regular coordination meetings between the government and the public sector and private sector representatives should be introduced.

Annex III
An Assessment of the Seed Market

An Assessment of the Seed Market

For the purposes of the seed market, the country could be broadly divided into three zones, namely, Northern, Central, and Southern. The Northern Zone, centered around the Arusha-Moshi regions, is a low-medium altitude and has a bimodal rainfall pattern. It is a significant agricultural area with maize as an important crop, and virtually all the seed companies are based here. The Central Zone is semiarid and produces more sorghum than maize. The Southern Highlands Zone, with a mid-high altitude and unimodal rainfall, is a high-potential agricultural area covering approximately 45% of the maize area in Tanzania.

Apart from these main zones, the coastal strip from Tanga southwards and extending inwards to Morogoro also produces some maize. The western areas along the rift valley form a productive strip connecting to the Southern Highlands. In addition to maize, the other crops of significance are: sorghum, millet, pulses, rice, and wheat. The minor crops are: groundnuts, sunflower, and sesame. Table III.1 shows the overall average potential annual seed market for the major crops. Cash crops include coffee, tea, cashews, tobacco, and cotton.

Organizations Involved in the Seed Market

Public Sector Organizations—The public sector is involved in research and variety development, production of prebasic (breeder) and basic (foundation) seed, informal seed production, regulation, and certification and control.

Research Institutions—The Selian Agricultural Research Institute (SARI), Arusha, mostly caters to the needs of the northern part of the country, while the Southern Highlands are served by the Uyole Agricultural Research Institute in Mbeya. Both these Institutes have maize as their main research crop. The other agricultural research institutes (ARIs) and their main areas of research are:

Ilonga in Morogoro—Cereals and grain legumes.

Mulingano in Tanga—Soils.

Tumbi in Tabora—Tobacco and farming systems.

Ukiriguru in Mwanza—Cotton.

Maruku in Bukoba—Coffee and bananas.

Table III.1. Crop Area Planted and Seed Requirements

Crop	Area	Seed Requirement	Seed Use	Comments
	(ha)	(tons)	(tons)	
Maize	1,700,000[a]	34,000	2,000	6%-7%; mostly hybrid seed. Some OPVs in QDS scheme.
Pulses	500,000	30,000	Negligible	Approx. 12,000 tons French bean seeds for export. Some quality declared seed (QDS).
Sorghum	600,000	9,000	Negligible	Mostly informal seed.
Paddy rice	450,000	22,500	Negligible	Informal and farm saved
Millets	350,000	2,800	Negligible	Informal and farm saved.

a. 1,500,000-2,000,000 ha.

Source: Derived from industry and MAFS' data.
Organizations involved in the seed industry.

Excellent varieties have been produced that, in the past, have been passed on to Tanzania Seed Company (TANSEED). Since the collapse of TANSEED, there is no clear pathway for these varieties. ARIs produce mostly prebasic/breeder seed and basic seed, which are sold to the Foundation Seed Farms. In addition, some certified seed of hybrid maize is also produced at Uyole.

Foundation Seed Farms—There are five Foundation Seed Farms (FSFs) in the country. They are:

Arusha Seed Farm—Arusha.

Msimba Seed Farm—Kilosa [Morogoro].

Dabaga Seed Farm—Iringa.

Kilangali Seed Farm—Kilosa, mostly for rice.

Mwele Seed Farm—Tanga.

These FSFs produce various classes of seed, mostly basic seed on contract to NGOs and seed companies, and some certified seed, which is sold to surrounding farmers. The bulk of the seed now produced is for the quality declared seeds (QDS) scheme funded by the Danish International Development Agency (DANIDA), some of which may also be used by companies and NGOs. But the activities of these farms are seriously hampered by poor funding, central control from MAFS, lack of business and marketing skills, and low staff morale.

The way forward for these farms is not clear at the moment. At one time, two of the five farms—Kilangali and Mwele—were slated for privatization, but later the GOT changed its mind. It is said that no one came forward or showed any interest to buy them. Now there is talk of creating a new public organization called "The National Seed Agency" based around the foundation seed farms. Though modalities of this agency are still being worked out, it is assumed that it will operate commercially by producing and marketing seeds. The question to be asked, however, is how will this agency avoid the problems that beset TANSEED and other government-run companies? Private companies are also worried that government may use this agency to interfere in the market through, say, selling subsidized seed. There has been no effort to inform the private sector about these developments and most stakeholders have no clue.

Commercial Seed Production—In addition to the FSFs mentioned above, the agricultural research institutes (ARI—Selian, ARI—Uyole, and ARI—Ilonga) also produce commercial seed of various crops including maize hybrids. Some of this seed may be regarded as certified and some is informal, but it is difficult to distinguish between the two. It is possible for these institutions to exploit their position so they do not have to go through the rigorous certification system like the private seed companies. Table III.2 shows the quantity of seed produced by the Agricultural Research Institutes and Foundation Seed Farms in 2001/02.

The sustainability of commercial seed production by ARIs is not clear because funding for even the core research work is inadequate and the institutes do not have requisite skills in business and marketing. There is no clearly defined role in seed production for ARIs and directives, and funds from MAFS come in an ad hoc manner. As a result, there is no proper marketing strategy and some of the seed produced may be sold below cost or even given out free. DANIDA has purified and maintained all national released varieties under the on-farm seed production component in Phase 1 and continue to do so for newly released varieties in Phase 2 plus the ones where there might be problems with the purity. It is not clear what will happen when this support finally ends.

GOT, with support from DANIDA, is also involved in QDS. According to the new Seed Act, 2003, and the Rules and Regulations for QDS production, all who work with on-farm seed production should follow the same system, the QDS. Since QDS is in the Seed Act, it may be regarded as a formal seed. The farmers have to be selected, trained, and registered and the Tanzania Official Seed Certification Agency (TOSCA) inspects about 10% of the growers. However, DANIDA has trained district inspectors in all areas of QDS (25 inspectors) and the target is to have 100% inspection of the seed.

Apart from FSFs, many of the growers are small-scale farmers who sell to the neighboring farmers within their villages. This is the underlying philosophy of the MAFS/DANIDA scheme. A few farmers visited indicated that they are having problems selling even the little maize seed they produce (less than 500 kg), and

Table III.2. Seed Production by Government Institutions (ARIs and FSFs) in 2001/02 and Available in 2002/03 (kg)

Crop Type	Arusha	Msimba	Dabaga	Mwele	Kilangali	Uyole	Iionga	Selian	**Total**
Maize OPV	43,800	7,400	-	925	-	-	1,580	3,755	**57,460**
Maize Hybrids	-	-	20	-	-	140	-	-	**160**
Beans	61,400	300	6	-	-	15	-		**61,721**
Sunflower	3,000	500					210		**3,710**
Sorghum	3,000	2,200					1,300		**6,500**
Pearl millet		300					50		**350**
Paddy					34,550				**34,550**
Cowpeas				4			6,000		**6,004**
Greengram	-	100		300			665		**1,065**
Wheat	93,100		20			41			**93,161**
Vegetables	-								**-**
Soya							1,000		**1,000**
Sesame		700							**700**
Groundnuts	-								**-**
Pigeon pea		150							**150**
Total	**204,300**	**11,650**	**46**	**1,229**	**34,550**	**196**	**10,805**	**3,755**	**266,531**

Source: Seed Unit, MAFS Headquarters.

many have stopped producing the seed of the minor crops, like grain legumes, after failing to sell the seed. According to the Seed Unit, some of the problems in the QDS scheme may be due to poor implementation by the district inspectors. But it is clear that emphasis is put on production and *little thought has been given to developing a marketing strategy*.

This questions the sustainability of the whole scheme. The government should use the scheme to promote the culture of using improved seed among farmers by linking up the growers with commercial seed companies and using them for the purposes of promoting new varieties. The message should also be clear from the start that this is only a transitional activity, although it can continue to play an important role in producing seed of the minor crops. QDS has an important role to play in meeting the farmers' need for improved seed but it needs to be linked with the private sector.

NGOs—A number of local and international NGOs are involved in informal seed production. These include: World Vision, African Inland Church, DASPA (Dodoma), KAEMP (Kagera), Diocese of Mara, and Act Diocese of Masasi. Table III.3 shows the quantity of informal seed produced by various NGOs, religious organizations, and local government programs in 2001/02. These data also include QDS mentioned earlier. Most of this seed is given out free or sold at very low subsidized prices. This seed, plus that from government institutes and farms, has the potential to distort the market.

It is, however, argued that NGOs operate in areas where there is no commercial seed activity, largely because they are remote and marginal, and the farmers are too poor to afford improved inputs. This may be true but there is a catch—some of the free seeds often find their way into the market at reduced prices and the farmers develop a dependency syndrome and will not buy commercial seed even if they are able to afford it. Such NGO activities should thus be designed with a clear exit strategy and should be implemented in a market-friendly manner.

The Private Sector Organizations

There are over 20 registered seed companies in Tanzania but only one-half of them are active. All are based in Arusha except Maungu Seed Company and Pioneer (represented by ByTrade) who are in Dar es Salaam. There is also TANSEED International in Njombe.

Only Kibo Seed Company and Suba Agro Trading and Engineering Company, Limited (SATEC) have business operations in the Southern Highlands, based at Makambako. All the foreign-based companies produce their seed outside Tanzania and simply import it into the country. This is attributed to the small seed

Table III.3. Informal Seed Production by NGOs, Religious and Local Government Organizations, and QDS Produced in 2001/02 and Available in 2002/03

Region/District	Maize	Beans	Rice	G/nuts	Sunflower	P/Peas	C/Peas	P/millet	Sesame	Sorghum	Wheat	**Total**
	(kg)											
Shinyanga	1,350	-	-	2,075	6,980	-	-	-		7,200		**17,605**
Dodoma	25,090	12,800	2,496	1,400	8,000	5,375	580	1,025	1,650	102,950	-	**161,366**
Tabora	29,000	-	-	-	2,000	5,000	-	9,000	-	-	45,000	**90,000**
Iringa	53,520	13,171	9,390	-	7,876	800	800	2,150	250	-	91,887	**179,844**
Kagera	-	-	-	-	-	-	-	-	-	-	-	**6,600**
Mara	6,600	-	-	-	-	-	-	-	-	-	-	-
Mtwara	-	-	-	-	-	-	-	-	-	-	-	-
Morogoro	17,855	2,670	33,100	-	1,300	-	300	968	528	1,300	59,063	**117,084**
Grand Total	**133,415**	**28,641**	**44,986**	**3,475**	**26,156**	**11,175**	**1,680**	**13,143**	**2,428**	**111,450**	**195,950**	**572,499**

Source: Seed Unit, MAFS Headquarters.

market, poor infrastructure, and absence of serious commercial farmers, all of which make local seed production very expensive. Only Seedco, through its local partner SATEC, is trying to produce its seed locally. So far 250 tons of SC627 has been locally produced and marketed.

The local seed companies have tried to pick up various pieces of the defunct TANSEED, but most of them lack both financial and technical capacity. A few are trying to organize formal contracts with FSFs, but most simply broker marketing deals and then buy seed from the farms and supply. They are basically trading companies and have not developed the requisite infrastructure for genuine seed companies. They also import and market various vegetable seeds. Again, only SATEC is making efforts to produce its own seed and has even started a breeding program.

Another category of companies is those producing mostly legume (bean) seeds for export markets only. These include: Sluis Brothers E.A. Ltd., Rotian Seeds Co. Ltd., and Pop Vriend [T] Ltd. Then there are companies that deal in imported vegetable seeds with some local production like Alpha Seed Company Ltd.

The Multinational Corporations (MNCs) dealing in both field crops and vegetable seeds are locally represented as follows:

Pioneer:	ByTrade Tanzania Ltd.
Pannar:	East African Seed Company
Seedco International:	SATEC

Monsanto is trading directly using Cargill and Dekalb seed brands. Cargill had been in the Tanzanian seed market since 1990 and its maize hybrids are quite popular. Its activities are concentrated in Arusha, Kilimanjaro, Tanga, and Singida. Monsanto has introduced the "Hodari Pack" consisting of seed, herbicide (Roundup), and fertilizers (planting and top dressing) enough for one-half acre. This is an innovative way to promote not only seed, but also the full technology package that will enhance farm productivity, and hopefully increase farmer demand for improved inputs.

Although Monsanto plans to move to the southern regions with its DK 8071 maize hybrid, it does not have materials suited to highland areas. Considering its strong market presence in the country, Monsanto might benefit from acquiring some of the highland materials from Uyole in order to gain a firm foothold in the Southern Highlands. Such an arrangement should be possible now that there is a plant variety protection (PVP) law in place. However, Monsanto seems reluctant to invest in producing seeds locally, claiming it is expensive to produce seeds here and the market is too small.[12]

Kenya Seed Company, through its local subsidiary, Kibo Seed Company**,** is another foreign seed company with a long-standing and strong presence in the market. It has exploited its close proximity to Tanzania and the similarity of agro-ecological conditions between Kenya and Tanzania to establish itself. It is also the only company with good maize hybrids suited to the Southern Highlands, although they may not be tolerant to Maize Streak Virus and Grey Leaf Spot, diseases that are becoming increasingly significant in the region.

FICA Seeds Limited, a Ugandan based company, has been locally incorporated to take advantage of the harmonization of seed policies, laws, and regulations in Eastern Africa and market maize hybrids and OPVs bred and produced in Uganda. These are excellent materials suited to the low and medium altitudes with tolerance to low nitrogen and drought, as well as Maize Streak Virus and Grey Leaf Spot. It is also the only foreign company actively promoting OPV maize seed. The Variety Release Committee approved its varieties and the company sold 80 tons of seed in 2004.

Seed Supply and Demand

Before liberalization, TANSEED was satisfying 15% of the seed market with improved seeds, but all the activities of the company were subsidized and the seed was sold below cost price. The distribution network consisted of cooperatives, whose activities were also subsidized. The company never invested in market development or demand creation because there was never a need to do so. Thus, it is not easy to assess what the actual demand for improved seed has been in Tanzania. The seed market has never functioned competitively.

Seed Supply—It has been conjectured that after the liberalization, seed supply has fallen to no more

[12]After the study, it was learned that Monsanto has closed its office in the country and is selling through an agent, ostensibly because of the small market.

than 5% of the market. This is based on the abovementioned situation where seed distribution was not according to demand. However, this analysis is not supported by more recent data obtained from the Seed Unit. According to Table III.4, during the last years of TANSEED, seed supply averaged about 2,000 tons of seed per year, a figure, which shot up to over 4,000 tons in 1998/99 and 10,000 tons the following year. This shows an increase in supply, rather than a decrease.

According to the same source, seed from private companies available for the year 2002/03 totaled 9,587 tons. This was excluding the seed sold by TANSEED, which was nearly defunct by then. In addition to the formal sources, there were about 266.5 tons from ARIs/ FSFs and another 572.5 tons from QDS and NGO sources. Thus, taking into consideration all the current sources of seed in Tanzania, there does not seem to be a problem with seed supply, and the claim of reduced seed supply following liberalization does not seem to be true. Although the market pathway for seed produced from government institutions and NGOs is not clear, it is assumed that most of it ends up being planted by farmers. The only snag is that such seed supply distorts the market because it is not commercially produced and marketed, and its regularity is not guaranteed. But overall, it would seem more accurate to say that seed supply has actually risen following liberalization, although it is still not sufficient to meet the total demand.

Seed Demand—According to the MAFS' data, overall potential seed demand has steadily risen from approximately 126,000 tons to nearly 170,000 tons for the same period 1993 to 2000. The biggest increase is in beans and wheat, followed by rice. The seed demand for maize, sorghum, and oilseeds rose only nominally. This trend might be attributed to increased crop acreages, although no attempt was made to do an analysis in this regard. It should be emphasized that these figures only show potential demand, and the situation for actual demand and effective demand is hardly known. There are no data at all, because no attempt has ever been made to do a seed market survey.

For many of the crops with big seed requirements like beans, rice, and wheat, farmer-saved seed and other informal seed would suffice because these are self-pollinated crops. It is only maize, and to some extent sorghum and oilseeds, that the formal seed sector has the potential to supply a sizeable percentage. Even with these crops, competition from informal seed sources is still significant where most farmers still grow OPVs. It is, therefore, imperative to actively develop the demand for improved seeds.

Seed Distribution Network—After the collapse of the cooperative system, a distribution network of private traders has developed across the country. According to industry sources, there are probably over 500 active stockists, mostly located in the main towns and trading centers and selling all types of agri-inputs. Private seed companies make over 70% of their sales through this network. Although this is a small number of stockists for a country the size of Tanzania, it is still a commendable start considering the history and size of the industry. With the combined effort of the entire agri-input sector, and the support of the public sector, this number can be easily doubled and the network can slowly extend to rural areas. The Tanganyika Farmers'

Table III.4. Seed Supply From Formal Sources (1993/94 to 1999/2000)

Seed Source	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000
	(tons)						
TANSEED	1,174	826	994	547	861	881	355
Cargill	1,313	1,267	845	660	na	na	na
Other	na	na	na	na	na	3,861	10,408
Total	**2,487**	**2,093**	**1,839**	**1,207**	**861**	**4,742**	**10,763**

Source: Compiled from Seed Unit data.

Association (TFA) has established itself as a formidable distributor of all farm inputs.

Seed Prices

Farmers and extension staff claim that seed prices are very high. However, the industry seems to think that prices have held steady for many years in dollar terms, but have risen only in local currency due to currency devaluation.

There is pan-territorial pricing, and the wholesale price to major stockists includes delivery. Thus the price is fairly uniform across the country, but slightly higher at smaller retail outlets that buy small quantities from other stockists and use their own transport. Table III.5 shows maize seed prices quoted by some of the dealers visited.

While the price for certified seed has held steady for some time, the price of breeder seed and basic (foundation) seed has been going down as a result of Ministry directives. This is part of MAFS' attempts to keep the commercial seed prices affordable to farmers. Seed companies have also been directed to use pure basic seed for the multiplication of their commercial seed. It is said that an agreement was reached between government and seed companies over the pricing of basic seed so that certified seed could be sold at an affordable price, but it is not clear what effect this has had on the market because, as noted earlier, few seed companies are actually multiplying locally bred varieties. At the same time, ARIs and FSFs are complaining that they are not making any money from basic seed multiplication since the price of breeder seed has been decreasing (Table III.6).

Table III.5. Sample of Maize Seed Prices by Dealer, Tanzania (2003)

Seed Source	Maize Variety	Buying Price (Tsh/kg)	Selling price (Tsh/kg)
Pioneer	Hybrid	2,000/=	2,200/=
EASCo.	Hybrid	1,400/=	1,750/=
	OPV	1,100/=	1,200/=
Monsanto	DK Hyb	1,500/=	1,700/=
	CG Hyb	1,400/=	1,600/=
SeedCo.	Hybrid	1,900/=	2,000/=
Kibo Seed	Hybrid	1,800/=	1,900/=
SATEC	Hybrid	1,500/=	1,750/=
	OPV	1,100/=	1,200/=
Mbalizi Stockist	OPV	1,200/=	1,500/=

Source: Various industry sources.

Table III.6. Official Prices of Breeder Seed in Tanzania (2000 to 2003)

Crop	Price in Tsh/kg			
	2,000	2001	2002	2003
Maize	7,000/=	6,500/=	5,000/=	3,000/=
Beans	8,500/=	6,000/=	5,000/=	4,000/=
Wheat	6,000/=	5,000/=	5,000/=	3,500/=
Sunflower				2,000/=
Other Legumes				2,000/=
Paddy				2,000/=
Maize Inbreds				9,200/=

Source: Arusha Foundation Seed Farm.

Improving the Regulatory System: Policies, Regulation, and Control

There is an elaborate National Seed Policy and Implementation Guidelines with powers invested in the Seed Unit at MAFS Headquarters on behalf of the Ministry. The Seed Statute has been revised and the Plant Breeders' Rights (PBR) legislation has been recently passed by Parliament. These are all progressive legal instruments useful for the development of the seed industry. The challenge is in implementing them effectively.

It is recommended that MAFS should move quickly to implement the PBR legislation so that private companies can access public varieties and pay the stipulated fees. The ARIs

should be proactive in initiating dialogue with seed companies for this purpose. The companies should be encouraged to commercialize public materials in collaboration with the ARIs. Urgent action is required for quality protein maize (QPM) varieties promoted by SG 2000 and also for the new Uyole maize hybrids suitable for the Southern Highlands.

TOSCA is responsible for all aspects of seed certification and control. Based in Morogoro with branches in Arusha and Njombe, TOSCA has received a lot of support from DANIDA, such as rehabilitation and construction of new laboratories, new equipment, training, and vehicles/motorbikes. In spite of this, TOSCA is still constrained by poor operational facilitation and low staff morale, which renders it ineffective to supervise the industry to the satisfaction of all stakeholders. An attempt has been made to address some of the constraints by training extension officers as seed crop inspectors, as well as supervisors for NGOs, and small-scale farmer groups involved in informal seed production.

The entire certification system lays emphasis on variety release and registration, as well as inspection of seed production, but is unable to monitor seed on the market. Consequently TOSCA has not developed the capacity for point-of-sale checks to ensure that there are no fake seeds sold to farmers. This sort of regulatory approach delays the introduction of new varieties and thus denies farmers greater choice, yet it leaves wide room for unscrupulous traders to exploit the farmers. The Government of Tanzania should re-orient and strengthen the capacity of TOSCA to offer improved regulatory services. TOSCA should train more inspectors from the extension services and change their mandate to focus on point-of-sale checks rather than inspecting "informal" producers. The principle of QDS should be extended to the private sector covering all OPV and self-pollinated crop seeds. In addition, TOSCA should train and license company personnel to do some of the inspection work. This will reduce the burden on TOSCA.

Seed import and export issues are controlled by the Post-Entry Plant Quarantine Station at TPRI, Arusha, with a branch at the MAFS Headquarters, Dar es Salaam. This unit issues import permits and phytosanitary certificates, and checks imported seed to ensure that no diseases and pests are brought to the country. There had been claims from the industry that the process of obtaining import permits involves traveling to both offices in Arusha and Dar es Salaam, which is time consuming and expensive, but this team was told that this has now been streamlined so that one can obtain the permit from either of the two offices. It is a step in the right direction.

Issues in Seed Production and Marketing

Inconsistency and Lack of Clarity in Policies— Having liquidated TANSEED in the process of liberalization, GOT is now talking of creating a new "National Seed Agency" to be engaged in commercial seed production. This has led to uncertainty in the role of the Foundation Seed Farms and delayed their devolution to the private sector. It has also maintained monopoly of the locally bred varieties in government hands. Liberalization should be given a chance to work by steadfast government policies. Back tracking sends wrong signals to the private sector, leading to a situation of "let's wait and see." In this regard, government will not have the capacity to run the Seed Agency sustainably, and a quick solution should be found for the FSFs.

Attempts at privatizing the FSFs hit a dead end supposedly because nobody showed interest in them. It is further said that private companies have shown no interest in producing basic seed. It is for these reasons, therefore, that GOT has decided to create the Seed Agency, which is expected to operate commercially and to concentrate on the categories of seed that are not attractive to the private sector. However, most stakeholders have no information at all about the whole scheme and this is creating anxiety in the industry. There is a need for the government to involve the private sector in policy formulation and implementation to avoid misunderstandings.

Distrust Between Public and Private Sector Players—There is distrust between the government and private seed companies. Thus there is no sharing of information or data in the industry for planning purposes, and good government varieties are not commercialized because the private sector cannot readily access them**.** The Tanzania Seed Traders Association (TASTA) can play a major role in bridging this gap as the forum of communication between the two sectors.

Both sectors need each other as they play complementary roles for the benefit of farmers. Regular planning meetings between both sectors, networking, and sharing of information are important. The Agricultural Research Institutes should establish linkages with companies for the purposes of harnessing mutual synergies.

Another important area for TASTA is the collection and dissemination of market information. GOT and donors should fund an initial survey to establish the size of the seed market, and thereafter, members of TASTA should support a regular market information service.

Inadequate Facilitation of Research and Basic (Foundation) Seed Production—Research and production of breeder seed and basic (foundation) seed are still in government hands at ARIs and FSFs. However, facilitation is inadequate, some critical skills are lacking, and there is low staff morale. GOT should put in more resources and strengthen agricultural research and breeder seed production. One way could be to allow the institutes to generate and use their own revenues to supplement government budgetary allocations.

The production of basic (foundation) seed, like certified seed, should be left to the private sector. Specific programs for public-private partnership should be initiated to attract seed companies to multiply the seed of minor crops. For instance, a memorandum of understanding (MOU) could be reached on the use of land and other facilities on FSFs for this purpose. During the transition, an arrangement could be made to contract out to private companies. This is more sustainable in the long run than government production programs.

Ineffective Extension Service—Apart from inadequate facilitation, the extension services seem to lack accurate and meaningful up-to-date messages. They are "boxed" in their traditional roles, and do not regard themselves as active promoters of new technologies. As a result, farmers do not appreciate the value of using improved seeds and other inputs, partly because extension messages are not forthright. For instance they are advised to use OPVs, instead of hybrids, because they are regarded as cheaper and recyclable. When and how will the farmers progress from peasantry to commercial farming? The extension staff should actively collaborate with private seed companies to promote the use of hybrids, emphasizing the cost-benefit of their use. Modern maize hybrids on the market (double, three-way, and top crosses) have a wide genetic base and their re-cycled seed can out perform the OPVs. The demand for improved seeds is still low and an effective extension service can greatly contribute to efforts to increase it.

Poor Market Development by Seed Companies—Two main factors have been mentioned by the industry to justify the low level of investment in seed market development. These are: **inconsistent government policies and the small size of the seed market**. The issue of government policies has been addressed elsewhere in this report, but the one of the small market is a "chicken and egg" story. The cycle of "low demand—low sales—small market" needs to be broken, and the private sector should take a lead. However, there is also room here for partnership with government as well as donor programs. All programs promoting agricultural production should liaise with the private sector and demonstrate proven technologies on the market, so that farmers are encouraged to go for the best. The companies on their part should seek out such programs and initiate this collaboration.

Weak Indigenous Companies—As stated earlier, most of the local seed companies are only involved in trading and have not developed seed production and processing infrastructure. The biggest constraint seems to be the lack of capital. Although liberalization has attracted many trans-national companies, they are mostly content with importing and marketing seed. This is purely a business decision, and a wise one until the market is large enough to warrant local production. The development of a strong local seed system can only be spearheaded by local entrepreneurs. GOT should work out a strategy to promote local seed industry development through, for example, tax incentives, grants, equity financing, provision of long-term development loans with low interest rates, and human capital development.

Integration of Formal and Informal Seed Sectors—The production of quality declared seeds (QDS) (funded by DANIDA) is an important source of seed in Tanzania, but its long-term sustainability is in doubt. QDS is more or less a formal system with set rules and regulations, and it is now generally accepted in the SADC region. The system is operated in an informal

manner, which renders it unsustainable. It is recommended that the private sector should be invited to participate in the scheme, either by buying the seed for bulking, processing and marketing, and/or by using the QDS farmers as seed stockists. This might attract the companies to handle the seed of the so-called "orphan crops."

Similarly, there are many NGOs involved in informal seed production without a clear exit strategy. Such NGOs should work with MAFS and the private sector to develop small rural enterprises (SMEs), which can continue to serve their communities on a commercial basis. They can be specialized producers and suppliers of certain seeds either independently or as agents of larger companies. This way, both the informal and the formal seed sectors can mutually reinforce.

Integration of Regional Markets

A number of stakeholders in the seed industry in Eastern Africa have for sometime realized the need to create fairly large markets in order to attract meaningful investment required to provide the quantity, quality, and variety of seed needed to support an expanding agricultural base. Otherwise, the low level of effective demand and the high transactional costs in each individual country's seed market makes it unattractive for investment by local or international companies. For this reason, since 1999 the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)—with USAID funding—has spearheaded a project for "The Harmonization of Seed Policies in Eastern Africa." The project started with the three East African countries of Uganda, Kenya, and Tanzania, taking advantage of the revival of the EAC, and is already expanding to include all the countries in the ASARECA mandate.

The project has covered five specific areas as follows:

- Variety evaluation, release, and registration.
- Seed certification.
- Phytosanitary regulations.
- Plant variety protection.
- Laws and regulations governing development of the seed trade of local seed industries and entry of foreign seed companies, including those from neighboring countries.

The project is already in very advanced stages, having passed through an elaborate consultative process. Most of the public and private seed industry stakeholders in Tanzania are aware of the project, and all that can be said here is to encourage the policymakers to quickly implement the agreed positions. It will lead to a common regional market with an effective demand large enough to induce needed investment and create the competition required to establish a viable and efficient seed industry in the region. Tanzanian farmers stand to benefit.

With this initiative, the private sector should take advantage and establish collaboration and networking at the company level as well as at the association level. This is critical for the local national companies in order for them to build capacity for cross-border sourcing and marketing of seeds.

Technology Transfer Efforts

Following the liberalization of the seed industry, it is often assumed that seed companies and other agri-input suppliers will promote their products using conventional marketing methods, such as advertising, public relations, etc. Consequently, the public sector has no more roles to play. This analysis is quite flawed. First of all, we are dealing with peasant farmers (the vast majority of our target clientele) who are neither accessible with the standard methods nor will they easily comprehend the messages contained therein. Second, we are dealing with high volume—low value products, with low elasticity of demand, whose benefits are indirect and come after some time. Their potential benefits are also influenced by other externalities like weather, soil, and general management. For instance, the benefits of using maize hybrid seed not only depend on adequate rainfall, but also on use of appropriate fertilizer, proper plant population, timely weeding, etc., and the benefits are realized only after harvesting and even selling. Similarly, the benefits of using fertilizer are affected by correct weather, timely and accurate application of the right type and amounts, and use of suitable varieties of crops capable of responding to the fertilizer. These benefits are also realized after selling the resultant crop. In both cases, poor output marketing can wipe away any potential benefits.

For these reasons, therefore, the most effective way of promoting the use of improved agri-inputs is through

technology transfer methods, an activity for public-private partnership. Since the inputs complement each other to realize their full benefits, the method involves using the full technological package under farmers' conditions. The extension staff and technical personnel from input suppliers provide technical back up to the farmers who do the actual farm work on their farms. The companies provide the inputs free of charge (plus any technical literature) and the farmers provide free labor and land for which they take the resulting crop. They also benefit from the technical advice. These farms act as demonstration plots where other farmers can congregate at agreed times so that the message can spread further.

This is a very effective means of promoting the use of improved inputs, and many seed companies are already using it. "Seeing is believing!" It is the extension services and government and donor funded projects that need to proactively seek out private sector collaboration and promote the use of this method. This way, the government will not have abdicated its responsibility under the guise of privatization.

Annex IV
An Assessment of the CPP Market

An Assessment of the CPP Market

Most of the important crops cultivated in Tanzania are subject to pest, disease, and weed attacks.[13] High pre-harvest and post-harvest losses reflect the fact that there has been limited success in introducing plant protection measures in Tanzania, particularly among smallholder farmers growing food crops. Therefore, these losses pose a serious threat to food security.

The use of crop protection products (CPPs) is the primary method used to control pests, diseases, and weeds in Tanzania. Insecticides and fungicides are used on cotton, coffee, vegetables, and fruit trees, and insecticides are used for grain preservation and fumigation. Herbicides are used to control weeds on food and cash crops.

With the withdrawal of the government from the CPP market in 1994/95, it was anticipated that the private sector would make CPPs available to smallholder farmers in a timely manner and at affordable prices. However, CPPs are expensive agricultural inputs and with the dismantling of the commodity boards, which distributed CPPs to farmers for free or on credit, farmers have reduced the quantities they purchase or have simply stopped applying them. Consequently, there has been a resurgence of institutional credit arrangements for the purchasing and distribution of CPPs.

Structure of the CPP Market

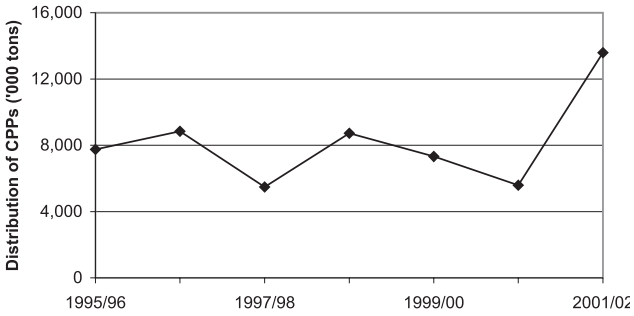
Market Size

Data from the MAFS indicate that current import levels for CPPs (approximately US $12.5 million in 2003, valued in f.o.b. prices) are significantly lower than 1990/91 levels. For example, CPP imports for coffee and cotton crops (traditionally the major users of CPPs) have declined in each case from an average of $20 million in 1990/91 to $2 million in 2003. In contrast, CPP imports for the cashew industry increased from next to zero in the early 1990s to $2 million in 2003. The MAFS estimate is a little higher than the data provided by COTECNA (a pre-shipment inspection firm), which reports CPP imports during the period November 1, 2001, to November 11, 2003, as US $18 million averaging a little over US $9 million per year. The discrepancy may be explained by the fact that COTECNA data only includes imports that enter Tanzania via the ports; unlike the MAFS, it does not cover imports that enter the country via land borders from neighboring countries.

Between 1995/96 and 2000/01, the distribution of CPPs fluctuated between 5,000 and 9,000 tons, averaging 7,000 tons (Figure IV.1). In 2001/02 the total distribution of CPPs exceeded 10,000 tons for the first time to reach a peak of 13,600 tons.[14] Today, cashew nuts account for a relatively large share of CPP use in Tanzania. According to Abassi Exports Ltd., the major supplier of sulfur dust to the cashew industry, cashew growers used more than 4,000 tons of sulfur dust in 2003/04 (for storage), whereas coffee growers used less than 1,000 tons (according to the Coffee Board).

Product Composition

There are 536 brands of pesticides registered in Tanzania. Of these, 304 are fully registered for general use, 33 are registered for restricted use, and 199 are for



Source: MAFS, 2003.

Figure IV.1. Total Distribution of CPPs, 1995/96 to 2001/2002

[13]Attachment IV.1 lists the main pests and diseases affecting crops in Tanzania.

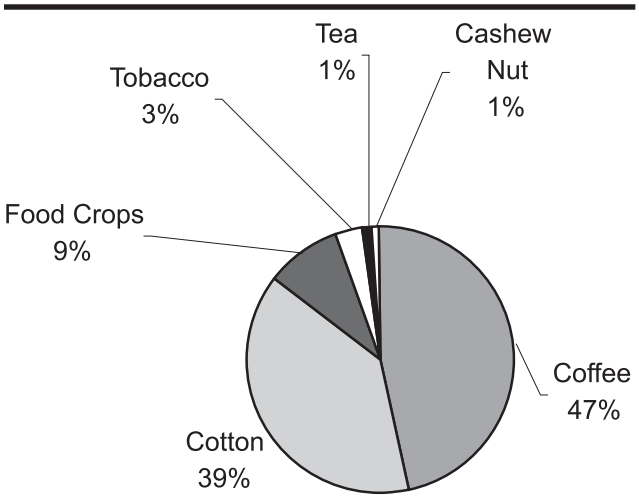
[14]Distribution does not equal consumption. Distribution figures are compiled based on data reported by dealers, input funds, cooperative societies, and end-users

experimental purposes only. Attachment IV.2 provides the current portfolio of registered brands of CPPs available in Tanzania in 2003. The number of brand names is higher than the number of active ingredients (approximately 200) because many of them are comprised of the same active ingredients, but manufactured and registered by different companies under different brand names. For example, over 15 insecticides contain cypermethrin and over 20 fungicides contain coppers (oxide or hydroxide). The availability of a large number of the same product under different brand names implies that the CPP market in Tanzania is competitive.

Consumption by Crop and Farming Sector

MAFS estimates that 18% of the farmers in Tanzania use CPPs. These are mainly large commercial farmers and smallholders growing cash crops for export. CPP use by smallholders growing food crops has been minimal and is mainly restricted to grain storage. Therefore, 91% of CPPs are used on cash crops (Figure IV.2).

These data indicate that cotton and coffee account for 86% of CPP use. However, recent problems in the coffee industry have reduced CPP use on this crop, while the rehabilitation of the tobacco, cashew, and horticulture industries has increased demand from these sectors. Therefore, it is likely that a more accurate breakdown of CPP use would reflect a higher level of use on tobacco, cashew, and horticultural crops.



Source: MAFS, Inputs Division, November 2003.

Figure IV.2. Distribution of Use of CPPs by Crop, April 2003

Structure of the CPP Market

Tanzania receives supplies of CPPs mainly through direct bulk importation of ready-to-use products by the private sector. However, Twiga Chemical Industries (TCI-Tanzania) has installations for pesticide formulations and imports active ingredients for local formulation of concentrates and dusts.[15]

The CPP marketing system consists of a multiplicity of supply chains, which vary by end-user (Figure IV.3). Importers sell wholesale to independent dealers, and retail directly to large commercial farmers, NGOs, and the MAFS.[16] Some small importers also source some of their product from large importers. Independent dealers sell to stockists and also directly to farmers. Stockists sell CPPs directly to farmers. A substantial proportion of CPPs are imported directly by end-users for distribution to their farmers on credit. Another supply chain is fueled by cross-border importations from neighboring countries. These are either sold directly to farmers or sold to stockists.

Players in the Market

There were 15 registered private importers in Tanzania in 2003. Three of these firms—ByTrade, Balton Tanzania, and TCI (Tanzania)—account for over 50% of the market share. These three large firms and three small importers are profiled in Table IV.1. Of these six importing firms, Balton and Twiga Chemicals are subsidiaries of multinationals and were in existence before 1994. The remaining four firms are representatives for multinationals although such representation is not exclusive. For example, although Mukpar is the main representative for Syngenta, five of the six profiled importing firms also purchase and sell products from this multinational. The annual turnover for these firms ranges from 1.45 billion Tsh (US $1.45 million)

[15]In January 2003, TCI (Tanzania) acquired the pesticide manufacturing facility in Moshi from the Parastatal Sector Reform Commission (PSRC).

[16]The Ministry's estimated annual requirement of CPPs for control of migratory pests is US $1 million (Parthasarathy, SOFRAIP, 2000).

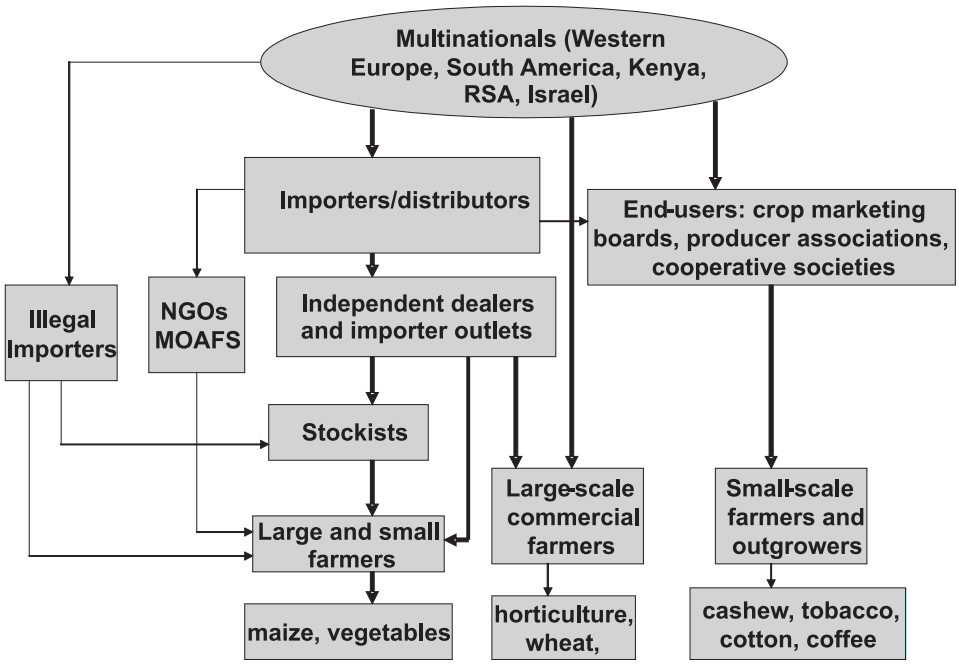


Figure IV.3. Structure of the CPP Market in Tanzania

to 5 billion Tsh (US $5 million). Although CPPs are the main source of revenue for all of the companies, all of them are diversified into other business activities. These firms source CPPs from Western Europe, South America, Kenya, the Republic of South Africa (RSA), and Israel.

Large Importers

ByTrade is an independent company established in 1994 and is distinguished by the business it does with a large number of independent dealers. There are approximately 500 independent dealers in Tanzania, and ByTrade deals with 200 of them countrywide. ByTrade is also one of the two importing firms interviewed that repackage its CPPs into smaller packs, and these packs comprise the bulk of its sales. Balton Tanzania (Tz) is a subsidiary of the British multinational, Balton CP. Although it is diversified into various businesses, agricultural inputs comprise the majority of its product line. In 2003 Balton CP became the sole distributor of CPPs for Monsanto. Balton is distinguished by its relatively broad product range (it sells 52 products) and well-developed marketing strategy. Twiga Chemicals Industries (Tanzania) is a subsidiary of Twiga Chemicals Industries Ltd. (TCI) based in Kenya. It is the only importer that imports ready made formulations and active ingredients to prepare local formulations. It is also the exclusive supplier of actellic super dust, which is repackaged into small 1-kg and 2-kg packs by its parent company in Kenya. However, Twiga is experiencing a significant problem with fake actellic dust. Since the product is packaged regionally (in Kenya), the technology is readily available. Therefore, the fake products are easy to replicate and their professional appearance makes them hard to identify. Moreover, demand is high because they are typically sold at a discount of 40%.

Small Importers

Mukpar and Suba-Agro are both small independent importers based in Arusha. Mukpar began operations in 1990 and is the main representative for Syngenta in Tanzania. Suba-Agro commenced business in 2001 and is the only importing firm interviewed that provides delivery services to its customers using a 10-ton truck and motorbikes. Kibo Trading and Services is a small importer with its headquarters in Moshi. Unlike the other importing firms interviewed, Kibo's

Table IV.1. The Main CPP Importers in Tanzania

Companies	Year Established	Ownership	Annual Turnover (average)	Products	Product Breakdown	Suppliers	Agents for Multinationals	Customers	Services
ByTrade	1994	Independent Tanzanian	2.2 billion Tsh (US $2.2 million)	90% agrochemicals (specialty products and generics), 10% seed	Insecticides 40%, Fungicides 40% Herbicides 20%	Syngenta and Dupont (Western Europe); Bayer (Germany, RSA, Kenya, South America)	Bayer	Independent dealers (70%); cash crop farmers, smallholders, MOAFS, NGOs	Repackaging Technical advice Credit facilities
Balton Tanzania Ltd.	1964	Balton CP, London	5 billion Tsh (US $5 million)	> 50% agrochemicals (specialty products and generics), irrigation, water systems, telecommunications	Insecticides 55%, Fungicides 30% Herbicides 15%	Makhteshim Agan, Israel Haifa Chemical Ltd., Israel Calliope, France	Main agent for Monsanto in Tanzania	Whole range[a]	Technical advice Delivery Credit facilities
Twiga Chemicals	1950	Twiga Chemicals Industries (Ltd), Kenya	Not available	> 50% agrochemicals (specialty products and generics, local formulations), animal health and veterinary products, home care products	Not available	Twiga Chemicals Industries (Ltd), Kenya	Subsidiary of TCI	Mainly independent dealers, some large-scale commercial farmers	Repackaging Technical advice Credit facilities
Suba Agro D	2001	Independent Tanzanian	1.45 billion Tsh (US $1.45 million)	80% agrochemicals (specialty products and generics), seed and fertilizer (20%)	Insecticides 50% Fungicides 30% Herbicides 20%	Bayer CropScience (Germany, RSA, France, Kenya); Almandine Corporation SA (Switzerland, UK), DowAgroScience (France); Crompton Uniroyal Chemicals (RSA)	No	Whole range[a]	Technical advice Credit Delivery
Mukpar	1990	Independent Tanzanian	Not available	40% agrochemicals (specialty products and generics), 40% fertilizer, 20% seed	Not available	Syngenta	Syngenta (main representative)	Whole range[a]	Technical advice Credit facilities
Kibo Trading Co.	2000	Independent Tanzanian	Not available	Agrochemicals (30%) Fertilizers (30%) Seed (40%)	Not available	Western European firms, Balton (Tz)	No	Small maize, vegetable and coffee farmers	Credit Technical Services

a. Whole range = Cash crop farmers (tobacco coffee, cotton); independent dealers; small-scale farmers; large commercial farmers; government; NGOs.

product line is not dominated by CPPs. The product line is broken down as follows: CPPs (30%), fertilizers (30%), and seeds (40%).

CPP importers share the following characteristics**:**

- They all employ professional technical and sales staff.
- They have a broad customer base—independent dealers, farmers, NGOs, and MAFS.
- They each deal with between 50 and 150 independent dealers countrywide.
- They have two to three distribution outlets located strategically to supply their clients and they also do direct sales, which increases competition in the supply chain.
- They typically use the banking system to carry out their transactions: the customer deposits the money in the importer's bank account and the importer sends the order via a public transporter specified by the customer.
- All the importers are able to purchase CPPs on credit from their suppliers.

- Importers provide credit, delivery, technical assistance, and repackaging services.
- Importers do not monitor their products once they have been sold to guard against adulteration.

Independent Dealers

There are no accurate data available on the number and spatial distribution of independent dealers in Tanzania, but it is estimated that there are 500 independent dealers countrywide. These dealers sell their products to approximately 2,000 stockists and they also retail directly to farmers. There are typically one to two independent dealers (and 810 retailer/stockists) in each regional capital and large rural town. The distribution network for CPPs has not penetrated beyond this point to the rural interior close to villages. Independent dealers share the following characteristics:

- Many of the independent dealers are agents for one or more of the importers.
- Their product line is comprised mainly of CPPs, veterinary products, animal feed, and seed; during the peak season they may also sell some fertilizer.
- The typical breakdown is: pesticides (65%), herbicides (25%), and fungicides (10%).
- They typically sell 10 tons of CPPs per year.
- Competition at the importer level is fierce so dealers are able to purchase on credit without collateral.
- With respect to services, dealers extend credit to select customers, provide technical advice to farmers, repackage their products into smaller quantities (using generic glass bottles and plastic bags), and distribute TPRI pamphlets with information about correct use of CPPs.

Farmers

Farmers in Tanzania can be divided into four groups: (1) large corporate farmers growing high-value crops for export, (2) progressive farmers growing crops for the domestic market and/or for export, (3) smallholder farmers growing cash crops for export, and (4) small-scale farmers growing food crops for home consumption with the surplus being sold in local markets. The large commercial farmers purchase CPPs in bulk directly from importers and progressive farmers source their inputs from independent dealers. Smallholders who grow cash crops obtain their inputs via various institutional arrangements set up by their respective crop marketing boards, and small-scale farmers who grow food crops purchase CPPs from independent dealers or stockists.

Direct Importation by End-Users

In addition to the private sector, there are a number of institutions involved in the importation and distribution of CPPs and other inputs. The Coffee Board has established a coffee input voucher scheme (CIS) to finance the provision of CPPs and other inputs for coffee farmers. Separate input funds have been established in the cashew growing regions to do the same for cashew farmers. A private company (Abbas Exports) imports CPPs for the cashew industry, distributes them to the input funds. The Cotton Lint and Seed Board imports CPPs on behalf of the Cotton Development Fund for direct distribution to cotton farmers. The two tobacco-buying firms in Tanzania (Tanzania Tobacco Leaf Company and Dimon) have established integrated crop-loan schemes for the provision of CPPs and other agricultural inputs to farmers. Tanzania Farmers Association procures CPPs and other inputs locally and distributes them to its members (smallholder farmers growing food and cash crops) via its field offices. CPPs comprise 90% of the business. In 2002 TFA had 5,000 members and sold a total of 4,842 liters of CPPs. However, sales show a declining trend due to stiff competition from private dealers (Table IV.2).

Ministry of Agriculture and Food Security

The Ministry of Agriculture and Food Security (MAFS) procures CPPs for sale to farmers to be used in large-scale operations against migratory pests, and in some cases it applies the CPPs itself.

Table IV.2. Sales Trends for Agrochemicals, Tanzania Farmers Association (1999 to 2000)

Product Category	1999	2000
	(L)	
Herbicides	910	592
Insecticides	1,529	634
Fungicides	5,331	3,617

Illegal Importers

Some CPPs also enter Tanzania via illegal cross-border trade and are sold without undergoing the proper registration procedures. They are sold mainly in times of a shortage or to price sensitive customers who are willing to purchase unregistered products at a cheaper price. In many cases these are fake or adulterated products that put the end-users at risk.

Performance of the Private CPP Market

The CPP market in Tanzania is competitive and functioning reasonably well. The importer level is oligopolistic, and some firms specialize in certain products and certain market segments. Nevertheless, importer and dealer margins are not excessive indicating low barriers to entry (importer markups are 7% and wholesale gross margins are 5% to 18%); there is a high level of non-price competition, and the market is well-facilitated by the wide coverage of the banking system, which enables long-distance trade and reduces transaction costs.

Table IV.3 illustrates the margins at the importer and dealer levels of the supply chain. Total administrative costs, port charges, and bank charges add 17% to the c.i.f. price, and charges by TPRI add another 2%. These marketing costs plus the 10% importer markup brings the importer price to 29% above the c.i.f. price. The gross margin at the dealer level consists of marketing costs plus markup and adds another 5%-18% to the importer's selling price. Hence, the dealer-selling price is 34%-47% higher than the c.i.f. price. This is comparable to market performance in Zambia where the price at the dealer level was estimated to be 30% higher than the c.i.f. price for herbicides and fungicides and 45% higher for insecticides.[17]

[17]P. Annequin, Zambia Action Plan: The CPP Market, Draft Report, August 2003.

Table IV.3. Normative Price Structure for the CPP Market

Line item	Amount
c.i.f.	100
Duties, taxes, VAT	0
Cess fee (TPRI)	0.5% f.o.b.
Analytical fee to TPRI	$50 per 3 tons (1 L is 1 kg)
Inspection fee to COTECNA (PSI)	1.2% f.o.b.
Certificate of Compliance (TPRI)	0.2% c. & f.
Bank charges	2% c.i.f.
Port charges (clearing and forwarding, handling, wharfage, agency fees)	5% c.i.f. including 20% VAT on services (handling and transportation)
Administrative costs	10% c.i.f.
Importer mark-up	10% (but there are a lot of hidden costs so this is overestimated)
Importer selling price	129[a]
Dealer gross margin	5%-18%
Dealer selling price	134%-147%

a. This is an approximation.

Source: Estimates from interviews with importers and dealers.

The similarity of retail prices for select products in different markets is further evidence of the competitiveness of the CPP market (Table IV.4).

The Regulatory System

The Plant Protection Act (1977) governs the supply and use of CPPs in Tanzania. The Act, which became operational in 2001, consolidated all plant protection functions and placed them under the mandate of the MAFS. The overarching purpose of this law and the accompanying regulations is to increase agricultural productivity while safeguarding human health, biodiversity, and the environment.[18]

[18]Other related laws or statutes exist, which complement these two laws and regulations. These include: The Public Health Act (Cap 535) on pesticides for the prevention and suppression of diseases to man, and disinfection of polluted water sources; the Tsetse Control Act (Cap 383) on insecticides for the control and prevention of the spread of trypaniosimiasis; and the National Industries Licensing and Registration Act, which is intended to provide for registration and regulation of industries in Tanzania.

Table IV.4. Retail Prices in Selected Markets

Product	Mbeya Agrochemicals, Mbeya	Suba Agro (Makambako)	Galapo Enterprises (Iringa)	Tanzania Farmers Association (Mbeya)
	Prices (Tsh)			
Actellic super dust (200 g)	Not applicable	1,400	1,300	1,200
Roundup (1 L)	8,500	8,000		8,000
Selecron (1/2 L)	8,500	8,750		8,500
Bravo (1 L)		7,500	8,500	
Karate (1 L)	15,000		18,000	4,500 (1/4 L)

In addition, Tanzania is a member of several international and regional organizations (WHO, UNEP, and SADC) and has signed several international conventions/agreements that deal with hazardous chemicals and the disposal of hazardous waste (e.g., the 1989 Basel Convention and the 1998 Rotterdam Convention). Through these linkages Tanzania has benefited from financial and technical assistance from various organizations. For example, the African Stockpile Program (ASP) funded by FAO for the disposal of obsolete pesticide stocks. Nevertheless, the CPPs, which are registered and used in Tanzania, still include some that have been banned or restricted in their countries of origin and are recognized as hazardous by the World Health Organization (WHO). Examples include the POPs[19] aldrin and DDT[20] and banned pesticides products such as Aldicarb and Parathion.

Statutory Regulatory Agencies and Their Functions

Regulatory agencies include statutory and non-statutory bodies. Under the Plant Protection Act (1997) the statutory bodies are the National Plant Protection Advisory Committee (NPPAC) and its four sub-committees;[21] the Registrar of Pesticides, TPRI; and the Secretariat and its inspectors. The composition of the NPPAC and each sub-committee includes representatives from the relevant Ministries, representatives from quasi-governmental institutions responsible for pesticides and agricultural research, standards control and environmental management, and a representative from the relevant department in Sokoine University of Agriculture (Figure IV.4).

The Division of Plant Health Services (DPHS) is under the Directorate of Crop Development; MAFS is the Secretariat of the NPPAC, and the Head of the DPHS is the Executive Secretary to the NPPAC.[22] The Registrar of Pesticides (TPRI) and the Inspector-in-charge are each the Deputy Executive Secretary of the NPPAC. The Secretariat (and its inspectors which are appointed by the Minister) is the implementing agency for NPPAC decisions, which means it is responsible for the day-to-day operation and enforcement of the

[19]Persistent Organic Pollutants (POPs) describe a class of toxic chemical substances that can harm human health and the environment. The May 2001 Stockholm Convention on CPPs called for phasing out these chemicals.

[20]DDT has been restricted for agricultural use because it remains in crops; however, its use is being considered by the Ministry of Health for controlling malaria. This would be accordance with World Health Organization recommendations and guidelines for disease vector control.

[21]The four sub-committees of the NPPAC are: the Pesticides Approval and Registration Technical Sub-committee (PARTS), the Biological Control Agents Sub-committee (BCAS), the Plant Quarantine and Phytosanitary Services Sub-committee (PQPS), and the Outbreak Pests Sub-committee (OPS).

[22]DPHS has the following mandate from the Plant Protection Act to (1997): (a) prevent introduction of exotic pests and their spread, (b) manage outbreak of pests, and (c) control importation and use of plant protection substances. In accordance with this mandate, the DPHS is divided into six units. (Figure IV.4, Structure of Statutory Pesticide Regulatory Agencies in Agriculture in Tanzania).

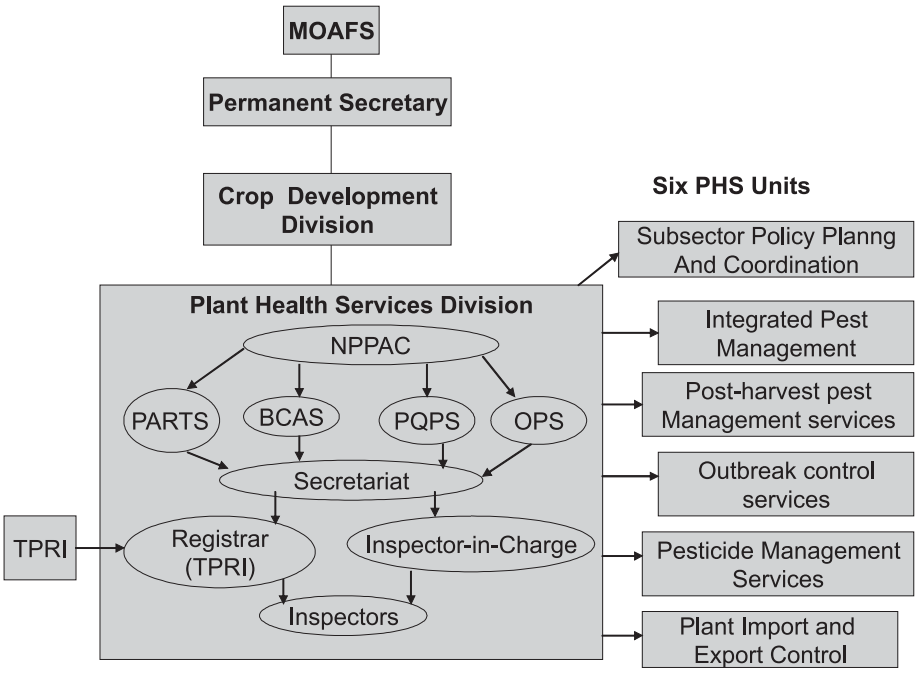


Figure IV.4. Structure of Statutory Pesticide Regulatory Agencies in Agriculture in Tanzania

law and supporting regulations. DPHS has five Plant Protection Zonal Centers responsible for performing these functions in each zone.

Tropical Pesticides Research Institute of Tanzania

The Tropical Pesticides Research Institute of Tanzania (TPRI) is an ARI based in Arusha. It has three departments—research, technical services, and finance and administration. The three divisions within the research department are: the plant protection division, the chemical and physical division, and the livestock and animal disease control division. The Registrar of Pesticides is within the Plant Protection Division of TPRI and this office is responsible for pesticide registration, training, and monitoring and enforcement of regulations. Training entails training of farmers, extension staff, importers, and dealers in the proper handling and safe use of CPPs. Monitoring and Enforcement entails carrying out surveillance of pesticide imports and exports at border points and monitoring the quality, handling, and use of pesticides. TPRI inspectors also check for expired pesticides and advise dealers to send them to TPRI for retesting and reuse if they are still viable or to the NEMC for disposal. At present there are only 2030 inspectors to service the whole country. However, TPRI has 165 inspectors undergoing training to inspect premises and dealers at the point of sale. The aim is to have a plant protection inspector in every region.

The Registration of CPPs

The pesticide control legislation requires that no CPP be imported/manufactured, formulated, distributed, or sold in Tanzania unless it is registered; no company engage in the importation and distribution of CPPs unless it is registered; and the concerned parties have to provide proof that they or their staff are competent to handle pesticides and that their premises are adequate and well-equipped for the storage and sale of CPPs.

Registration of a product is the responsibility of the manufacturer of the pesticide or its importer. All documentation is dealt with by the Registrar of Pesticides at TPRI, and recommendation and approval are done by the PARTS and TPRI Council, respectively. All CPPs are subject to testing for product efficacy and

degree of toxicity before they can be registered, in order to ensure they do not pose a threat to human health or the environment. Registrations are not granted on the basis that they have been approved for use in other countries.[23]

The registration of pesticides requires an application for a permit to the Registrar by the manufacturer or the importer. It should be accompanied by a dossier containing all the required information.

If a sample is submitted to the Registrar for analysis for the purposes of registration, it must be accompanied by appropriate standards, not be less than 0.5 kg in the case of solids and 0.5 L in the case of liquids; be accompanied by its specifications and other relevant information; be adequately packed, sealed, and labeled; and be accompanied by samples of the containers intended to be used for marketing, distribution, use or any other disposal. Once a sample has been submitted, the assessment entails in-country testing for a minimum of three growing seasons. Upon completion of the analysis (maximum of 14 days), the results are submitted to the Registrar using a Certificate of Analysis.

Once the Registrar is satisfied that the applicant has met all the requirements, the application is approved and the Registrar issues a Certificate of Registration. There are three categories of registration:

1. Full registration that is valid for 5 years.
2. Provisional registration, whereby due to non-compliance with any provision of the regulations the Registrar is unable to register a pesticide. The Registrar can defer registration pending compliance and issue a Notice of Deferment, which entitles the person applying for registration of a pesticide to import and distribute the pesticide.
3. Experimental registration, whereby a firm can have a pesticide registered for experimental purposes.

Business License—Any business intending to be involved in the CPP industry can only be issued a business license from the municipality after they have produced a certificate of registration from the Registrar. Various fees are applicable, depending on the activity and its scale. The fees associated with registration and obtaining a business license are presented in Table IV.5. Violations of the law or regulations can result in the withdrawal of a license or permit, and are subject to penalties.[24]

Duties and Taxes—As is the case for all agricultural inputs, CPPs are currently exempted from import duties and VAT on the product. However, the packaging materials (e.g., imported glass bottles, labels, cartons, plastic bags) and services (transportation) are subject to 20% VAT.

Other Statutory Bodies

The following statutory regulatory agencies have activities, which are relevant to and support the CPP industry. NPPAC is responsible for defining, testing, labeling, and certification of CPPs after confirming compliance (a representative of TBS sits on this committee). Société Générale de Surveillance (SGS) is a verification, testing, and certification multinational responsible for checking pesticide residue on agricultural crops for export. TRA is responsible for product clearance (through the issuance of a bill of entry) at the port in collaboration with MAFS and TPRI. It also collects revenues raised by the 20% VAT on packaging materials and services. COTECNA, a Swiss firm, has been contracted by the GOT to conduct pre-shipment inspections, determine customs valuation and classification, import eligibility, and payable duty and tax.[25]

NEMC is the leading advisory and regulatory agency responsible for the protection of the environment and sustainable use of natural resources in Tanzania. Its mandate includes the enforcement of environmental regulations as provided in the National Environmental Policy, and the organization is involved in the ongoing process of formulating an environmental law that is expected to be passed in 2004 which will cover all aspects of pollution control. One of its programs deals with the disposal of obsolete toxic CPPs.

[23]Harmonization of registration procedures in the East African community should be encouraged.

[24]Offending companies are subject to a fine of between 10 million and 100 million Tsh; individuals found in violation are subject to a fine of between 2 million and 10 million Tsh or to a term of imprisonment of 3 years or both.

[25]Tanzanian trade regulations require pre-shipment inspection at the point of origin for goods exceeding $5,000 in value.

Table IV.5. Fees Charged For the Various Plant Protection Services

Service	Payable Fee	Validity of Payment
	(US $)	
Import Permit	5	Per consignment
Input Cess Fee	0.5% f.o.b.	Per consignment
Inspection		
- If consignment is 1 ton or less	2	Per consignment
- If consignment is more than 1 ton but less than 1,000 tons	2 + (No. of tons x US $0.2)	Per consignment
- If consignment is more than 1,000 tons	202 + (No. tons x US $0.1)	Per consignment
Treatment Supervision	Minimum of US $100	Per consignment
Import Certification	2	Per consignment
Analysis		
Laboratory	Minimum of US $150	Per sample
Field Testing	Minimum of US $2,000	Per product
Categories of Registration		
- Experimental	1,000	1 year
- Provisional	1,500	2 years
- Full registration	1,000	5 years
- Re-registration/renewal	5,000	
Issuance of Pre-Approval for Business License		
- Formulator/manufacturer	100	1 year
- Importer	150	1 year
- Distributor/retailer	25	1 year
- Commercial operator (transporter, storage)	50	1 year
- Business license	50	Once

Source: Plant Health Services, Plant Protection Act 1997.

A 1997-2000 inventory revealed 1,200 tons of obsolete pesticides in Tanzania located in 400 storage sites countrywide. The reasons for the accumulation include: excessive donations from western governments, poor storage, the products were banned and subsequently abandoned, and ineffective coordination between the multiple institutions involved in importing and distributing CPPs. There are no facilities for the disposal of obsolete pesticides in Tanzania, and the government does not have the finances to build them. However, Tanzania has been earmarked for funding by the African Stockpile Program (ASP)[26] and implementation is scheduled to begin in July 2004 and take 4 years. In the interim, efforts are being made using funds from FAO (10 million Tsh or US $10,000) to clean up sites that are in critical shape and cannot wait until 2004.

Supporting Institutions

A number of institutions influence the development and effectiveness of the CPP industry in Tanzania.

Agrochemicals Association of Tanzania

The Agrochemicals Association of Tanzania (AAT) is a private, non-profit organization established in 1989. It is registered with the Registrar of Societies and affiliated with Crop Life International (the international association of agrochemical manufacturers). AAT objectives include:

- Develop and maintain a business climate favorable to the growth of the industry.
- Consult the government in enacting suitable legislation for the CPP industry.
- Increase public awareness of the value of pesticides in agriculture and public health.
- Create regional and international linkages.

AAT has a voluntary code of conduct to encourage members to adhere to certain minimum standards of practice while manufacturing, formulating, packaging, storing, and distributing CPPs. At the present time there are 15 members and financial resources come from members' annual subscriptions, fund raising activities, and donations from Crop Life Tanzania. Annual fees are presented in Table IV.6.

Through its affiliation with Crop Life Tanzania, the association benefits its members in the following ways:

- Offers technology demonstration and training in partnership with the private sector.
- Promotes the exchange of ideas on important issues, for example, how to handle expired and obsolete stocks and how to train farmers in the best use of pesticides.
- Keeps them abreast of current issues facing the industry and of what is happening in other countries regarding issues of interest to the agrochemical industry.

Table IV.6. Agrochemical Association of Tanzania, Annual Fees

Membership	Admission	Subscription
	(US $)	
Full Member	20	150
Associate Member	20	100
Small Dealer	20	25
Foreign Member	20	500

AAT is involved in the following activities:

- Attends meetings/seminars that have relevance to the Association's goals and objectives.
- Attends TPRI's PARTS meetings on technical control issues and registration procedures.
- Embarks on media campaigns to educate the public on the proper use of pesticides.

[26]The ASP is a comprehensive effort to clean up obsolete stockpiles in Africa within a decade. The World Bank and the global industry association, CropLife International, have endorsed the project and it is being sponsored by FAO, UNEP, UNIDO, AfDB, and EAC. The ASP has the following components: (a) cleanup of existing stocks; (b) build domestic capacity to deal with obsolete pesticides; and (c) awareness and prevention programs targeted at stockists, farmers, and government regulatory institutions to avoid reaccumulation. So far 15 countries have been earmarked for funding, including Tanzania.

- Conducts workshops and training programs on the safe use of CPPs for stakeholders.
- Lobbies the government to promote the interests of members and farmers. Examples include:
  - A proposal to increase the input cess fee by 1% f.o.b. and allocate the funds generated to AAT to support their activities.
  - The association is lobbying TPRI to make the registration procedure less cumbersome and restrictive.

AAT is constrained by the lack of funds to increase the scope of its activities and low membership. Therefore, AAT is lobbying TPRI to make membership in the association a requirement of registration, but so far it has not been successful. Such a move is not desirable. The membership in the AAT should be voluntary.

Commercial Court of Tanzania

The GOT with the assistance of DANIDA established a Commercial Court of Tanzania (CCT) in Dar es Salaam in September 1999 (it is a Commercial Division of the High Court of Tanzania). The purpose is to enhance the effectiveness and efficiency of the judicial system in the resolution of commercial disputes in all sectors. A dispute has to have a minimum value of 25 million Tsh to be taken up by the CCT. Traders with smaller claims can go to the magistrate court. Some of the importers have used the court successfully to obtain payments from customers.

Research Stations and Sub-Stations and the Agricultural Extension Service

Research services from national research institutes and Sokoine University of Agriculture impact the market by conducting crop- and livestock-related research. The Agricultural Extension Service of MAFS has a mandate to provide training and information about new technologies to farmers. The research centers are under the auspices of the Department of Research and Development of the MAFS and are located in the seven agro-ecological zones of Tanzania.

Institutions and Projects Involved in Integrated Pest Management in Tanzania

Until recently, crop pest control methods relied almost exclusively on chemical pesticides. Following the increase in the development of pest resistance to some of these chemicals and their detrimental side effects on the environment and human health, there is increasing emphasis in Tanzania on using integrated pest and disease strategies to control pests and minimize the use of agricultural chemicals. Two of the six units of the DPHS of the MAFS—Outbreak Control Services and Integrated Pest Management—are charged with using non-chemical means to control pests. In addition, the following steps have been taken by the GOT:

- ***Kibaha National Bio-Control Center*** was established to promote the biological control of pests. Bio-control programs currently carried out at the center include management of the following: water hyacinth, cassava green mite (CGM), cassava mealy bug (CM), citrus wooly flies, cereal stem borer, and diamond black moth in cabbage.
- ***Tanzania/German Integrated Pest Management Project*—**Since 1992 the Government of Germany has been supporting the Government of Tanzania in developing and implementing Integrated Pest Management (IPM) in agriculture. It is a national program with pilot implementation in the Northern Zone (Arusha and Kilimanjaro) and the cotton-growing areas in the Western Zone. It is closely aligned with the DPHS of MAFS, and the extension services at the district level. The primary target group is resource poor farmers, organized in farmers' IPM Working Groups in the pilot areas.

Constraints Affecting the Performance of the CPP Market

The CPP market in Tanzania is reasonably well developed and is governed by an elaborate legal and regulatory framework. Nevertheless, the following constraints continue to obstruct the development of a well-functioning CPP market in Tanzania.

Supplyside Constraints

Macroeconomic Constraints—Finance is not a constraint at the importer level; all the importers are agents for multinational companies so they are able to obtain their CPPs on favorable credit terms from their suppliers. Moreover, importers quote prices to their customers in dollar terms, thus passing any exchange rate risk down the supply chain. Due to stiff competition among importers, dealers have access to credit with no collateral. Nevertheless, high interest rates and a depreciating exchange rate make it too expensive and/

or risky to buy goods fully on credit. Therefore, dealers prefer to pay 30%-50% of what they owe upfront in cash. Their main sources of cash are savings and borrowing from the banks using immobile collateral (houses, land). However, dealers find that the lending terms are unattractive given relatively low returns from the CPP business. The outcome is that dealers have limited finances to invest in the CPP business, which limits the size of their orders (uneconomical sizes) and their ability to invest in market development activities. In addition to limited access to finance, the 20% VAT on packaging and services adds to the cost of CPPs and therefore constrains use at the farm level.

Weak Development of Dealer Networks Into Rural Areas—CPP dealers are mostly concentrated in the regional capitals and large towns; there are very few dealers in the rural areas. This is primarily due to a lack of financial resources to expand into the rural interior and poor rural road infrastructure. The result is that farmers have to travel an average of 35-50 km to purchase CPPs. Consequently, the cost is higher (in terms of transport and traveling time) which limits how much farmers can afford to purchase.

Lack of Human Capital—CPP dealers have limited business management (administrative and financial) skills and technical knowledge about the products they are selling.

Lack of Market Information—There is no central body that is responsible for collecting data and disseminating information about the CPP market. As a result, data are scarce and what is available is not reliable. The 2003 data presented in this report are based on estimates made by stakeholders. The only consistent and systematic import data is from COTECNA, but this data set only includes product entering the country via formal channels, and it does not include CPPs that enter across land borders. There is no comprehensive data set on CPP use nationally, by type of product, by crop, by district, by type of farmers, and there is no time series data on imports, consumption, availability, and prices. The lack of readily available data makes it difficult for the MAFS to plan ahead and avoid shortfalls or oversupply, and for the private sector to plan their marketing strategy to meet farmers' needs and maximize their returns. Lack of data also means farmers are unaware of the current market situation beyond their immediate geographic area.

Cumbersome and Weakly Enforced Regulatory Framework—At the importer level, the enforcement of regulations plays more of a restrictive role than a supportive one. Specifically:

- The lack of clarity in the CPP industry regarding the inspection functions performed by COTECNA and TPRI.
- The inadequate facilities and equipment at TPRI which delay the release of new products.
- The requirement of three cropping cycles for new product registration discourages importers from introducing new, cheaper products to the market.
- The expensive registration fees discourage manufacturers from introducing new, more suitable products to the market. This is particularly relevant to generics since their price may be too low relative to the cost of registration.
- The delays in the release of the letter of authorization from TPRI for clearance of consignments from the port (it can take as long as 4-5 days). This makes it necessary for the importer to unload the material, store it in a warehouse at or near the port or border, and then reload after clearance. This increases costs and reduces timeliness of availability.

The emphasis at the distribution level is on training and education. There is minimal inspection of shop premises and personnel and poor enforcement of truth-in-labeling. As a result, shop premises are not equipped to deal with accidents and it is not uncommon to find CPPs displayed next to veterinary products and seed. Moreover, many dealers still lack the requisite training to handle and sell CPPs and in many cases TPRI trains the owners of the establishments who are not the actual sellers of the products. There is also uncontrolled distribution of repackaged products, which leaves room for illegal activities such as incorrect labeling (e.g., renaming of the original pesticide or using the name of the active ingredient as the brand name) and unsafe packaging by workers who are not trained or protected. There is also no control of quantity and quality once a product has been repackaged which increases the risk of adulteration.

Demandside Constraints

Smallholder farmers growing food crops account for less than 10% of the CPP market. Therefore, they represent an untapped market, which can form the basis of future expansion of the CPP market. However, their demand is constrained by the following factors.

Low Purchasing Power—Due to their limited financial resources, smallholders buy in small quantities and apply less than the recommended dosage. The purchasing power constraint has also increased the demand for CPPs in small packages, creating an opportunity for fake products to enter the market since these are typically sold at half the price of the authentic products.

Lack of Input Credit for Farmers Growing Food Crops—It is difficult to establish crop-loan schemes for smallholders growing food crops. These crops are typically grown over a wide geographical area by numerous farmers, and have a large number of buyers. The transaction costs of reaching separate, individualized credit arrangements with such a large number of dispersed farmers are prohibitive, plus the large number of potential buyers means farmers have many options of who to sell to which makes loan recovery impossible.

Weak Output Markets—The weak output markets constrain demand for CPPs. Since smallholder producers of food typically sell their surplus immediately after harvest when the prices are lowest, they are unable to sell their output at prices that will allow them to cover the cost of the CPPs.

Ineffectiveness of Actellic Super Dust—An Important CPP Used by Smallholders—Farmers are complaining that actellic super dust (an insecticide used to control the grain borer, which has destroyed large quantities of stored and unharvested maize in Tanzania in recent years) is becoming ineffective. The exact reasons are unknown but include: the fake products entering the market, incorrect application by the farmers, mishandling of the insecticide by traders, and buildup of resistance by the pests. One unfortunate outcome is that in desperation some farmers have turned to the use of poisons to protect their stored maize.

Lack of Farmer Knowledge About CPPs—Interviews in the field revealed that many farmers have not been trained and therefore lack knowledge about the correct use of CPPs. Farmers do not use the correct mixing ratios and protective gear (clothing, masks), are unaware of handling and storage guidelines, and are unaware of the hazards of using CPP containers for carrying drinking water or food. Second, farmers use new products in the same way that they used old products, which can be unproductive as well as dangerous. For example, farmers use the liquid form of actellic—recently introduced to the market—in the same way that they use the dust (spraying it directly onto the maize), which is poisonous. Third, farmers fail to understand that the same active ingredient can be sold under a different brand name. Therefore, if they do not recognize the brand name they will not purchase the product. Farmers also have some misconceptions which need to be addressed through education; for example, farmers prefer to buy the insecticide Bulldog after it has expired because they believe it works better than the unexpired version and willingly pay the price of the unexpired product.

Measures Needed to Strengthen the Functioning and Performance of the CPP Market

Measures to Address Supplyside Constraints

Strengthening Dealer Networks in Rural Areas—It is critical that the business and technical knowledge of CPP dealers be improved in order to improve market performance. Dealers need training in business management and marketing strategies in order to conduct their businesses profitably and expand into the rural interior. Dealers also need to be trained regarding banking procedures and credit management in order to have access to affordable credit, although this also hinges on an improvement in macroeconomic conditions. In addition, dealers require training in product knowledge (the required inputs and their proper use) so they can pass this information onto farmers.

Strengthen the Agrochemical Association of Tanzania—The Agrochemical Association of Tanzania (AAT) has demonstrated that it is a serious organization committed to improving the performance of the CPP market by requiring members to adhere to a business code of conduct and providing training and workshops that increase the technical and business knowledge of importers, dealers and farmers. It can also work to increase interaction among importers and dealers and between them and the government at the national,

regional and district levels. However, it needs to be strengthened by increasing the size of its membership. In this regard the AAT, with the support of TPRI and the MAFS, should make a concerted effort to inform importers and dealers about the benefits they stand to gain from joining the association and encourage them to join the association.

Introduce a Mechanism to Prevent Future Accumulation of Expired Pesticides—As mentioned earlier, a 1997-2000 inventory revealed 1,200 tons of obsolete pesticides in Tanzania located in 400 storage sites countrywide. However, there are no facilities for the disposal of obsolete pesticides in Tanzania, and the government does not have the finances to build them. Therefore, Tanzania has been earmarked for funding by the African Stockpile Program (ASP), which will undertake the safe and environmentally sound disposal of these obsolete stocks. Implementation began in July 2004 and should take 4 years. In the interim, efforts have been made using funds from FAO (10 million Tsh or US $10,000) to clean up sites that are in critical shape.

However, there is no system in place in Tanzania to prevent the future accumulation of outdated pesticides. The current policy is for importers to send their expired stocks to TPRI to have them retested, and if they are cleared for reuse they are resold to large farmers. There is no plan for disposal if these products cannot be reused. Moreover, independent dealers have to find their own means of handling these products. CPPs which are registered and in use in Tanzania include some that have been restricted or banned in their countries of origin and are recognized as hazardous by the WHO. Examples include aldrin, aldicarb, and parathion. The DPHS needs to draft a national policy for the proper monitoring and disposal of pesticides. The policy should involve regular inventory of stocks, identification of expired products, retesting or destruction of expired products, and a mechanism for preventing accumulation. The DPHS should also establish guidelines to avoid accumulation of pesticides imported to deal with emergency outbreaks. In addition, efforts should be made to find alternatives to the use of restricted and banned CPPs. This will include intensifying research and extension on integrated pest management practices and other non-chemical methods for the control of pests and diseases.

Remove VAT on Packaging and Services[27]—The 20% VAT on packaging and services is passed onto farmers and increases the price they have to pay for CPPs. Therefore, the removal of this tax would increase access to CPPs by smallholders and thus encourage increased use in the field and in storage. Removal will also promote the legal repackaging of products into small packages, which are more affordable to smallholders using more suitable packaging material. However, in order to be successful the removal of the VAT should be preceded by research to determine the potential winners and losers so that suitable adjustments can be made in the government budget in order to maximize the overall gains to society.

Measures to Address Demandside Constraints

Provide Training to Improve Farmer Knowledge and Use of CPPs—TPRI, MAFS, and AAT should collaborate to provide training to farmers to improve their knowledge about the right type and dosage of CPPs for the various crops and the correct use and handling of these products.

Legalize and Monitor Repackaging—Since smallholders account for 85% of agricultural production in Tanzania, this sector offers the biggest growth area for the CPP market. Smallholders typically use small packages of CPPs either because they are cultivating small plots and/or they face a purchasing power constraint. Therefore, reaching the smallholder farmer will require legalizing the repackaging of CPPs in small packages, training and licensing interested dealers, monitoring these businesses to enforce regulations (truth-in-labeling, quality control, appropriate packaging and sealing equipment) and penalizing those who engage in it illegally. This will also reduce the prevalence of fake and adulterated products since part of their appeal is their smaller packaging at a lower price.

Increase the Effective Demand of Smallholder Farmers—Increasing the effective demand of smallholder farmers will require increasing their access to seasonal credit, improving output marketing and postharvest opportunities, promoting crop diversification, and developing off-farm income generating activities in rural areas. Increasing access to credit will entail

[27]At the stakeholders' workshop, it was decided that a study be conducted to assess the pros and cons of this measure.

addressing the weaknesses in the current institutions offering input credit to smallholder farmers (SACOS and SACAS). It is also important to train dealers to extend credit to farmers. However, in order to do so, dealers will need better access to credit. Therefore, importers and bankers will also have to be targeted for training in extending credit to dealers.

Conduct Research on Actellic Super Dust—It is imperative that TPRI and the MAFS do research to determine the extent and cause of the problem of ineffective actellic super dust otherwise the grain borer will continue to threaten the food security of maize-dependent farmers.

Other Measures to Improve the Performance of the CPP Market

Introduce Changes to Improve the Regulatory Framework—Tanzania has an impressive regulatory framework in place for CPPs, but the institution responsible for enforcement, TPRI, is constrained by a lack of human and financial resources. There is a need to reassign responsibilities in order to increase efficiency, clarify the roles of the various regulatory bodies, and simplify the legal and regulatory framework to make it easy to implement. Suggestions in this regard are as follows:

- Product registration, monitoring, and enforcement should remain the responsibility of TPRI. In this regard, the ongoing revision of the 1997 Act should be expedited in order to reduce the time required for registration.
- The inspection duties performed by COTECNA (quantity) and TPRI (quality) need to be published and made available to stakeholders to clarify the role of these institutions in the CPP industry.
- Training and education should be the responsibility of the MAFS in collaboration with AAT.
- Data collection and dissemination should be taken over by the market information unit in the MAFS.
- Truth-in-labeling should be the responsibility of the Tanzania Bureau of Standards.
- TPRI should invest more resources in monitoring and enforcement in the distribution system. In order to ensure broader coverage TPRI should authorize some other institutions (e.g., district officers and extension workers in the MAFS) to carry out some of its inspectorate responsibilities.

The implementation of these changes would require the amendment of the law and accompanying regulations accordingly.

Establish a Market Information Unit—Market information is essential for public monitoring of market conditions and policy analyses, and improving transparency thereby promoting competition and long-distance trade. While this is primarily the responsibility of the DPHS of the MAFS, the private sector has an important role to play by making information available to the public sector. The specific recommendations are as follows:

- Every importer and dealer should be required to send data on prices and quantities imported and distributed to a (newly created) market information unit in the DPHS on a regular basis. This would require reviewing the 1997 Act and making it mandatory for the private sector to submit such data in order to renew their import permit or business license.
- The DPHS should periodically disseminate market information to importers, dealers, and farmers to enable them to make better decisions about procurement. The information should be categorized according to the needs of the particular interest group. The appropriate medium will be determined by the DPHS and may include the radio, a monthly newsletter that is distributed at the district level, and/or the Internet. One specific suggestion is for the Farmer's Gazette to include information on the CPP market.
- TPRI should make the list of the registered pesticides and importers and dealers available on the Internet and distribute it to all registered CPP businesses annually. This list should be regularly updated.
- MAFS and AAT should work together to establish and operate this unit.
- Information should be disseminated about health and environmental impacts of the CPPs.

Regional Harmonization of CPP Legislation and Legalization of Cross-Border Trade—Regional harmonization of CPP policies and regulations, particularly registration procedures, can increase the availability of cheaper and legitimate, and possibly more suitable CPPs in Tanzania thus reducing farmer demand for fake and adulterated CPPs which are typically sold at half the price of registered products.

Attachment IV.1. Major Pests and Diseases Affecting Major Crops in Tanzania

Crop	Major pests	Major diseases
Maize	African armyworm, American bollworm, African maize stalkborer, pink stalkborer, spotted stalkborer, cutworms, maize leafhopper	Leaf rust, leaf blights, maize streak disease
Rice	White paddy stalk borers	Blast, brown spot, bacterial leaf blight, rice yellow mottle virus
Wheat	Armyworm,	Leaf rust, brown rust, stem rust, yellow rust, septoria diseases
Cotton	American bollworm, spiny bollworm, cotton aphid, cotton stainer, blue bugs	Bacteria blight, fusarium wilt, alternaria leaf spot
Sisal	Sisal weevil	Bole rot, zebra disease, korogwe leaf spot
Coffee	White coffee borer, antestia bugs, coffee berry borer, coffee berry moth, coffee thrips, coffee leaf minor	Coffee berry disease, coffee rust, fusarium back disease
Tobacco	American bollworm, cut worms, green peach aphid, white fly, root knot	Brown spot, barn spot
Cashew	Helopeltis bugs, coconut bugs, thrips, stem borers, mealy bug,	Powdery mildew, anthracnose, die back, pestalotia leaf spot
Tea	Helopeltis bugs, black citrus aphid	Armillaria root rot, back root rot
Sugarcane	Sugarcane white grub, sugarcane beetle, sugarcane scale, sugarcane stalkborer, armyworms	None reported

Source: "*Plant Pests and Diseases Field Hand Book, A Guide to their Management*," Plant Health Services, MOAFS.

Attachment IV.2. Current Portfolio of Registered Brands of CPPs Available in Tanzania, 2003

Type	General Use (5 years)	General Use (2 years)	Restricted Use	Experimental Purposes	Most Used Active Ingredient
Insecticides	10	147	7	112	permethrin, deltamethrin, fenualerate, pyrethrins, lambda-cyhalothrin, endosulfan, cypermethrin, dimethoate, fenitrothian
Fungicides	9	53	2	39	mancozeb, sulphurs, copper oxychloride, copper hydroxide
Herbicides	5	57	10	35	atrazine, glyphosate, amitraz
Others[a]	2	21	14	13	amitraz, cypermethrin
Total	26	278	33	199	

a. Plant growth regulators, rodenticides, acaricides, and avicides.

Source: Inputs Division of the Ministry of Agriculture and Food Security.

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