



An Action Plan for Developing Agricultural Input Markets in Ghana

An
International
Center for
Soil Fertility
and
Agricultural
Development



An Action Plan for Developing Agricultural Input Markets in Ghana

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Preface

In 1991, Ghana liberalized and privatized the import and marketing of fertilizers and divested inputs under the control of the Ministry of Food and Agriculture (MOFA). In the same year, the Ghana Seed Company (GSC) was privatized, and the production of improved seed became the responsibility of stakeholders in the private sector, including farmers. These policy reforms have contributed to the general involvement of the private sector in the seed and fertilizer business. However, in spite of 10 years of progress, farmers continue to face difficulties in accessing agricultural inputs on time and in a cost-effective manner. Even the private-sector dealers have been facing constraints to expanding their business in rural areas. Prompted by these considerations, an assessment of the agricultural input supply systems was conducted and an *Action Plan* developed for an orderly development of agricultural input markets (AIMs) in Ghana.

In 1999, IFDC, in collaboration with other institutions, prepared a strategic framework for developing sustainable input supply systems in sub-Saharan Africa (SSA). 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: Malawi, Nigeria, Ghana, Uganda, Tanzania, and Zambia. So far action plans have been completed for Malawi, Nigeria, and Uganda. Thus, Ghana's *Action Plan* is a part of this broader group of action plans being prepared for developing AIMs in Africa.

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The assessment team visited Ghana in April/May 2001. To ensure that we consulted with all stakeholders and visited various parts of the country, the team was divided into three groups: policy and finance, fertilizers and pesticides, and seed and technology transfer. The team visited with various stakeholders including farmers, dealers, importers, wholesalers, bankers, donors, nongovernmental organizations (NGOs), and policymakers. Field visits were made to Ashanti, Brong Ahafo, Central, Eastern, Greater Accra, Northern, Volta, and Western regions. The first draft of the report was discussed at a stakeholders' workshop organized in Accra on September 12-13, 2001, to build a consensus for the proposed actions and policy measures to strengthen the input delivery system in Ghana. Comments and suggestions made at the workshop are reflected in the report.

This report provides an assessment of the functioning of AIMs in Ghana, identifies constraints faced by the private sector participants in expanding their input business, and suggests policies and programs to strengthen the functioning of the input and output markets. A holistic approach focusing on the policy environment, human capital development, access to finance and information, and regulatory frameworks is recommended for making AIMs more effective and efficient. The proposed recommendations are consistent with the efforts initiated by MOFA under its Agricultural Services Sub-Sector Investment Programme (AgSSIP).

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1. The views and interpretations expressed in this document are those of the Study Team and should not be attributed to the funding or sponsoring agencies.

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Abbreviations and Acronyms

AAGDS	Accelerated Agricultural Growth and Development Strategy
AgSSIP	Agricultural Services Sub-Sector Investment Programme
ADB	Agricultural Development Bank
ADF	African Development Fund
ADPA	Association des Distributeurs des Produits Agro-Pharmaceutiques
ADRA	Adventist Relief Agency
AFD	Agence Française de Développement
AfDB	African Development Bank
AFSTA	African Seed Trade Association
AgDiv	Agricultural Diversification Project
AIBDF	Agricultural Inputs Business Development Fund
AIIF	Agricultural Inputs Importation Fund
AIMs	Agricultural Input Markets
AN	Ammonium Nitrate
APF	Agricultural Production Fund
AS	Ammonium Sulfate
ASIP	Agricultural Sector Investment Project
BAT	British American Tobacco
BBG	Barclays Bank of Ghana Ltd.
BOG	Bank of Ghana
BOPP	Benso Oil Palm Plantation
BT	Biotechnology
CARE	Cooperation for Assistance and Relief Everywhere
CEC	Cation Exchange Capacity
Cedi	¢
CEPS	Customs, Excise and Preventive Services
CIC	Cocoa Inputs Company Ltd.
COCOBOD	Cocoa Marketing Board
CPHAOC	Comité Phytosanitaire d’Afrique de l’Ouest et du Centre
CPP	Crop Protection Product
CRB	Credit Reference Bureau
CRI	Crops Research Institute
CSD	Cocoa Services Division
CSIR	Council for Scientific and Industrial Research
CU	Credit Union
DADU	District Agricultural Development Unit
DAES	Directorate of Agricultural Extension Services
DAI	Development Alternatives Incorporated
DAP	Diammonium Phosphate
DCS	Directorate of Crop Services
DFID	Department for International Development
DFR	Department of Feeder Road

DGIS	Directoraat Generaal voor Internationale Samenwerking
DMB	Deposit Money Bank
EC	Emulsionable Concentrate
ECOWAS	Economic Community of West African States
EPA	Environmental Protection Agency
ERP	Economic Recovery Program
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FASCOM	Farmer's Services Company
FASEPE	Favourable Socio-Economic and Policy Environments
FFH	Freedom from Hunger
FOB	Free on Board
g	gram
GAEC	Ghana Atomic Energy Commission
GAFCO	Ghana Agro Food Company
GCB	Ghana Commercial Bank Ltd.
GCC	Ghana Cotton Company
GCCSFA	Ghana Cocoa, Coffee and Sheanut Farmers' Association
GDP	Gross Domestic Product
GIDA	Ghana Irrigation Development Authority
GLDB	Grains and Legumes Development Board
GMO	Gene Modified Organism
GOG	Government of Ghana
GPHA	Ghana Ports and Harbors Authority
GREL	Ghana Rubber Estates Ltd.
GSB	Ghana Standards Board
GSBV	Ghana Standards Bureau Veritas
GSC	Ghana Seed Company
GSE	Ghana Stock Exchange
GSID	Ghana Seed Inspection Division
GSS	Ghana Statistical Services
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Assistance)
GVLC	Ghana Varietal Release Committee
ha	hectare(s)
HIPC	Heavily Indebted Poor Country
HSMU	Hybrid Seed Multiplication Unit
ICI	Imperial Chemical Industries
IFAD	International Fund for Agricultural Development
IFDC	An International Center for Soil Fertility and Agricultural Development
IITA	International Institute for Tropical Agriculture
IMF	International Monetary Fund
IPM	Integrated Pest Management
IRRI	International Rice Research Institute
ISTA	International Seed Trade Association

kg	kilogram(s)
KKCU	Kuapa Kookoo Credit Union
km	kilometer(s)
KR-II	Kennedy Round II
L	liters
LC	Letter of Credit
LIBOR	London Inter-Bank Offered Rate
MEPRI	Ministry of Economic Planning and Regional Integration
MEST	Ministry of Environment, Science and Technology
MFI	Microfinance Institution
MIS	Market Information System
mL	milliliters
MOEST	Ministry of the Environment, Science and Technology
MOF	Ministry of Finance
MOFA	Ministry of Food and Agriculture
MOH	Ministry of Health
MOP	Muriate of Potash
MRH	Ministry of Roads and Highways
mt	metric ton(s)
MTADP	Medium Term Agricultural Development Programme
MTC	Ministry of Transport and Communication
MTL	Masdar Technology Limited
NBFI	Non-Bank Financial Institutions
NGO	Nongovernmental Organization
NIB	National Investment Bank
NPK	Nitrogen, Phosphate, Potassium compound fertilizer
NRCD	National Root Crops Division
NSC	National Seed Committee
NSFMAP	National Soil Fertility Management Action Plan
NSS	National Seed Service
OECD	Organization for Economic Cooperation and Development
OPV	Open Pollinated Variety
PCU	Project Coordinating Unit, Nigeria
PIP	Public Investment Project
PPRSD	Plant Protection and Regulatory Services Directorate
PVP	Plant Variety Protection
RFSP	Rural Financial Services Project
ROSCAs	Rotating Savings and Credit Associations
S&LCO	Savings & Loans Company
SAFGRAD	Semi-Arid Food Grain Research and Development
SARI	Savanna Agricultural Research Institute
SAT	Sinapi Aba Trust
SCB	Standard Chartered Bank (Ghana) Ltd.
SG 2000	Sasakawa Global 2000
SGA	Seed Growers' Association of Ghana

SGS	Société Général de Surveillance
SMU	Seed Multiplication Unit
SOP	Sulfate of Potash
SRI	Soil Research Institute
SRID	Statistical, Research and Information Directorate
SSA	Sub-Saharan Africa
SSB	Social Security Bank Ltd.
SSMS	Smallholder Seed Multiplication Scheme
SSP	Single Superphosphate
TOPP	Twifo Oil Palm Plantations Ltd.
TPSL	Technical Product Specification List
TSP	Triple Superphosphate
TTB	The Trust Bank Ltd.
ULV	Ultra Low Volume
UNDP	United Nations Development Program
UR	Upper Region
USAID	United States Agency for International Development
UST	University of Science and Technology
VAT	Value Added Tax
VCR	Value:Cost Ratio
VIP	Village Infrastructure Project
VRC	Varietal Release Committee (National)
WASDU	West Africa Seed Development Unit
WHO	World Health Organization
WVI	World Vision International

An Action Plan for Developing Agricultural Input Markets in Ghana

Executive Summary

I. Introduction

The agricultural sector in Ghana employs about 70% of the labor force, contributes about 36% of the GDP, and accounts for 57% of the country's foreign exchange earnings. Thus, the sector is an important engine for economic growth in Ghana. Despite its critical importance the sector has not performed to its potential, primarily because of the general lack of support for agriculture and the unfavorable macroeconomic conditions, particularly the high rate of inflation, high interest rates, and the rapid depreciation of the Cedi (¢). To reverse the declining trends in agricultural productivity and to increase the sector's contribution to economic development, the Government of Ghana (GOG) set targets under its Vision 2020 program in the early 1990s; these targets were recently revised during the National Economic Forum in May 2001.

The agricultural sector is once again challenged to drive the economy towards ensuring food security, reducing poverty, and protecting the environment. In fulfilling these goals, improved seeds and planting material, fertilizers, and crop protection products (CPPs) are critical, and the private sector now has the primary responsibility for procuring and distributing these inputs through sustainable agricultural input markets (AIMs).

II. An Assessment of AIMs

Ghana has made considerable progress toward deregulation and liberalization of the agricultural input supply systems, and in recent years the private sector has played a dominant role in supplying various inputs. Nevertheless, agricultural input markets are not operating efficiently, and farmers do not have easy access to inputs at affordable prices. Several factors continue to constrain the development of efficient AIMs. These factors can be divided into two broad groups, namely, macropolicy issues and market development issues.

In the macropolicy group, devaluation of the Ghanaian Cedi, limited availability of foreign exchange, high interest rates, and poor rural roads constrain the development of input markets. The devaluation of the Cedi not only increases the prices of imported seeds, fertilizers, and CPPs, but it also discourages investments in business development due to associated risks. Limited availability of foreign exchange constrains the import of inputs. Poor infrastructure in rural areas makes the transportation of goods and services difficult and costly and thereby limits the supply of much-needed inputs. These factors have contributed to the concentration of suppliers in urban and peri-urban areas, consequently forcing farmers to travel 10-50 km to purchase inputs.

The market development issues consist of policy-induced uncertainty, inadequate human capital and market information, lack of affordable finance, and poor enforcement or absence of regulatory frameworks for inputs marketing. The unresolved issues associated with well-intentioned government-supported programs such as tendering for supplying inputs by the Agricultural Development Bank (ADB) and the zoning of cotton production areas in northern Ghana create uncertainty in the marketplace. Consequently, these programs tend to discourage private-sector investment in the input business.¹ Inadequate human capital (technical and business skills) and market information restrict the supply of products in the marketplace and result in high prices. There is generally

1. The Ministry of Food and Agriculture (MOFA) is engaged in resolving the zoning issue. It is expected that such resolution may contribute to creating a positive environment for input dealers, provided the final agreed-upon arrangements are effectively enforced.

a lack of input dealers in the rural areas. The seed and fertilizer markets are largely concentrated in towns and cities and are served by a limited number of enterprises. High interest rates and stringent collateral requirements, coupled with the lack of financial service providers in rural areas, severely limits the availability of finance for business development. Although Ghana has laws on seed and fertilizers, the implementation of these laws has been far from satisfactory, largely because important amendments have not yet been enacted into law and the regulatory agencies are constrained by limited human and financial resources.

III. An Action Plan for Developing AIMs

In developing the *Action Plan*, the team assessed various options available to improve the supply of inputs and concluded that a free market system should be used to supply inputs to the farmers because this approach is relatively more efficient and sustainable and does not strain the fiscal resources of the country. The team recognized that although AIMs have been liberalized in Ghana they are not operating efficiently. The team recommends that, to develop sustainable agri-input supply systems in Ghana, the liberalized markets must be strengthened by undertaking activities in the areas of policy reform and human capital development and by improving financial services, market information systems, and regulatory frameworks. The team also recommends that these activities be undertaken in a holistic manner so that the synergies of various activities can be captured.

Furthermore, the team assessed the potential of the private sector in undertaking marketing activities in a competitive market environment. The private sector has latent potential to assume the responsibility of marketing agricultural inputs in an efficient and sustainable manner. However, for this potential to be realized, constraints affecting their activities need to be removed. In developing the *Action Plan*, special attention was paid to the alleviation of these constraints.

The main activities proposed in the *Action Plan* are identified in the Action Plan Matrix 1 and are briefly summarized below.

Macropolicy Reform

Overall, the macropolicy environment should be conducive to the market development process. Macroeconomic stability and sufficient supply of foreign exchange are essential. It is recommended that the Bank of Ghana (BOG), the Ministry of Finance (MOF), and their international partners implement appropriate monetary, fiscal, and exchange rate policies. Similarly, foreign exchange availability should be ensured in that Ghana will require approximately US \$45 million/year to import the necessary inputs during the 2001-2005 period.

Because the poor quality of rural roads adds cost to inputs and discourages traders from penetrating rural markets, the Ministry of Roads and Highways (MRH) and the District Assemblies are encouraged to develop long-term programs for constructing and maintaining rural roads.

Market Development

Skills, knowledge, and information (human capital) needed to make input markets efficient are inadequate at all levels of the marketing chain. Importers do not have adequate knowledge about the conditions prevailing in the global input markets; wholesalers and retailers lack the necessary skills for enterprise management and business development; and most importantly, there are few independent dealers involved in marketing inputs in rural areas. Even the bankers are not fully equipped to effectively play their role in financing the import and marketing of inputs. Developing the human capital necessary for making input markets perform efficiently constitutes the core of the activities under this *Action Plan* and will be accomplished by focusing on the following activities:

1. Training programs for dealers (wholesalers and retailers), importers, and bankers.
2. Technical assistance in enterprise development to newly trained dealers.
3. Study tours for dealers, importers, and bankers.
4. Policy workshop and study tours for policymakers.
5. Access to market information.

To make dealers a dynamic force in the economy, various associations of input traders will be encouraged. Training and technical assistance for associations will be essential. In addition to developing human resources for competitive markets, training and technical assistance will be needed for building technical capacity in the seed sector—training for seed growers, capacity for inspection and quality control, and enterprise development.

Financial Support Services

Finance is the lifeblood of any business activity. Without adequate access to and availability of finance, competitive markets cannot function efficiently. At the present time, difficulties in obtaining adequate foreign exchange to cover procurements from overseas currently estimated at about US \$31.9 million/year are constraining established and new-entrant importers alike. Currently, foreign exchange available (mostly from ADB) for the importation of agricultural inputs has been maintained at a level equivalent to only 19% of the annual requirements. To make funds available, and factoring in market expansion, it is recommended that the African Development Bank (AfDB) Group, USAID, Department for International Development (DFID), International Fund for Agricultural Development (IFAD), Agence Française de Développement (AFD), and GOG (using indirect receipts from the Heavily Indebted Poor Country [HIPC]) constitute a US \$45 million Agricultural Inputs Importation Fund (AIIF) over a period of 5 years for importers to supplement and generate available foreign exchange needed in establishing Letters of Credit (LCs) with foreign banks. BOG should manage the fund lodged in a foreign bank. The borrower should contribute 30% of the cost of the inputs paid in foreign exchange Cedis equivalent. Commercial banks would provide LCs for 100% financing of the cost of the inputs under a risk-sharing mechanism between the lender (40%) and the fund (30%). A number of stakeholders at the workshop noted that a requirement of 30% contribution from the borrower is likely to be a constraint. However, the assessment team feels that a 30% contribution from the borrower is essential to make this arrangement successful and sustainable. The fund should provide guaranteed foreign exchange support up to a maximum of US \$1.5 million per importer per year.

Input wholesalers and retailers similarly face financial constraints in their operations, and potential market participants without adequate financial resources are unable to enter the market. To alleviate this constraint, the District Assembly Common Fund (Poverty Alleviation Fund), BOG, and the African Development Bank Facility are to be used to constitute a €70 billion Agricultural Inputs Business Development Fund (AIBDF) to cover commercial bank lending to local agricultural inputs wholesaler and retailers. BOG should manage the fund. Commercial banks would provide 70% financing of the cost of the inputs with 30% guaranteed from the fund. In addition, it is recommended that training programs be organized for borrowers and lenders to minimize the risks of default, and databases for borrowers should be created at a Credit Reference Bureau. As in the case of the AIIF, a number of stakeholders at the validation workshop noted that a requirement of 30% contribution from the borrower is likely to be a constraint. As a result, the use of warehouse collateral (bonded warehouse) should also be considered during the implementation to reduce the burden of liquidity on the borrower.

Market Information System (MIS)

Information is crucial for the functioning of the market. Dealers and importers need information about local, regional, and global markets. Because every stakeholder will need the information about prices, stocks, and availability of inputs in various markets, MOFA's present MIS should be strengthened and linked with other regional web-based agricultural input information systems.

Other Input-Specific Issues

Seed and Planting Material

Apart from seed of cereals and some other food crops, most of the improved seeds, particularly vegetable seeds, are imported. Ghana can benefit from stronger linkages to the international market and access to new varieties of seeds. The seed market is thin, and it lacks the presence of large seed companies and adequate dealer outlets. Recommendations are made in the *Action Plan* to address these issues. In particular, efforts should be made to help potential entrepreneurs (scientists, seed farmers, seed growers' association, and others) to establish

viable seed enterprises—buying seed from farmers, packaging it with a brand name, and distributing or selling it to retail outlets for farmers to buy.

Fertilizers

Almost all the fertilizer used in Ghana is imported; hence, a primary bottleneck in the subsector is that of financing at the level of importers, wholesalers, and retailers. The *Action Plan* has therefore proposed the establishment of the AIIF and AIBDF to cater to importers and dealers, respectively. A major problem constraining the use of fertilizers is the small effective demand due to unfavorable fertilizer/output ratios arising from high fertilizer costs and low product prices. Actions have been recommended to improve the effective demand for fertilizers.

CPPs

With the uncontrolled status of the Ghana CPP market, a substantial quantity of obsolete and dangerous materials can be found in Ghana. Furthermore, serious adulteration and abuse of truth in labeling are common at the retail level. Consequently, a safe and environmentally sound disposal of the obsolete stock of pesticides and enforcement of laws and regulations have received top priority in the *Action Plan*, which also calls for proper monitoring, research, and education to avoid harm to human health and the environment. Additionally, efforts should be made to (1) strengthen the capacity of the Environmental Protection Agency (EPA) and the Plant Protection and Regulatory Services Directorate (PPRSD) to accelerate product registration and enforcement of the pesticide legislation, (2) design training programs to educate extension agents and end users about the products and their safe use, (3) conduct residue testing on food products, (4) initiate negotiations for a regional harmonization of the testing and registration of pesticides, (5) strengthen the capacity of the health services to deal with cases of pesticide poisoning, and (6) support research and extension on biocontrol and integrated pest management (IPM).

IV. Potential Benefits of the Action Plan

The implementation of the *Action Plan* will generate several socioeconomic benefits for the Ghanaian society. It will promote food security and environmental protection by lowering the prices of inputs, making inputs easily accessible to farmers in rural areas, and improving access to new production technologies. In addition, it will encourage economic activity at microenterprise level, improve smallholder incomes, and expand bank sector activity to include input markets. The contribution of the *Action Plan* to foreign exchange earnings will also be significant through crop diversification and increased food production.

Because it focuses on the development of AIMs, the present *Action Plan* is an important component of Ghana's strategy for improving food security while protecting the environment. In this regard, this *Action Plan* supports and complements (a) the 1998 National Soil Fertility Management Action Plan (NSFMAP), (b) the 2001 Accelerated Agricultural Growth and Development Strategy (AAGDS), and (c) the targets set for agricultural development in the national economic dialogue of May 2001.

V. Implementation Arrangements

In implementing the *Action Plan*, care must be taken to preserve the holistic nature of the proposed measures. It is recommended that core activities dealing with policy reform, dealer development, and financial services be implemented as a project. Other activities could be implemented as subproject activities. The project activities should be implemented by an autonomous project entity reporting to the Chief Director, MOFA.

To facilitate the implementation of the *Action Plan*, an Advisory Committee consisting of stakeholders from the private sector (including farmers), donor community, and the government should be created. The Advisory Committee will provide broad policy and program guidance about the project to the Chief Director, MOFA. MOFA will make the necessary arrangements for the Advisory Committee meetings and stakeholders' workshops.

An Action Plan for Developing Sustainable Agricultural Input Markets in Ghana

I. Introduction

1.1. Role of Agriculture in the Socioeconomic Development of Ghana

Agriculture plays important roles in the socioeconomic development of Ghana. It contributes to ensuring food security, provides raw materials for local industries, generates foreign exchange, and provides employment and incomes for most of the population, thereby contributing to poverty reduction. In 2000, for example, the agricultural sector employed about 70% of the labor force, contributed about 36% to gross domestic product (GDP), and accounted for over 57% of the country's foreign exchange earnings (GOG/World Bank, 2000; PriceWaterHouseCoopers, 2001; and MOFA, 2001). Furthermore, the agriculturally dependent rural households (72% of the population) form the largest potential domestic market for output from other sectors of the economy.

Despite its critical and strategic importance to the economy, the performance of the agricultural sector has varied over the years. The first country in colonial Africa to gain its independence in 1957, Ghana was one of the brightest hopes in Africa as it enjoyed the highest per capita income on the continent and an average economic growth rate of 4% heavily driven by cocoa.¹ But, the respectable gains of the 1960s were eroded by two decades of state monopoly and patronage, political turmoil, and short-lived reforms. This resulted in a situation of large fiscal deficit, deteriorating balance of payments, hyperinflation, and shortage of goods and services starting in the early 1970s. Between 1970 and 1980, the country experienced a decline in agricultural output while at the same time population was increasing at 2.4% to 3% per annum. However, the agricultural share of GDP remained high (at 56.2% in 1977).

1. At the independence in 1957, Ghana cocoa exports represented 70% of foreign exchange earnings. Averaging one-third of world supply in the late 1950s, Ghana was the world's largest cocoa producer.

Following the 1981/82 economic debates, the GOG, supported by a stand-by arrangement with the International Monetary Fund (IMF) and a multisector rehabilitation credit from the World Bank, introduced a comprehensive economic recovery program (ERP) to reverse the downward economic spiral. Under the ERP, the country experienced significant improvements in economic activities in all sectors except in food production and manufacturing. Though the negative trend in agricultural growth rates was reversed, it had grown by an average of only 2.4% per annum by 1988.

To consolidate the progress achieved under the ERP and promote a sustained 4% annual growth rate, the GOG initiated a Medium Term Agricultural Development Programme (MTADP) in 1988 (for the period 1991-2000) with the support of the World Bank. The MTADP provided a framework to support a market-led growth of the agricultural sector through institutional reforms and a more efficient allocation of government resources to public goods and services, particularly feeder roads, market infrastructure, irrigation, research, and extension. In spite of these efforts, agricultural growth remained slow, averaging 2.7% per annum over the period 1988-98. This was largely due to the general lack of support for agriculture and the macroeconomic conditions, particularly the high rate of inflation, the high interest rates, and the rapid depreciation of the domestic currency (MOFA, 2001). Consequently, the agricultural share of GDP fell from 50.6% in 1987 to 35.8% in 1997 (GOG/World Bank, 2000).²

The unsatisfactory performance of the agricultural sector, particularly in the early 1990s, prompted the GOG in 1995 to launch a 25-year perspective plan (Vision 2020)³ with the objective of attaining a middle-income status by the year 2020. To reach this goal, Ghana undertook the daunting task of making its over-

2. This structural change is different from a classical structural transformation of the economy since the agricultural share of GDP is expected to increase (at least in the short term) if the targeted growth rate is achieved.

3. MOFA. 1995. Ghana's Vision 2020.

all GDP grow at over 8% per year⁴ (MOFA, 2001). In this perspective plan, the GOG clearly restated the critical role agriculture has to play in bringing about the targeted economic growth, increased employment, and reduction in poverty. In particular, the plan emphasized that such a high GDP growth rate requires at least a 4% annual growth of the agricultural sector through improved agricultural productivity and competitiveness (MOFA, 2001). The recognition of the critical role of agriculture was reinforced in MOFA's recent Accelerated Agricultural Growth and Development Strategy (AAGDS). In the AAGDS, the MOFA stresses that a higher annual growth rate of about 6% over the period 2001-2010 is required to achieve the Vision 2020's targets on economic growth, food security, and poverty reduction.

Although the agricultural sector grew annually at a remarkable rate of 4.4% during the second half of the 1990s⁵—compared with a dismal 1.1% during the first half—much remains to be done. Food imports continue to be high, particularly for rice and maize. Rice imports accounted for between 25% and 72% of the total cereal imports between 1995 and 1999 while maize represented between 25% and 50% of total cereal imports over the same period (Table 1). Concerned about the level of food importation into the country, the government in its budget for 2001 set a goal of replacing 30% of rice imports with a domestic pro-

4. Under the ERP, when the economy was performing at its historical best, annual growth rates never exceeded 5.5%.
5. The agricultural sector grew at 4.3% in 1997, 4.7% in 1998, and 4.5% in 1999, but the agricultural share of GDP remained around 36% (GOG/World Bank, 2000).

duction of 72,000 mt. For maize, the target is to increase domestic production by 10% by expanding the area under cultivation by 70,000 ha (Government of Ghana, 2001).

In general, the growth in agricultural production has historically been achieved primarily through increases in area cultivated (MOFA, 2001). Given the current 2.6% population growth per annum, the availability of agricultural land per capita is projected to decrease from its current 0.77 ha to 0.38 ha by the year 2020 (MOFA, 2001). This implies that the current level of agricultural productivity would have to be nearly doubled simply to maintain the current level of food security and nutritional requirements.

Currently, about 29% of the population lives below the national poverty line. The most affected are the rural poor and women who perform about 40% of all agricultural activities, especially in the food crop subsector. This is partly due to the low productivity level arising from comparatively lower uptake of fertilizers in Ghana. The average plant nutrient uptake in Ghana is 3.1 kg/ha compared with 12.8 kg/ha in neighboring Togo. Given the strong link between agriculture and rural poverty,⁶ poverty reduction would remain a mirage without significant improvement in the sector's performance. The challenge for Ghana is to develop its currently inadequate irrigation infrastructure (only 0.05% of area cultivated), improve the poorly developed rural roads and markets, and reverse the accelerated land degradation (FAO/World Bank, 2000).

6. According to the 1998 Ghana Living Standard Survey, 54% of Ghana's poor are food crop farmers.

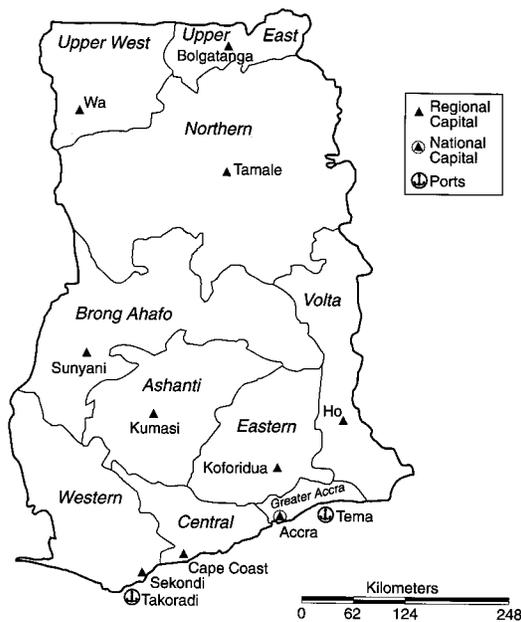
Table 1. Share of Rice, Maize, and Wheat in Total Cereal Imports, Ghana (1995-99)

Year	Total Cereal Imports (mt)	Share in Total Cereal Imports (%)	
		Rice	Maize/Wheat
1995	142,237	25	25
1996	99,936	35	50
1997	121,268	31	57
1998	378,121	72	26
1999	226,189	31	39

Source: FAOSTAT for the year 1998 and GSS based on data from Customs, Excise and Preventive Services (CEPS) for the other years.

I.2. *AIMs and Agricultural Development*

Following the liberalization of agricultural input marketing in Ghana in the early 1990s, fertilizer use dramatically declined. Much of the growth in agricultural production was achieved through increases in area cultivated, particularly widespread expansion into marginal lands. Cultivation of these marginal lands with inappropriate land management practices,⁷ however, has translated into serious soil erosion and land degradation problems, thereby leading to lower soil fertility and lower yields. The phenomenon exacerbates the inherently low fertility of Ghanaian soils (MOFA, 1998 and FAO/World Bank, 2000).⁸ This is particularly true for soils in the Northern, Upper West, and Upper East regions, and the coastal Savannah in the Greater Accra, and part of the Central and Volta regions (Map 1). In



Map 1. Administrative Regions of Ghana.

7. These include constant bush fires in the dry season, crop residues removal after harvest, uncontrolled and overgrazing, up-down slope cultivation, hilltop cultivation without soil conservation measures, cutting of woody species for charcoal production and fuel wood, slash-and-burn land preparation, and inadequate use of fertilizers.

8. Most of Ghana's soils have lower than optimum cation exchange capacity (CEC) (especially Ca and Mg). Soils in the coastal and interior savannah zones have low inherent fertility and poor physical characteristics, and are prone to erosion. Those in the forest zones have higher organic matter content but poor water-holding capacity (FAO/World Bank, 2000).

the early 1990s, the direct cost of this degradation was estimated to be about 4% of the national GDP (EPA, 1991) or the equivalent of US \$111.4 million annually (FAO/World Bank, 1991).

Prominent in Ghana's strategy for reversing the accelerated land degradation and thereby achieving the targeted 6% agricultural growth rate is a greater adoption of quality seed of improved varieties, fertilizers, and CPPs supplied through efficient markets supported by appropriate government policies and facilitating institutions. Though private firms now supply a large proportion of agricultural inputs, their high cost and unavailability in rural areas continue to be a concern. The efficient functioning of these markets would ensure the availability of appropriate and high-quality inputs on time and at affordable prices. In addition, farmers' choice of products would increase, and their knowledge and use of the inputs would eventually improve as traders develop their clientele. Ultimately, agricultural productivity, domestic production,⁹ and returns to farmers and input traders would increase as soil fertility levels are restored, improved, and/or maintained.

I.3. *Goal, Scope, and Objectives of the Action Plan*

The goal of this *Action Plan* is to identify specific actions needed for the development of sustainable AIMs in Ghana and thereby improve food security and protect the environment.¹⁰ The proposed plan is based on an assessment focusing primarily on the structure, conduct, and performance of the seed, fertilizer, and CPP markets in Ghana and on the constraints market participants face. However, because successful market development requires a holistic approach, the assessment also examines factors affecting input demand, such as technology transfer, access to seasonal credit, and the performance of output markets. The assessment is based on the following objectives:

1. Briefly review the recent trends in the use and importation of fertilizer, seed, and CPPs.

9. It is demonstrated that use of improved seed and quality fertilizer can increase current low maize yield level (about 1 mt/ha) by as much as fivefold.

10. The term AIMs (agricultural input markets) is used throughout this plan in reference to the whole range of activities involved in the importation, distribution, and final use of these inputs.

2. Assess the suitability, adequacy, and efficiency of the organizational arrangements—public, private, and NGO enterprises involved in the marketing and distribution of inputs.
3. Evaluate the policy and regulatory environments and their impact on input marketing and distribution.
4. Analyze the availability of and access to finance for input marketing and distribution.
5. Evaluate donor-funded and government-supported programs for input supply and their impact on private-sector participation in input marketing.
6. Identify constraints to marketing and distribution of inputs.
7. Develop a plan identifying the specific actions needed to address the identified constraints and the role of key stakeholders and thereby strengthen the functioning of competitive input markets in Ghana.

The assessment focuses on the identification of the constraints affecting the supply side of the input market largely because the system changed from a public-sector monopoly to a private-sector-based competitive market that has failed to perform as expected. Moreover, earlier work by IFDC and others has indicated that the transaction costs associated with the supply of agricultural inputs to farmers are high in many African countries. Consequently, alleviating the underlying constraints and strengthening the capacity of the private sector could lead to a significant reduction in these costs and thereby enhance input supply and the profitability of their use. Focusing on the supply side is not to suggest that the demand-side factors are not important; limited resources and work on the supply-side issues necessitated that the assessment focus on the supply side of the market equation.

Because it focuses on the development of AIMs, the present *Action Plan* is an important component of Ghana's strategy for improving food security while protecting the environment. In this regard, this *Action Plan* supports and complements (a) the 1998 National Soil Fertility Management Action Plan (NSFMAP), (b) the 2001 AAGDS, and (c) the targets set for agricultural development in the national economic dialogue of May 2001.

1.4. Outline of the Report

The body of the report is divided into three sections. Section II deals with the assessment of AIMs in Ghana with a special focus on private-sector participation. It

focuses on the functioning of the markets and constraints affecting their performance. The measures needed to improve the performance of the markets are included in Section III. The last section covers the issues dealing with the implementation of the *Action Plan* in a holistic manner.

II. An Assessment of the AIMs in Ghana

II.1. Introduction

The AIMs in Ghana have been studied extensively since the structural adjustment period beginning in the mid-1980s (Bumb et al., 1994; Gerner et al., 1995; Visker et al., 1995; Kempkes, 1997; Delimini and Wobil, 1998; Ocran et al., 1998; Schiere, 1998, Safo et al., 1999; Debrah, 2000). However, in-depth analyses of the AIMs have focused on the fertilizer market, taking into account the situation before the structural adjustment period until the mid-1990s. Although the marketing system for fertilizers and other inputs is fully privatized, there are second-generation constraints that currently hinder the full development of the private sector.

As a way of promoting broad-based rural development and poverty alleviation in Ghana, a joint FAO-World Bank mission was fielded in June 2000 to identify constraints that limit farmers' use of these inputs and to identify practical solutions for alleviating such constraints. The study focused on developments in the fertilizer and other agrochemicals sector during the period 1995 to 2000, but important gaps remained to be filled. These gaps related to seed and CPP markets and financial services and are addressed in this assessment. This section provides a summary of the assessment findings. More details are included in the background report.¹¹

II.2. Policy Issues: Macropolicy and Market Development Issues

Macropolicy Issues

Rapid depreciation of domestic currency—the Cedi (¢)—has been a significant macropolicy factor affecting the functioning of input markets, especially the

11. IFDC. 2001. "Developing Agricultural Input Markets in Ghana: Background Information to the Action Plan." IFDC internal document.

fertilizer market. Because Ghana does not have facilities for domestic production of fertilizers, it has to depend on imports to meet its fertilizer requirements. With a depreciating exchange rate, the value of imported goods increases in direct proportion to the depreciation of currency. Between 2000 and May 2001, the value of the Cedi depreciated from ₵3,944/\$ to ₵7,000/\$. Such depreciation not only adds to the cost of inputs but also prevents investment in business development by creating risk and uncertainty in the business environment.

High interest rates, associated currency depreciation and inflation, and stringent collateral requirements make borrowing for business development almost impossible and/or unreasonable. For example, interest rates in Ghana varied between 42% and 56% in May 2001. At such high interest rates, recovery of investment may require near doubling of prices in a single cropping season. Very high prices discourage demand and therefore lead to reduced incentive for investment in the input business. Few traders can afford to borrow from banks. The high risk of investing in agriculture and agribusiness has discouraged commercial banks from lending minimal funds to agriculture or agribusiness. Thus, the lack of funds for business development is a serious constraint to the private-sector participation in the input market development.

Difficulties caused by a depreciating exchange rate and high interest rates are compounded by the lack of infrastructure, especially feeder roads, in rural areas. The paucity of rural roads makes the expansion of dealer networks into rural areas difficult. As a result, most of the input retailers remain concentrated in urban or peri-urban areas, and many farmers have to travel 30-50 km for a bag of fertilizers or seed.

Market Development Issues

A well-functioning competitive market requires a conducive policy environment, adequate availability of human capital at all levels in both the private and public sector, easy access to finance and information, and effective implementation of regulatory systems and contract enforcement mechanisms. In Ghana, various reforms of the 1990s have created an enabling policy environment for private-sector participation in the marketplace, and there are few distorting policies in place. However, skills available for efficient functioning of input markets are limited because policy reforms were not accompanied by the development and strengthening

of human capital, institutional support, and marketing infrastructure. There is a general lack of dealer networks in rural areas, which acts as a severe constraint for farmers to access inputs. Many of the dealers who are currently involved in the input business do not have adequate marketing and management skills, and their technical understanding of product characteristics is also limited.

Finance is the lifeblood of business advancement. Yet, access to finance for importing fertilizers and other inputs and for developing small and medium-size marketing businesses is not easy. As mentioned earlier, commercial banks are reluctant to provide funds for agriculture-related activities, and in situations where they are willing to loan funds, collateral requirements are so stringent and interest rates are so high that few dealers can afford to borrow. Likewise, dealers and importers have limited information about prices, supplies, and other market conditions in the national, regional, and global markets. In this context, the ADB/Ghana efforts in helping importers to have easier access to foreign exchange are laudable. However, the assessment team strongly believes that tendering mechanisms used by ADB/Ghana may not be the best way to help importers. Rather than selecting importers to supply fertilizers to cotton-producing companies, the bank may consider creating a fund for the importation of inputs and allowing eligible importers to access this fund.¹²

Ineffective implementation of regulatory mechanisms for seed and CPPs, especially truth in labeling, has facilitated the proliferation of the sale of poor-quality or outdated pesticides and has discouraged honest traders from entering the input business. Institutional mechanisms and trained staff are needed to enforce existing regulations, and new laws should be enacted to further strengthen the legal backing of the regulatory services' activities.

II.3. Financial Support Services

Financial Institutions

The landscape of financial institutions dealing with agriculture in Ghana includes both formal- and informal-

12. A number of stakeholders did not accept this position during the validation workshop. They argued that identifying and resolving the problems associated with the current tendering process is preferable to ending the practice of tender.

sector institutions. The formal-sector institutions can be grouped into banking and non-banking institutions. At present, banking institutions consist of BOG—the Central Bank, 17 deposit money banks (DMBs), and 113 rural banks. The DMBs consist of nine commercial banks,¹³ five merchant banks,¹⁴ and three development banks.¹⁵ Three of the commercial banks, namely GCB, SSB, and SCBSCB, are listed on the Ghana Stock Exchange (GSE). The GOG has equity interests in the NIB (86.42%), GCB (46.8%), and ADB (51.83%). The BOG owns the remaining ADB shares (47.17%). The other DMBs are all privately owned. The rural banks are privately owned, with the BOG holding preferential shares in some; individuals and corporate bodies hold ordinary shares.

The main non-bank financial institutions (NBFIs) of any relevance to agriculture and input markets are the credit unions (CUs) and the savings & loans companies (S&LCOs). The CUs mobilize savings from their members only and grant loans exclusively to these members. There are about 225 CUs with a total membership of about 70,000 and cumulative savings of about ₵40.0 billion. About 30% of the CUs are based in rural areas. Notable among them is Kuapa Kookoo Credit Union (KKCU), with a membership of about 6,000 cocoa farmers and a total savings of about ₵1.5 billion. There are eight S&LCOs, which are based in urban and peri-urban areas. They provide financial services to micro, small, and medium enterprises, including petty traders.

In addition to CUs and S&LCOs, there are some NGOs with microfinance focus that provide financial services to the agricultural sector. The main ones are Sinapi Aba Trust (SAT), Adventist Relief Agency (ADRA), World Vision International (WVI), Freedom from Hunger (FFH), and TechnoServe.

13. These are Ghana Commercial Bank Ltd. (GCB), Standard Chartered Bank (Ghana) Ltd. (SCB), Barclays Bank Ghana Ltd. (BBG), Social Security Bank Ltd. (SSB), Metropolitan and Allied Bank, International Commercial Bank, Stanbic Bank Ghana Ltd., The Trust Bank Ltd. (TTB), and Unibank Ghana Ltd.

14. These are Merchant Bank Ghana Ltd., Ecobank Ghana Ltd., CAL Merchant Bank Ltd., First Atlantic Merchant Bank Ltd., and Amalgamated Bank. In addition to being a commercial bank, TTB also plays the role of a merchant bank.

15. These are the ADB, Prudential Bank Ltd., and National Investment Bank (NIB).

Besides the formal financial sectors, there are numerous informal financial institutions such as the Rotating Savings and Credit Associations (ROSCAs) and ‘*Susus*’, which also provide financial services to farmers and other entrepreneurs engaged in agriculture.

Regional Distribution

By year-end 1999, the DMBs had about 302 branches distributed throughout the country. However, the spatial distribution of the branches was skewed and is still skewed in favor of the Greater Accra (32%), Western (13.6%), and Ashanti (9.6%) regions. On the other hand, the regional distribution of rural banks was more dispersed: 22 in Ashanti, 18 in Brong Ahafo, 20 in Central, 19 in Eastern, 6 in Greater Accra, 3 in Northern, 2 in Upper West, 3 in Upper East, 8 in Volta, and 12 in Western. However, a significant number of these rural banks are not doing well. The distribution of the CUs as of December 2000 is also much better spread across the regions with 28 in Ashanti, 29 in Brong Ahafo, 26 in Central, 19 in Eastern, 65 in Greater Accra, 5 in Northern, 15 in Upper West, 9 in Upper East, 11 in Volta, and 18 in Western. The regional distribution of these financial institutions reveals that the regions with the least number of branches of the major banks also have the least number of rural banks.

Distribution of Bank Lending by Sector

Available data indicate that, despite its critical role in the national economy, the agricultural sector (including forestry and fishery) gets only a small proportion of the total DMB lending. According to the BOG (1999), as of the end of 1999, for example, the DMB lending to agriculture stood at ₵340.1 billion (i.e., about US \$97.12 million). This represented about 11.8% of total outstanding credit to all sectors, estimated to be about ₵2883.9 billion (US \$823.8 million). The corresponding outstanding credit to other sectors of the economy was ₵717.1 billion (24.9%) for the manufacturing sector and ₵451.4 billion (15.7%) for commerce and finance. DMBs’ outstanding credit to agriculture in 1997 and 1998 was 11.9% and 12.2%, respectively.

With regard to rural banks, the sectoral distribution of loans and advances is also heavily skewed toward nonagricultural trading businesses. In 1999, for example, only 18.9% of the total outstanding credit of

¢10.07 billion from 72 rural banks went into agriculture (Bank of Ghana, 1999). This represented an average credit to the agricultural sector of about ¢138.89 million per rural bank. The data also indicated that as much as 71.1% went into trading activities and loans to salaried workers.

The relatively small agricultural share of total outstanding credit of DMBs and rural banks is largely a direct result of the high risks associated with high default levels in the agricultural sector, as well as the investment opportunity in risk-free Treasury Bills, which also offer high yields and lower cost management. The main factors contributing to the high default levels in the agricultural sector include a high level of willful default and the decreasing profitability of agricultural production due to the unfavorable and increasing input/output price ratios and continuing high cost of capital.

Dominance of the ADB in Agricultural Lending

There is strong evidence that the ADB provides the bulk of lending to agriculture. Its share of the total DMB credit outstanding to the agricultural sector for the years 1997, 1998, and 1999 was 80.4%, 82.5%, and 77.7%, respectively.¹⁶ The dominant role the ADB plays in agricultural lending is largely explained by the fact that, as a government bank, ADB is more favorably disposed to accessing often-subsidized government loans from external sources than are other DMBs. For example, between 1980 and 1999, ADB has accessed four lines of credit from the African Development Bank (AfDB) Group worth about US \$80.0 million and others from International Fund for Agricultural Development (IFAD) and Agence Française de Développement (AFD).

Availability of Finance for Agricultural Input Trade

The ADB, BBG, and SCB are the main financial institutions that provide foreign exchange support for the importation of fertilizers and CPPs. Imports of vegetable seeds by AGLOW and AgriMat are normally effected through suppliers' credit arrangements. The ADB, SSB, SCB, and BBG handle local bank transac-

16. ADB's outstanding credit (in nominal terms) to agriculture in 1997, 1998, and 1999 was ¢124.0 billion, ¢182.53 billion, and ¢264.29 billion, respectively.

tions of input dealers. The ADB, rural banks, and some GCB branches in rural areas provide limited credit at the local retailers' level. At the farmers' level, ADB, rural banks, microfinance institutions (MFIs) such as credit unions, and some NGOs with microfinance focus are the key suppliers of credit. Clearly, there are no specific lending products for either input dealers or importers. This is largely attributed to a lack of proper understanding of the input markets by the banks and input dealers, as well as the associated risks. Depending on the loan amount and the risk involved, an authorized person or committee approves the loan.

The total annual foreign exchange needed for agricultural inputs is estimated to be about US \$31.9 million (i.e., US \$12.5 million for fertilizers, US \$1 million for seed, and US \$18.4 million for CPPs). Netting out the yearly allocation of US \$6.0 million from AfDB Group (which is drawn on the US\$ 20 million line of credit from ADF), there is a deficit of about US \$25.9 million to be filled. In other words, foreign exchange available from ADB for the importation of agricultural inputs has been maintained at a level equivalent to only 19% of the annual requirements. The balance of 81% finance comes mainly from CitiBank Line of Credit to ADB, BBG, SCB, and Suppliers' Credit.

Terms and Conditions for Agricultural Input Lending

The terms and conditions of financial institutions for lending to agri-input dealers are summarized in Table 2.

Development Potential and Principal Constraints

From the perspective of the key stakeholders in the input market chain, there are numerous financial factors that constrain the operation of an efficient agricultural input market; these constraints to financial support services are identified in Table 3.

II.4. The Seed Market

Evolution of the Industry

The institutionalized seed multiplication program in Ghana started in the late 1950s with hybrid maize. In 1958, the Hybrid Seed Multiplication Unit (HSMU) was established within the Ministry of Agriculture. In 1961 the HSMU evolved into the Seed Multiplication Unit (SMU), and this signaled the beginning of the

Table 2. Terms and Conditions of Financial Institutions

Key Companies	Key banks	General Terms		
		Annual Interest Rate	Period	Security
<u>Importers</u> Wienco, Chemico, Dizengoff, Reiss & Co.	ADB, SCB, BBG, TTB	US Prime +3% (max); or London Interbank Offered Rate (LIBOR)+2%	18 months (max)	Coverage of up to 150% (landed property); 80% (fixed deposit) <u>Margin</u> : 25% (min) deposit upfront.
<u>Distributors/Dealers</u> AGLOW, OBEK, Sefa & Jane, Chinese Woman, SMAKO	ADB, BBG, SCB, SSB	40%-44% (ADB) 44%-48% (other banks)	6-12 months	Coverage of up to 150% (landed property); 80% (fixed deposit)
<u>Retailers</u> Numerous and can be found in major market centers e.g., Techiman, Kumasi Kejetia, etc.	ADB, Rural Banks, GCB branches in the rural areas	38%-42% (Rural banks); 40%-44% (ADB) 44%-48% (other banks)	6-12 months	Coverage of up to 150% (landed property); 80% (fixed deposit)

Source: Informal Survey, May-June 2001.

formal seed sector in Ghana (Ocran et al., 1998). The operations of the SMU were at first centered on production on its own seed farms located in the Central, Volta, Ashanti, Brong Ahafo, and Northern regions. New crops were added gradually, and by 1964 open-pollinated varieties (OPVs) of maize, rice, groundnuts, sorghum, millet, local vegetable seeds, and tree crop seedlings were being introduced.

In 1969 the role of certified seed production was relinquished to contract seed growers. The SMU evolved into the Ghana Seed Company (GSC) to operate on a commercial basis, but the GOG remained its main shareholder. During the 10 years of its operation, the GSC experienced a significant setback in marketing seeds because the distribution networks were not fully developed and the marketing potential was not fully utilized, resulting in carryover seeds. Consequently, in 1989 GSC was dismantled in the context of the ERP. Since then, the production and marketing of certified seed has been a shared responsibility between the public and the private sectors.

Current Structure

Under the present structure, the seed industry is based on partnerships between the private and public sectors; their respective roles and responsibilities are well defined. The structure is described in Figure 1 where the public sector is represented by the GOG and its agencies such as the agricultural research institutes (Crops Research Institute [CRI], Savanna Agricultural Research Institute [SARI]), the extension service, the Grains and Legumes Development Board (GLDB), and the regulatory services (Plant Protection and Regulatory Services Directorate [PPRSD]). The research institutes have the mandate for research and breeder seed production, the GLDB for foundation seed production, and the PPRSD for quality control, policy formulation, and coordination. The Directorate of Agricultural Extension Services (DAES) assists farmers to gain renewed appreciation of the use of good-quality seed and planting material. The agricultural extension agents inform farmers about the sources of certified seed and educate them on their proper use.

Table 3. Constraints to Financial Support Services for AIMs in Ghana

Market Level	Constraints
Banks	<ul style="list-style-type: none"> • Inadequate supply of foreign exchange. • High interest rates for offshore borrowing due to high country risk. • High inflationary pressures. • Willful default by some beneficiaries of some donor-funding projects. • No risk-sharing and mitigating measures for loan defaults. • Inadequate capacity of junior- and middle-level bank officials to manage input credits efficiently.
Importers	<ul style="list-style-type: none"> • Unavailability of foreign exchange.^a • High interest rates. • High banks collateral requirements. • Steep depreciation of the Cedi.
Wholesalers	<ul style="list-style-type: none"> • Inadequate number of dealers in the country to reduce transaction and marketing costs. • High interest rates. • High banks collateral requirements. • Unfavorable credit terms from importers.^b • Low purchasing power of retailers due to steep increases in prices. • Limited competition due to few importers in the system. • Few retailers and thus expensive distribution. • Inadequate exposure to current computer-based business practices.
Retailers	<ul style="list-style-type: none"> • High interest rates. • Unfavorable credit terms from distributors. • Weak purchasing power affecting quantities purchased. • High banks collateral requirements. • Few dealers, which tends to limit competition. • Limited technical, financial, and management capacity in running an inputs business profitably and on a sustainable basis.
Farmers	<ul style="list-style-type: none"> • High interest rates. • Lack of purchasing power and low effective demand for inputs. • Inaccessibility to credit. • Low capacity to correctly apply inputs. • High transaction costs in accessing credit for inputs. • Weak farmer-based organizations to access inputs cost effectively.

a. This has led importers to contract suppliers' credit for inputs and the resultant shortage of inputs such as fertilizers, roundup, etc. on the market.

b. Credit period has largely been shortened due to the unpredictability of the depreciation of the Cedi.

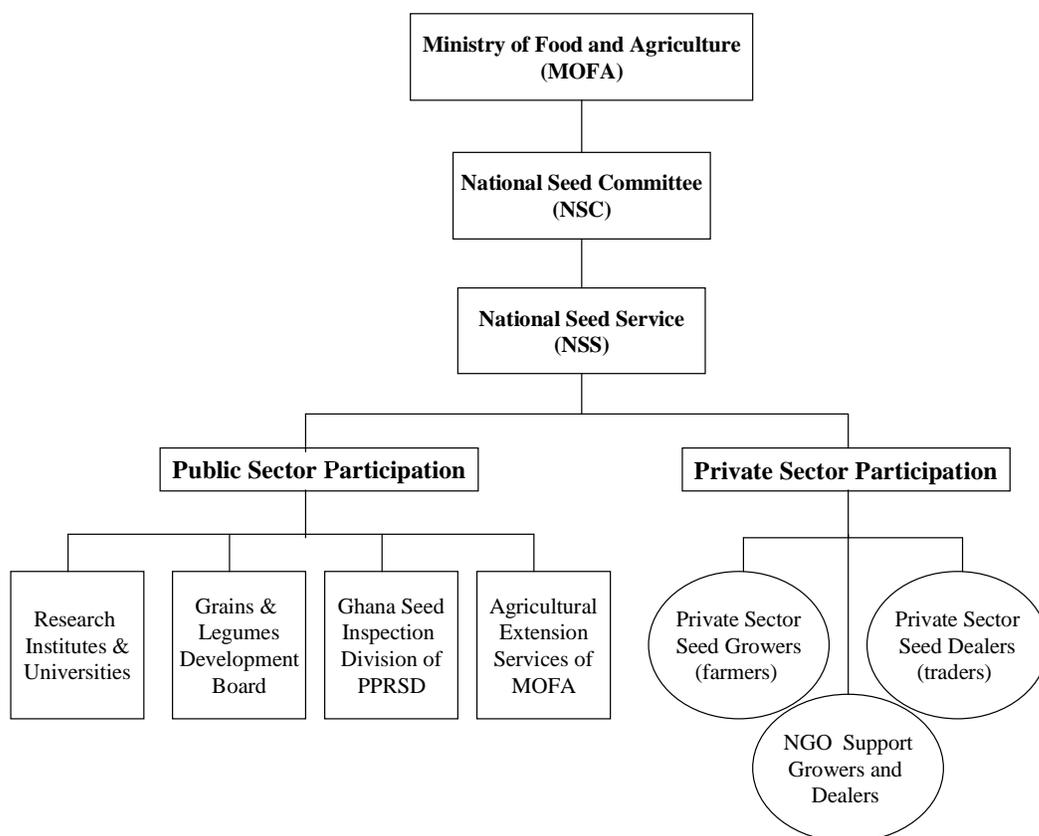


Figure 1. Structure of the Ghana Seed Industry.

Seed production in Ghana does not involve corporate bodies or multinational companies but is confined to progressive farmers who are registered seed growers and to seed dealers and some NGOs. These groups have the responsibility for the production and marketing of certified seeds. Currently, there are 164 registered seed growers and 127 registered seed dealers throughout the country. Seed growers are loosely organized into seed grower associations, namely, northern, middle, and southern sectors. Although most of the growers belong to the associations, membership is voluntary. The main objective of these associations is to offer members an opportunity to share ideas and in some cases resources and to serve as a lobby group to protect their common interest. These associations have received some support from NGOs such as SG 2000, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), TechnoServe, and Cooperative for Assistance and Relief Everywhere (CARE) International in terms of organizing regular meetings and training in business management.

Regional Distribution of Seed Growers and Dealers

Registered seed growers are dispersed in all the regions of Ghana. Regional distribution is as follows: 4 in Greater Accra, 9 in Eastern, 7 in Central and Western, 14 in Ashanti, 22 in Brong Ahafo, 25 in Northern, 7 in Upper East, 5 in Upper West, and 11 in Volta.

The distribution of dealers by region is as follows: 16 in Greater Accra, 11 in Eastern, 15 in Central and Western, 19 in Ashanti, 12 in Brong Ahafo, 6 in Northern, 5 in Upper East, 3 in Upper West, and 30 in Volta. The large seed dealers are AGLOW and AgriMat in the Greater Accra region and OBEBK and Sefa and Jane in the Ashanti region.

Seed Marketing Chain

The marketing channel for domestically produced seeds begins with breeding, with the major players being the crops research institutes and the universities (Figure 2). Once the variety is released, the GLDB

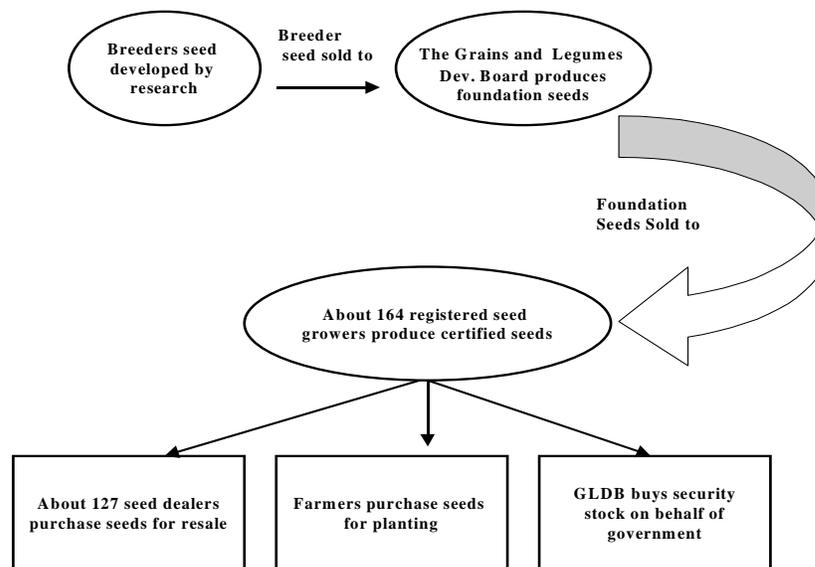


Figure 2. The Seed Marketing Chain.

produces foundation seed. These are sold to registered seed growers (mainly farmers) who multiply and produce certified seeds on a commercial basis. Certified seeds enter the market through wholesale and retail dealer shops, direct farmer purchases for planting, or as security stocks the MOFA purchases and manages. For imported seeds (especially vegetable seeds), the sources of supply vary, but they are mainly sourced from France, Belgium, and Holland in Europe and from Côte d’Ivoire, Burkina Faso, and Mali in West Africa. The main consumers of the imported seeds are the Vegetable Producers and the Exporters Association of Ghana.

Released Crop Varieties

The Ghana Varietal Release Committee (GVLC) has released a number of crop varieties since 1971. Rice and maize have the largest number of varieties released (10 each), followed by cowpea (5), cassava (4), soybean and sorghum (3 each), and groundnut (2). Table 4 describes the varieties, the year of release, and the institutions involved in their development. Apart from the sorghum variety Framida, which SG 2000 introduced in 1987, and some rice varieties bred in the International Rice Research Institute (IRRI), most of the crops were bred in Ghana by CRI, SARI, and the universities.

Types and Sources of Seeds and Planting Materials

The types of seeds and planting materials that are currently available and their primary sources of supply in Ghana are presented in Table 5. The public sector continues to produce and supply seeds of trees and industrial crops (cocoa, oil palm, and cotton), and there is presently no effort to promote private-sector seed supply of these crops. All seeds of the main grains (e.g., maize, rice, cowpea, and soybean) and legumes (e.g., groundnuts) are produced through partnerships between the public and private sectors (or the formal and informal sectors). However, substantial amounts of vegetable seeds are still imported into the country. Imports provide 10% of the national requirements for seeds of onion and okra, 15% of pepper, 70% of tomato, and 100% of cabbage and lettuce (Delimini and Wobil, 1998).

Seed Production

Foundation seed production of maize by the GLDB has increased steadily from 17 mt in 1991 to 31 mt in year 2000 (Figure 3). The foundation seed production of rice has fluctuated dramatically, reaching its lowest level in 1998 before rising again. Production of soybean and cowpea seed has risen steadily.

Table 4. Varieties of Selected Crops Released in Ghana (1971-97)

CROP	Variety	Year of Release	Known % of Total Seed Planted	Breeding Institution	Comments
MAIZE	Aburotia	1983	-	CRI Kumasi	Replaced by Abeleehi
	Dobidi	1984	-	CRI Kumasi	Replaced by Okomasa
	Okomasa	1988	7.5	CRI Kumasi	Widely available to farmers
	Abeleehi	1990	10	CRI Kumasi	Widely available to farmers
	Obatanpa	1992	30	CRI Kumasi	Widely available to farmers
	Dorke SR	1992	2.5	CRI Kumasi	Widely available to farmers
	Dodzie	1997	-	CRI Kumasi	
	Dadaba	1997	-	CRI Kumasi	Hybrid
	Mamaba	1997	-	CRI Kumasi	
Cidaba	1997	-	CRI Kumasi		
RICE	C 463	1971	-	IRRI	
	IR 20	1972	-	IRRI	
	IR 5	1972	-	IRRI	
	IR 442	1975	-	SARI	
	IR 8	1982	-	Univ. of Ghana	
	IR 3278	1983	-	Univ. of Ghana	
	GR 18	1986	-	SARI	Available
	Bengbie	1993	-	SARI	
	GR 21	1986	-	SARI	Available
Sikamu	1997	-	CRI Kumasi		
COWPEA	Amatin	1983	Traces	CRI Kumasi	
	Soronko	1983	Traces	CRI Kumasi	
	Asontem	1987	60	CRI Kumasi	
	Ayiyi	1992	10	CRI Kumasi	
	Bengpla	1992	30	CRI Kumasi	
SOYBEAN	Anidaso	1992	35	CRI Kumasi	
	Salina 1	1992	20	SARI	
	Salina 2	1993	25	SARI	
GROUNDNUT	F-MIX	1986	-	SARI	
	Sinkazie	1986	-	SARI	
SORGHUM	Naga-White	1973	-	SARI	
	Framida	1987	-	SG 2000 introduced	
	Kapaala	1998	Traces	SARI	
CASSAVA	Gblemoduade	1992	-	CRI	Available
	Abasafitaa	1992	-	CRI	Available
	Afisiafi	1992	-	CRI	Available
	Tek Bankyi	1997	-	UST	Available

Source: Ghana Seed Inspection Division (GSID) data taken from Delimini and Wobil, 1998.

Table 5. Types and Sources of Supply of Improved Seeds and Planting Materials

Typical Crops	Supply Sources			
	Public Sector (Research)	Public Sector (GLDB)	Private Sector (Farmers)	Private Sector Imports
<u>Tree Crops:</u> cocoa, oil palm, coconut, rubber	Cocoa Research Institute (Tafo), Oil Palm Research Institute (Kade)		Farmer seed savings	Rubber seeds imported by Ghana Rubber Estates Ltd. (GREL); oil palm seeds imported by Twifo Oil Palm Plantations Ltd. (TOPP) and Benso Oil Palm Plantations (BOPP)
<u>Industrial Crops:</u> cotton, coffee, cashew, tobacco				Tobacco seeds imported by British American Tobacco (BAT)
<u>Roots/Tubers:</u> cassava, cocoyam, yam, sweet potatoes	CRI	GLDB tests cassava planting materials at various sites	Farmer planting materials savings	
<u>Cereals:</u> maize, rice, sorghum and millet	CRI, SARI and universities supply breeder seeds	GLDB supplies foundation seeds	Farmer seed savings, and certified seed production by registered farmers	
<u>Fruits and Vegetables:</u> pineapples, citrus, tomatoes, onions, and other tropical and sub-tropical vegetables		GLDB experimenting with certified seed production for onions and okra on pilot basis	Farmer seed savings and informal exchanges	Vegetable seeds mainly imported by dealers
<u>Legumes:</u> cowpeas, groundnut and soybeans	CRI, SARI supply breeder seeds	GLDB supplies foundation seeds		
<u>Other Crops:</u> plantains, bananas	CRI	GLDB producing suckers of plantains	Farmer planting material savings	

Source: Adapted from Delimini and Wobil (1998) and supplemented with information from the field.

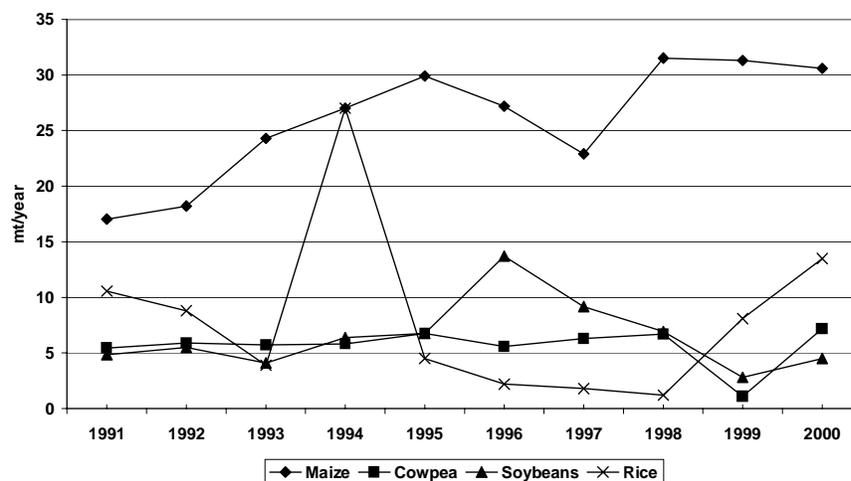


Figure 3. Foundation Seed Production Trends for Selected Crops, 1991-2000.

The annual certified seed production is presented in Table 6. These data show that the seed market in Ghana is very small. Apart from the Ejura farms, farms of the seed growers are small, averaging 0.4 to 2 ha. Coupled with the dispersion of seed growers, such small sizes not only increase the cost of inspection and technical backstopping for seed growers, but also lead to the underutilization of seed-related infrastructure. In the course of the study, it was established that there is much capacity for seed processing (equipment) that is underutilized in the regions. The low level of certified seed production is largely attributed to the small effective demand.

Adoption Rates

The adoption rates measured as a percentage of crop area planted to improved varieties are high for soybean, rice, and maize and low for sorghum and millet (Table 7). Reasons for the low adoption of improved seeds and planting materials include their high price relative to traditional varieties, their nonavailability within proximity to the farmers (0-5 km), and lack of complementary technology (fertilizer and CPPs). The lack of proper awareness of the potential benefits of improved seed over and above traditional varieties and the inadequate funding of research institutions are additional constraining factors. Finally, the absence of

well-developed large-scale seed enterprises to aggressively promote improved materials and the limited number of seed dealers in the system also contribute to the low adoption rates.

Seed Requirements and Farmer Demand

Based on crop area and planting rate, about 14,630 mt of maize seed and 10,500 mt of rice seed are required annually (Table 8). The availability of improved seeds and planting materials notwithstanding, the percentage of improved seeds used by farmers is still very low. Table 8 provides an estimate of the demand for improved seed for particular crops.¹⁷

Introduction and Use of Hybrid Seed

Although Ghana's seed program was initiated with hybrid maize seed production in the 1950s, farmers have not yet adopted the use of hybrid seed because of perceived high prices of hybrid maize seed and low market prices for grain. In addition, farmers have been reluctant to experiment with hybrid because they do not see the additional benefits vis-à-vis the perceived

17. Seed demand is measured by multiplying the adoption rate, the total seed requirement, and the replacement rate. The latter is the frequency with which farmers renew their improved seeds.

Table 6. Annual Certified Seed Production, 1990-2000 (mt)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Maize											
<i>Obatanpa</i>	0	0	0	288.0	581.0	596.6	638.3	1,045.0	993.8	569.2	1,134.0
<i>Mamaba</i>	0	0	0	0	0	0	0	0	0	0	72.0
<i>Okomasa</i>	182.9	129.4	189.2	104.0	148.0	244.7	34.8	120.8	41.7	67.6	62.0
<i>Abeleehi</i>	127.5	189.0	245.3	108.0	233.0	228.7	33.2	163.4	17.5	17.5	37.0
<i>Dorke SR</i>	6.5	7.4	13.8	14.0	14.0	11.7	11.0	31.5	10.6	12.6	58.0
<i>Dodzie</i>	0	0	0	0	0	0	0	0	0	4.6	16.0
Total	316.9	325.8	448.3	514.0	976.0	1,081.7	717.3	1,360.7	1,063.6	671.5	1,379.0
Rice											
<i>GR 18</i>	0	0	0	1,500.0	2,709.0	408.0	850.0	386.1	45.0	26.2	16.8
<i>GR 19</i>	0	0	0	0	136.4	171.6	0	0	4.5	0	0
<i>ITA 32</i>	0	0	0	0	0	0	0	0	36.0	1.9	0
<i>IR 64</i>	0	0	0	0	0	0	0	0	6.3	15.7	0
<i>Tox 3107</i>	0	0	0	0	0	0	0	0	0	476.5	492.0
<i>Tox 3108</i>	0	0	0	0	0	0	0	0	0	43.5	216.8
<i>IRAT 262</i>	0	0	0	0	0	0	0	0	0	0.9	0
Total	0	0	0	1,500.0	2,845.4	579.6	850.0	386.1	91.8	564.7	725.6
Cowpea											
<i>Asontem</i>	0	0	0	1.8	3.4	29.5	11.3	8.6	16.5	42.0	54.5
<i>Bengpla</i>	0	0	0	1.2	2.8	15.1	4.5	14.4	6.9	19.9	21.5
<i>Blackeye</i>	0	0	0	1.1	16.6	0	0	0	0	10.9	0
<i>Ayiyi</i>	0	0	0	2.7	5.5	2.8	5.7	5.8	9.0	5.0	1.5
<i>Adom</i>	0	0	0	0	0	0	0	0	0	0	2.7
Total	0	0	0	6.8	28.3	47.4	21.5	28.8	32.4	77.8	80.2
Soybean											
<i>Anidaso</i>	0	0	0	8.6	0	27.8	49.2	70.4	70.2	105.0	71.5
<i>Salint. 1</i>	0	0	0	0	0	9.4	54.1	5.9	0	0	31.5
<i>Salint. 2</i>	0	0	0	13.0	22.3	23.0	21.4	6.5	0.7	20.4	32.0
<i>Bengbie</i>	0	0	0	15.2	0	60.2	0	0	0	0	0
Total	0	0	0	36.8	22.3	120.4	124.7	82.8	70.9	125.4	135.0
Groundnut											
Florispan	0	0	0	0	0	0	30.0	32.0	20.2	21.5	17.8
Sorghum											
Kapaala	0	0	0	0	0	0	1.2	3.0	2.6	2.5	0

Source: GSID.

Table 7. Improved Seed Adoption Rates (% Total Crop Area)

Crop	Formal Sector	Informal Sector	Total
Maize	10	60	70
Rice	10	80	90
Cowpea	5	45	50
Soybean	5	95	100
Sorghum	0	10	10
Millet	0	5	5
Groundnut	0	30	30

Source: GSID.

Table 8. Annual Requirement and Estimated Demand for Improved Seed in Ghana

Crop	Crop Area (ha)	Seeding Rate (kg/ha)	Total Seed Requirement (mt) (a)	Adoption Rate (%) (b)	Replenishment Rate (%) (c)	Total Seed Demand (mt) (abc)
Maize	665,000	22	14,630	70	20	2,048
Cowpea	100,000	20	2,000	90	33	594
Rice	105,000	100	10,500	50	10	525
Soybean	2,000	50	100 ¹	na		
Sorghum	314,000	12	3,708	na		
Millet	190,000	6	1,140	na		

na: not available

¹broadcast

Source: GSID.

higher costs of investments in hybrids in terms of fertilizers and other crop husbandry practices. While to some extent these reasons may be valid, it appears that farmers need to be educated that under the same conditions and agronomic practices hybrid seeds will still outyield open-pollinated and self-pollinated varieties. To boost agricultural production and significantly improve the profitability of seed production, there is need to improve farmer perception of the potential benefits of hybrid seeds by creating awareness through demonstrations and publicity.

Seed Prices

Since the liberalization of input markets, market forces have determined seed prices. Table 9 shows that between 1994 and 2000 seed prices have been increas-

ing. The price of maize seed almost quadrupled over this period; that of cowpea seed tripled while soybean seed price doubled. There is a direct relationship between grain and seed prices. Seed prices are generally twice the prevailing grain prices, and in years when grain prices collapse, the demand for seeds decreases. Because of the grain-seed price relationship, seed growers usually use prevailing grain prices as leading indicators of the level of seed prices in the following year and hence plan their production accordingly.

The Legal and Regulatory Framework and Institutional Support

Officially, the 1972 Certification and Standards Decree and the 1973 Certification and Standards Regula-

Table 9. Market Prices of Improved Seed, by Crop, 1994-2000

Year	Cedis/kg of Seed			
	Maize	Cowpea	Soybean	Rice
1994	700	1,150	600	225
1995	1,100	1,175	900	250
1996	1,750	2,350	1,000	312.5
1997	2,400	2,800	1,200	375
1998	2,000	3,000	1,200	400
1999	2,000	3,000	1,200	400
2000	3,000	3,500	1,500	450

Source: GSID.

tions govern the production, importation, and marketing of seed in Ghana. However, these instruments were amended in the early 1990s. Although the amended legislation has been taken through the administrative process leading to its enactment, it is yet to be enacted by an Act of Parliament. Nevertheless, GSID, which was mandated to implement the amended laws and supporting regulations in collaboration with NSS, has been functioning. GSID and the entire seed industry are complying with the revised legislation pending its enactment. However, GSID does not have the legal backing to prosecute violators of the seed laws. The legislation imposes restrictions on the importation of seeds into the country and requires that all seed importers, growers, and processors be registered.

In terms of institutional support, GSID is a division within PPRSD responsible for the registration of seed producers and dealers and for field inspections and rejection or approval of seed lots. In addition, it is responsible for monitoring seed dealers at storage and sale periods and for seed certification, and it offers training of seed inspectors and producers in internal seed quality assurances, seed processing, marketing, and packaging. It also fixes fees for seed certification and testing, monitors the supply of seeds for purposes of seed security, organizes training courses on all aspects of the seed industry, and coordinates the activities of the different agencies involved in the seed industry program. Finally, GSID operates a national seed-testing laboratory. Other regional satellite laboratories are located at Ho, Winneba, Kumasi, Tamale, Wa, and Bolgatanga.

The NSS is the technical arm of the seed industry. As part of the Directorate of Crop Services (DCS) of the MOFA, the NSS provides leadership and technical support for the development of seed production and commercialization. The NSS serves as secretariat of the NSC, which is responsible for policy issues. The NSC has a subcommittee (the National Varietal Release Committee—VRC) responsible for releasing new varieties and deleting obsolete varieties from the official variety list based on the NSC's criteria.

Main Constraints

The following seven factors are the main constraints affecting the development of the seed market in Ghana:

Inadequate Resources for Supporting Institutions

Inadequate, irregular, and late release of funds to the research institutes, GLDB, and other agencies related to seed production affects the implementation of any meaningful seed development strategy because seed production activities are time bound. During the course of the field visits, it was established that the public-sector institutions are severely strained and require some policy interventions to become effective partners in the seed industry. For example, the CRI's lands for trials are being taken over by landowners. The research staff is inadequate, overworked, and poorly motivated; their research budget is limited, and the bureaucratic procedures during the disbursement of funds lead to delays in research operations. Capacity in the research institutes to produce vegetable seeds is lacking; hence, there is a total dependence on imports of vegetable seeds from Europe and neighboring West African countries. Most of the cold storage facilities are nonfunctional.

The GLDB is inadequately staffed and may not be able to meet large demands for foundation seeds without increasing and strengthening staff. There are few seed inspectors in the GSID to service the large number of farmers. In addition, they are poorly equipped to reach farmers who are dispersed over large areas.

Limited Marketing Skills of Seed Dealers

Despite 10 years of private-sector involvement in certified seed production, there is a limited number of seed dealers in the system and few private wholesale/retail traders in seeds for rice, beans, cowpea, groundnut, sorghum, and most other crops. Consequently, the formal seed sector is supplying only about 10% of total seed demand, leaving the bulk (about 90%) of seed in the hands of the informal sector. This means that the Ghanaian farmer has very limited access to improved crop varieties.

The thin market for the Ghanaian seed industry is not conducive to the emergence of large seed companies in the country. With no developed seed company and a limited number of seed dealers and retail outlets, some aspects of the seed industry are not yet well developed. Much of the seed of limited crop varieties is produced by a handful of seed growers' associations. There is need for the seed dealers/companies to be more aggressive in contracting smallholders (seed growers'

associations) to produce seed of specific crop varieties that would be sold under their company logo. Currently, few potential dealers can communicate with farmers to determine what they want through on-farm tests and demonstrations. Similarly, few dealers have the marketing skills to establish a brand name, advertise and demonstrate the technology to farmers, contract for seed production, process and package seed, and market through independent retail outlets. Further down the marketing chain, potential seed dealers need to learn about all the possible sources for seed and marketing strategies (e.g., demonstrations).

Along with the insufficient number of dealers and retail outlets, the government and dealers are not applying enough effort to determining what farmers want and educating them about new varieties and the use of hybrid seeds through on-farm tests and demonstrations. Given the large number of farmers, the number of field demonstrations is inadequate.

Lack of Effective Linkages Between Seed Producers and Dealers or Other End Users

Maize and cowpea seed producers are organized into seed growers' associations and benefit from technical backstopping from extension and GSID. However, there are no effective linkages between these organized seed growers and the seed dealers mainly because there is a lack of trust as well as a lack of respect for sales contracts established between them. An important consequence of the lack of organized seed production and its weak linkage with the dealers is the irregular supply of both domestically produced and imported seeds.

Examples of strong, successful linkages between input supply and market outlets were identified during the field study for the industrial crop companies. In these cases, the companies contract with producers to purchase their products; hence, they invest in the acquisition and use of inputs. These arrangements are common in the rubber plantations (GREL), the oil palm companies (TOPP and BOPP), tobacco (BAT), and to some extent, cotton (Ghana Cotton Company [GCC]). For successful development of a viable seed industry, farmers must be assured of the markets for their products in that the demand for seed and other inputs largely depends on the demand for the outputs.

Financial Constraints

Seed producers and dealers face credit constraints in terms of access to financial capital from the com-

mercial banks. Interest rates are approximately 42%-45%, and sometimes the requirements for the credit (e.g., collateral) are stringent and beyond the capacity of farmers. Moreover, the prices at which the products are sold do not provide enough incentive for farmers to invest in the production or in the marketing of improved seeds and planting materials.

Lack of Market Information

Presently, the Statistical, Research and Information Department (SRID) is responsible for the systematic collection, analysis, and diffusion of information on inventories, sales, imports, distribution, and consumption of agricultural inputs and products. With limited human and financial resources, the SRID has not effectively performed this task. This has affected the proper functioning of the seed market because dealers, importers, and other participants in the marketing chain do not have reliable information about local, regional, and global market situations for inputs and products. One important area where information is most lacking is in the area of seed demand forecasting. In the absence of a reliable system, the seed growers currently depend on signals from the grain market (grain price trends) as leading indicators of the following year's demand. This has resulted in difficulties in making production and marketing plans.

Unprofitable Seed Production Due to Unattractive Product Prices

The demand for improved seeds is a derived demand. It is derived from the demand for the product for which the improved seeds are required. Farmers' motivations to use modern inputs (fertilizers, improved seeds, and crop protection chemicals) depend in part on the marketing outlet availability and the demand. Except in a few cases where contracts exist between the supplier and the buyer, there is generally a weak relationship between seed growers and seed dealers. Most of the seed growers therefore face an uncertain market where the prices of improved seeds are determined by the demand for the grains (and therefore their prices). The grain prices have been low in Ghana and thus do not provide incentives for grain producers to invest in the use of improved seeds. In addition, farmers have cited the high costs of acquiring seed and other associated inputs, including labor and transportation, as the main determinants of the profitability of seed production.

Technical Constraints

Although several crop varieties have been developed, they are not widely used because of the perceived low profitability or high cost associated with their use. The problem is most acute for the adoption of hybrids. Under the structural adjustment program the Ghana extension service is severely constrained by inadequate staffing; hence, the extension support that was available for farm demonstrations of improved varieties and hybrid production has declined. There are a few NGOs (e.g., SG 2000) that have filled this void, but in general, technology transfer and other technical support to farmers are limited.

II.5. The Fertilizer Market

National Fertilizer Consumption

The use of mineral fertilizers in general agriculture was introduced in Ghana in the early part of the 20th century (Ofori and Dennis, 1996). In the 1960s, fertilizer imports were extremely low, averaging only 4,378 mt of products per year with a peak of 8,290 mt in 1963 (Figure 4). In the 1970s, the average annual fertilizer import increased by sixfold with a peak of 58,650 mt in 1979. This high growth occurred when the country was plunging into an economic downward spiral,

the incentive structure in agriculture was deteriorating (heavy tax burden), and living standards were dramatically declining. This remarkable performance was largely due to the demonstrative effect of FAO's fertilizer programs of the 1960s and special support for fertilizer use programs.

However, during the first half of the 1980s, fertilizer imports eventually reflected economic performance. By 1986, while awareness of the need for fertilizers remained high among farmers, fertilizer imports had declined to 20,100 mt of products from 60,460 mt in 1980 largely because of foreign exchange shortage and subsidy removal. Although imports increased during the second half of the 1980s to reach an all-time record of 65,329 mt in 1988 when the market privatization process began, it never exceeded 55,000 mt throughout the 1990s. However, there is significant scope for improvement to as high as 200,000 to 250,000 mt of product if the average use rate increases to at least 80 kg of nutrients per ha of arable land. With proper use, an application rate of this amount would have no significant negative effect on the environment; rather, it would contribute to its preservation through improvements in land and labor productivity and the reduction of encroachment into marginal lands.

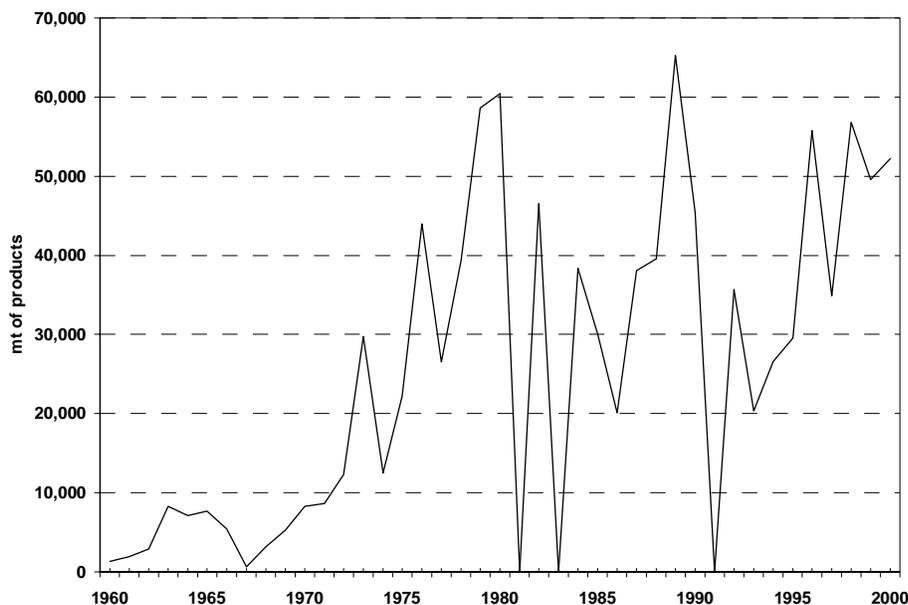


Figure 4. Ghana Fertilizer Imports, 1960-2000.

Product Mix

Before the 1960s, straight fertilizers (ammonium sulfate [AS], single superphosphate [SSP], triple superphosphate [TSP], muriate of potash [MOP], sulfate of potash [SOP]) were the most commonly used products in Ghana. Beginning in the late 1960s, compound fertilizers were introduced. Today, the dominant products are NPK compound fertilizers (especially 15-15-15 and 20-20-0)¹⁸ that are applied as basic fertilizers and topdressed with AS and, to a lesser degree, urea. These grades are expensive on a nutrient basis relative to high analysis formulations. Furthermore they do not allow fertilizer to fully capture crop yield potential (IFDC, 1986; Ofori, 1999). Furthermore, since 1954 AS has been the most important source of N and S although continuous use of AS is likely to lead to soil acidification, especially on the poorly buffered soils of northern Ghana. Urea and calcium ammonium nitrate (CAN) are less acidifying and more cost effective than AS. Finally, Ghana uses fertilizer formulations that are different from those used in the neighboring countries with similar agro-ecologies.¹⁹ This situation limits the scope for regional market development.

Blended fertilizers are not promoted in the Ghanaian market for historical reasons and lack of education (product knowledge) on the part of farmers and agricultural extension agents. Historically, blended fertilizers were excluded under the public monopoly regime in the Technical Product Specification List (TPSL) on the grounds that they do not contain N in nitrate form. Similarly, diammonium phosphate (DAP), which is one of the most cost-effective fertilizers in terms of nitrogen and phosphorus, is only marginally used in Ghana and was excluded in the TPSL. Because of this exclusion, farmers are not accustomed to using these fertilizers. Currently, however, MOFA prohibits only the sale of fertilizers with the potential to harm the soil (heavy metal).

Uses by Crop

Reliable data on farmers' fertilizer use by crop are not readily available in Ghana. Nevertheless, it is generally admitted that fertilizer is used mainly on cotton

18. Other compound fertilizers include 23-15-5 and special purpose products such as 11-5-27+ 5MgO for pineapple, 0-22-18+7S+6MgO for cocoa, and 11-0-37 for plantain and banana.

19. Mali uses 14-22-12-7-1 (NPK+SB) on cotton and 18-46-0 (NPK) on food crops while Burkina Faso and Côte d'Ivoire use 14-23-14-6-1 and 5-15-15-6-1 (NPK+SB), respectively.

(slightly over 50%), maize, rice, and high-value crops such as pineapple, tobacco, and tomatoes. However, use on maize and other cereals is drastically declining in favor of high-value cash crops (export crops). Fertilizer use on root crops, tree crops, and cocoa is minimal.

Uses by Region

Much of the use is concentrated in the Northern, Upper East, and Upper West regions of the country. However, apart from cotton and rice, fertilizer use on grains, vegetables, and export crops is higher in the south than in the north.

Intensity of Use

Ghana used 8.8 kg of nutrients per hectare of area cultivated in 1978. Ten years later, when the process of liberalizing the fertilizer market was launched in 1988, Ghana used less than 7.5 kg of plant nutrients per hectare of area cultivated. In 1993 this rate fell to 2.9 kg and has remained low, averaging 3.0 kg in 2000. Very often, farmers use less than the recommended amounts, largely because of the high cost of the fertilizers.²⁰ This low use intensity is particularly acute among small-scale subsistence farmers who use 0-20 kg of products per hectare, compared with about 80-120 kg for large-scale farms and plantations. Consequently, Ghana's soil nutrients are being rapidly depleted; yields are either stagnating, rising slightly, or in some cases dropping, and good arable land for agriculture is becoming scarce, particularly in the Western, Eastern, Ashanti, and Upper East regions. Fallow periods have shortened from 6-10 years to 0-3 years. By some estimates, Ghana's average nutrients requirements should be at least 80 kg of N-P₂O₅-K₂O per hectare, which is roughly 200-250 kg of fertilizer products per hectare. In other words, potential crop yield increases are substantial and can be achieved through better soil fertility management strategies, including the use of mineral fertilizers.

Private-Sector Participation

With few exceptions, MOFA controlled fertilizer supply to Ghanaian farmers prior to 1988. Through

20. The standard fertilizer application rate that the extension service recommends for cotton is a basal application of five 50-kg bags of NPK and two 50-kg bags of AS as topdressing. For maize, the recommended rate is two 50-kg bags of 15-15-15 for basal application and two 50-kg bag of AS for topdressing or one basal 50-kg bag of 15-15-15 and one 50-kg bag of urea for topdressing. For rice the standard recommendation is one 50-kg bag of 15-15-15 and one 50-kg bag of AS or urea.

the Crop Services Directorate, MOFA determined requirements and arranged procurement, importation, and distribution using its network of national, regional, district, and subdistrict outlets. Beginning in 1988, as the fertilizer subsector underwent significant policy changes, the private sector was allowed to be directly involved in the importation and marketing of fertilizers. To date, as much as 95% of the imported fertilizer product is brought in by private operators. The remaining 5% comes in as aid-in-kind (mostly urea²¹) through MOFA.

Product Sourcing

All of the mineral fertilizer products used in Ghana are imported from abroad. Currently, the imported products are sourced through direct private importation primarily from Western Europe—particularly from France (HydroAgri) and in a lesser degree from Holland (Cheminex) and Ireland (Dynochem). A small proportion is imported from Côte d'Ivoire (Hydrochem), Russia, Belgium, Morocco, Bulgaria, Israel, and Tunisia. Fertilizers are imported mainly through the port of Tema where large storage facilities are available. However, sea freight of imported fertilizer products to Abidjan is much lower than to Tema because Hydrochem and STEPC benefit from economies of scale of bulk transport and competitive procurement. Because there is little suitable warehouse storage for bulk fertilizer products in the Tema port, most of the imports come in 50- and 25-kg labeled bags. Among all importers, only Wienco (Gh) Ltd. imports shiploads of 15-15-15, 20-20-0, and 23-15-5 in bulk; bags them at the Tema port quay; and transports the bagged products to warehouses in Tema, Kumasi, and Tamale. Trucks transport the imported products to different destinations throughout the country. Fertilizer delivery to the north using the Volta River (e.g., Wienco in the past) is not operational due to multiple handling issues and associated costs that substantially increase the price of the product at the final destination.

Domestic Suppliers and the Marketing Chain

Following the liberalization of the fertilizer import in 1991, six large companies imported fertilizers for their own distribution, namely Wienco (Gh) Ltd., Chemico Ltd., Dizenghoff, Jasmedi Group Ltd., Watraco Gerber, and Farmer's Services Company (FASCOM) (Upper Region [UR]) Ltd.²² Large farm-

21. Ghana received 1,250 mt of urea as Kennedy Round II (KR-II) commodity grant in 1996.

22. Prior to 1991, Wienco, Chemico, and Dizenghoff supplied fertilizers to the government on tender.

ing companies also imported some of their requirements (e.g., Ghana Oil Palm Development Corporation, Pioneer Tobacco Company). Watraco Gerber in 1992 and Jasmedi Group in 1997 exited the fertilizer import business, largely as a result of their weaker financial backing. More than a decade after the liberalization, fertilizer import in Ghana involves only two large private companies, namely Wienco and Chemico, and to a lesser degree Primark and Dizenghoff. With about 48% of the market share, Wienco is currently the largest importer and has been the market leader since the liberalization of fertilizer marketing. However, Wienco's market share has been decreasing, particularly in the last two years, as Chemico and Primark shares have increased (Figure 5).

The main private importers have wholesale outlets to deliver directly to end-users, primarily in the oil palm, tobacco, and cotton subsectors and in the large rice irrigation projects. In fact, Wienco has been able to successfully integrate the sale of fertilizer and the purchase of cotton by entering into an exchange or swap agreement with cotton companies. Importers also sell their products through a few registered wholesalers/retailers who are independent dealers. These registered wholesalers/retailers take delivery from Tema warehouses for distribution to the network of rural retailers in the districts and farming communities. The main registered wholesalers/retailers include Sefa and Jane (Kumasi), AGLOW (Accra), AgriMat (Accra), Chinese Woman (Kumasi), Obek Agro Services (Kumasi), SMAKO (Nsawam), Iddissal (Tamale), and Dagx Agrofarma (Accra-North). The exact number of rural retailers is not well known; however, some studies estimate that there are 600-800 wholesalers and rural retailers throughout Ghana (Debrah, 2000). These retailers are generally agrochemical shops operated by individuals such as the agrochemical sellers of Kumasi. In addition to 25- and 50-kg bags, most of the retailers rebag fertilizer products for sale in 1-kg, 2-kg, and 5-kg bags. They also sell from open 50-kg bags.

Market Outreach

While Wienco has established a decent retail network of its own,²³ the overall retail network of the country is not well-developed. Most wholesalers and retailers are concentrated in urban centers, forcing farmers to travel long distances to purchase fertilizers.

23. Wienco sale points are concentrated in the Greater Accra, Ashanti, Brong Ahafo, and Northern Regions.

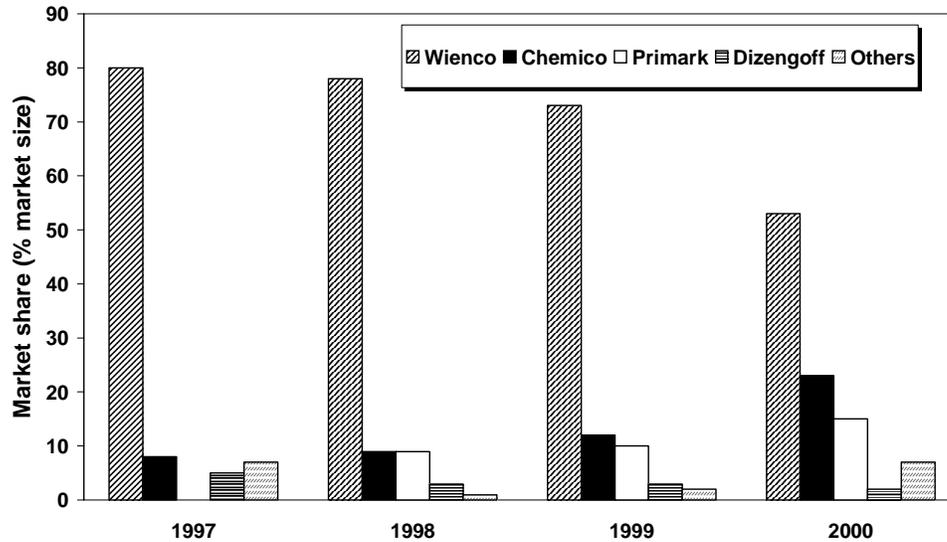


Figure 5. Market Shares by Major Importers, 1997-2000.

Dealer network development in Ghana is constrained by the limited skills of potential dealers, willful defaults, and the poor capitalization of potential retailers and the small-scale and dispersed farmer-clients in rural areas. A retailer needs to make enough profit to be motivated to move the products close to the farmers and provide other needed services. Potential dealers also need training and access to affordable finance to develop the market. This is clearly recognized in the country's strategy for agricultural development (MOFA, 2001). Unless the market size is increased, the Ghana fertilizer industry is bound to be an oligopolistic structure with relatively high prices. Nevertheless, with the current market size, bulk and joint procurements offer opportunities for significant reduction in freight costs. In addition, a better use of existing depots distributed throughout the country can also improve the development of the retail network. Currently, this valuable infrastructure is not fully utilized.

Fertilizer Product Pricing

To a large extent, fertilizer pricing in Ghana follows a price leadership model; smaller importers peg their prices to the prices of one or two market leaders. Although there is no evidence of collusive behavior, these market leaders follow each other closely in prices. There is, however, some evidence of competitive pressures leading to changes in prices. But, much more competition is needed and can be achieved if the mar-

ket size increases, the current ADB tender system is rendered more market-friendly or simply terminated, and the private enterprises intensify their effort in marketing their products. In particular, input traders need to reach out to farmers through promotional strategies involving product image with trademarks and logos.

Price Trend

Nominal fertilizer prices rose sharply starting in 1991/92, after liberalization of imports and devaluation of the cedi (Figure 6). In addition, the post-reform period is characterized by large price increases from one year to the next. For example a 50-kg bag of urea, which sold at ¢63,000-66,000 in 2000, now costs ¢130,000-135,000. Similarly, a 50-kg bag of 20-20-0, sold at ¢52,000-55,000 in 2000, now costs ¢97,000-102,000. A 50-kg bag of cocoa fertilizer sold at ¢44,000 in 1999 but now costs ¢132,000. Price increases of this magnitude make the use of fertilizer unattractive and negatively affect the stability and efficiency of the marketing system by increasing the associated risk and thereby reducing farmers' demand and traders' willingness to invest in the fertilizer business. The removal of subsidies, high inflation and interest rates, and the persistent devaluation of the Cedi against the U.S. dollar are primarily responsible for the drastic increase in fertilizer prices since the liberalization of the input market. Figure 6 shows how fertilizer prices and exchange rates move together.

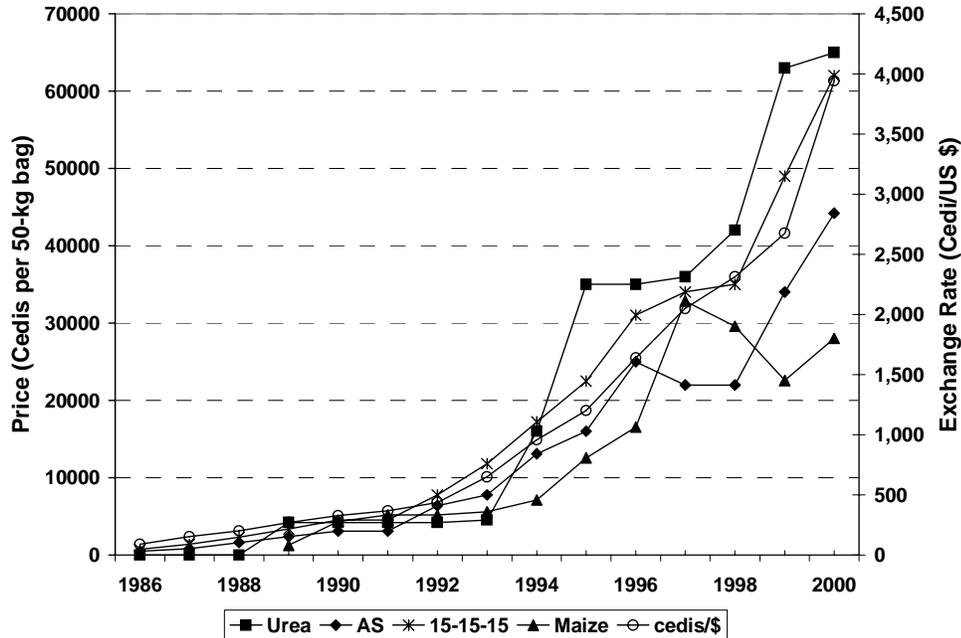


Figure 6. Exchange Rate and Price of Maize and Selected Fertilizers, 1986-2000.

Not surprisingly, prices of fertilizer increased much more than prices of the crop output. For example, between 1991 and 1995, the prices of urea, AS, and 15-15-15 increased by 733%, 416%, and 400%, respectively, compared with a corresponding average price increase of only about 142% for maize and 190% for rice. The same trend persisted in the second half of the 1990s but with a much smaller magnitude. Between 1995 and 2000, the price of AS and 15-15-15 increased by 176% each, compared with a corresponding average price increase of only about 123% for maize and 34% for rice.

Fertilizer:Grain Price Ratios

The input/output price ratios show a more favorable incentive for the use of fertilizers on rice than on maize because the ratios for rice are consistently lower than those for maize (Figures 7a-c). In the early 1990s less than 1 kg of maize could buy 1 kg of urea, AS, or NPK (15-15-15); currently, it takes about twice as much maize to buy the same quantity of urea, AS, or NPK. This suggests that the market for a domestically traded crop such as maize may not be working efficiently, and farmers cultivating such crops bear a much higher burden from the increase in the price of fertilizer.

Profitability of Fertilizer Use

The value-cost ratios (VCRs) for fertilizer use on maize production reflect the trend noted using the input/output price ratios. Using the available output prices (i.e., weighted average wholesale prices), the VCR associated with the use of basal 15-15-15 topdressed with AS was higher than 2.0 in the late 1980s. Following the input market liberalization, the VCR remained below 2.0, except in 1997 and 1998 when it reached 3.2 and 2.8, respectively (Figure 8). Similarly, the VCR associated with the use of 15-15-15 topdressed with urea was higher than 2.0 in the late 1980s. This ratio has remained below 2.0 since the input market liberalization, except in 1997 and 1998 when it reached 3.5 and 2.9, respectively. However, the VCR associated with the use of urea as topdressing has been higher than that obtained using AS.

The low VCRs are largely due to unfavorable input/output price ratios, less than recommended fertilizer application rates, lower crop response to fertilizer, and the output price used to estimate the VCRs. Using farm-gate prices would yield higher VCRs. A recent FAO/World Bank (2000) analysis shows that the VCRs are higher for irrigated rice. The same analy-

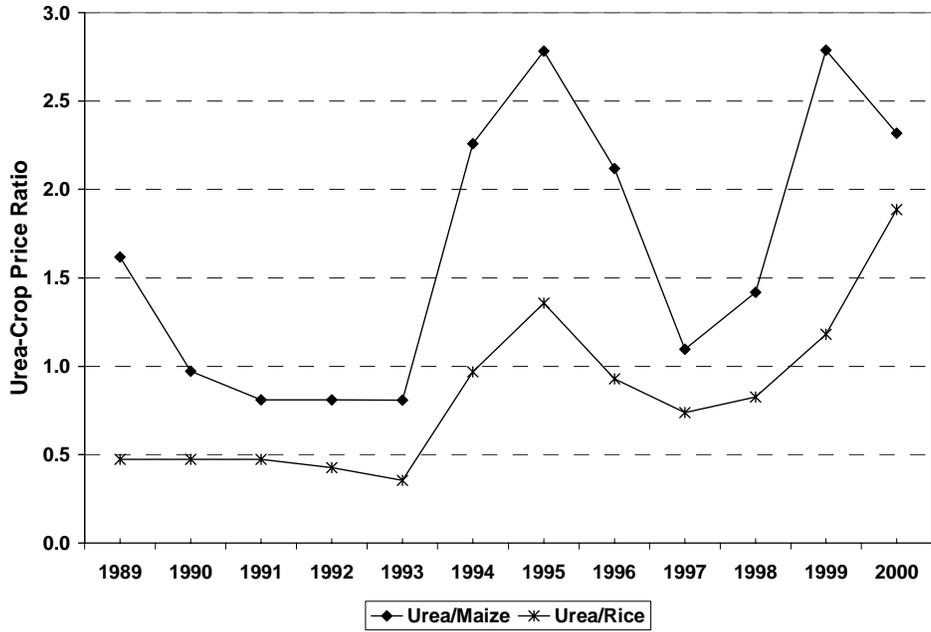


Figure 7a. Urea: Crop Price Ratio Trends, 1989-2000.

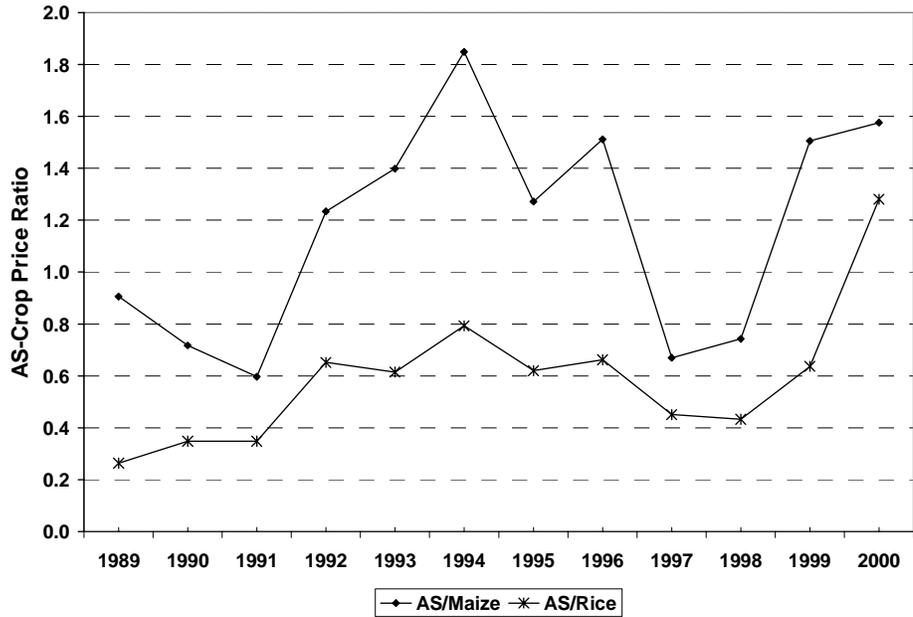


Figure 7b. Ammonium Sulfate: Crop Price Ratio Trends, 1989-2000.

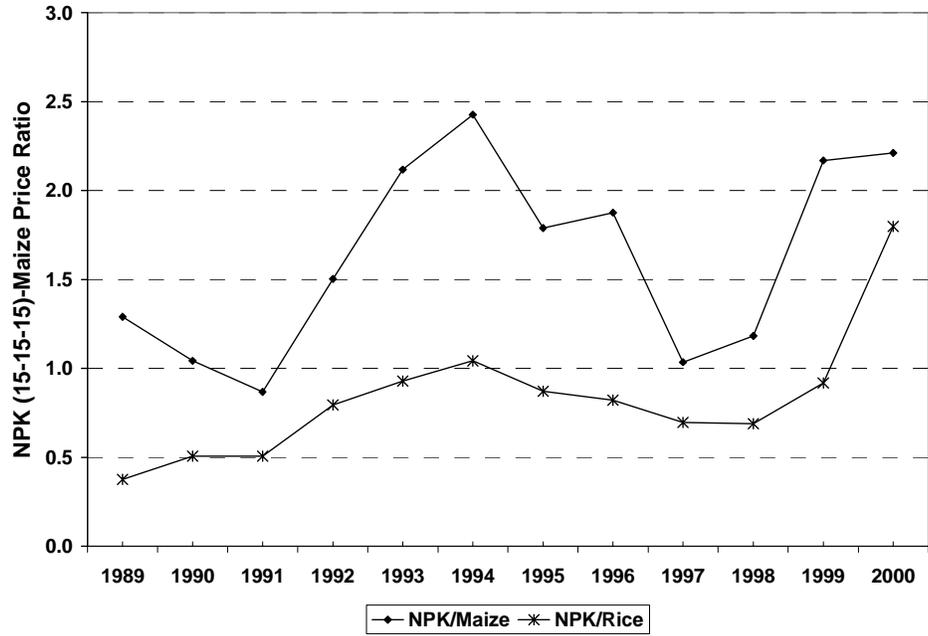


Figure 7c. NPK (15-15-15):Crop Price Ratio Trends, 1989-2000.

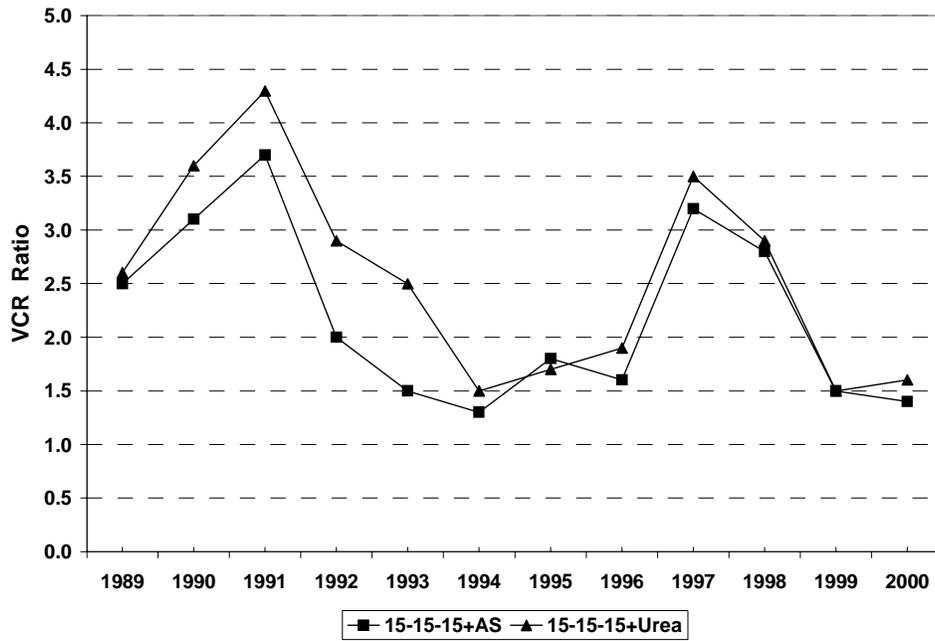


Figure 8. VCR Trends for Fertilizer Use in Maize Production, 1989-2000.

sis also shows that the profitability of fertilizer used on maize when valued at the world price is much more favorable and higher than that of rice. This result suggests a latent potential that Ghana needs to tap; given better crop markets and lower fertilizer prices, domestic maize and rice production can be increased significantly, thereby reducing their importation and saving scarce foreign exchange.

Opportunities for Improving Profitability

Fertilizers are imported into Ghana at a high free-on-board (FOB) price, largely because of small shiploads and reliance on expensive import sources. Although Chemico and Dizengoff import primarily from Eastern Europe, importers should be tapping much more into the cheap markets in that region of the world and in the Middle East.²⁴ The procurement cost constitutes the most important factor influencing fertilizer price, averaging between 54% and 56% of the final retail price (Schiere, 1998). Obviously, Ghana's high cost of finance and high freight costs associated with small shiploads also influence these high procurement costs.

Importers' margins vary between 16% and 20%. Retailers' margins are in the neighborhood of 3% to 5%. With such margins, trading fertilizer alone is a risky business. As a result, many retailers also sell crop protection chemicals partially because their margins are much higher.

The decreased profitability of fertilizer use has led to decreased demand and consequently to adverse effects on soil fertility, productivity, food security and the environment. Under these conditions of low profitability and poor soil fertility, improving the efficacy of fertilizer use becomes very important. This implies refining the obsolete fertilizer recommendations, which for the most part date as far back as 1973, and using more cost-effective products as discussed earlier. After almost three decades, it is only logical to realize that the amount of nutrients and their ratios in Ghanaian soils have changed and so have crop varieties, yield expectations, and relative prices.

24. During the stakeholders' workshop, some delegates did not consider fertilizer import costs to be unusually high in Ghana, thereby arguing that importers are well linked to the international markets.

Improving the efficacy of fertilizer use also implies critical improvement in farmers' technologies, including greater use of improved seed and integrated soil fertility management strategies as discussed in the national soil fertility action plan. In other words, significant research efforts need to be supported at the Soil Research Institute (SRI), the CRI, and the universities. Similarly, the practice of soil testing for site-specific recommendations needs to be promoted. The need for such initiatives was clearly recognized in the strategy documents (i.e., MTADP and AAGDS) that have guided government policies and programs for triggering a demand-led growth of the agricultural sector since the structural adjustment program was launched. The national soil fertility management action plan that has specific activities to tackle soil-related problems is yet to be implemented.

There have been calls to reintroduce subsidies in Ghana. This was the case, for example, recently in the national economic forum of May 2001. Resorting to subsidies as a way to deal with high fertilizer prices is not the appropriate solution to the problem. Ghana's experience with subsidies has demonstrated that, besides being an inefficient allocation of resources, subsidies are fiscally not sustainable and have often led to abuses and product smuggling into neighboring countries. A better and more sustainable solution would be to use resources on initiating and intensifying more efficient demand-inducing activities. Such activities include demonstration of results and methods pertaining to fertilizer use and crop varieties, as well as dealer network and output market development (including agroprocessing) to increase the market size, thereby providing opportunity to reduce prices through lower landed unit prices, greater competition, and bulk blending. It is estimated that ₵3,500 to ₵5,600 per 50-kg bag can be saved through bulk importation of at least 10,000 mt shiploads of product to be bagged at the local port. Taking advantage of this cost reduction opportunity would require setting up a shipside bagging facility at the port of Tema and reducing the waiting time, thus minimizing demurrage costs.

In addition, farmers could organize themselves for the acquisition of inputs to take advantage of lower costs of large quantity purchases while District Assemblies could invest in local feeder roads. Finally, reduction or elimination of unnecessary harbor charges

will further reduce prices. One particular example is the unnecessary fee applied for the shore handling of some types of fertilizers like urea that are classified as dangerous products in port handling documents. Declassifying urea as a hazardous product would be helpful.

Policy Environment

Significant progress has been made in Ghana to create a policy environment that offers incentives for investments in fertilizer marketing. In particular, the government has created a conducive investment environment with neither direct import duties nor special sales tax (value-added tax [VAT]). The only exception is the 0.5% levy imposed by the Economic Community of West African States (ECOWAS). However, much remains to be done. The unstable macroeconomic indicators (exchange rate, inflation, and interest rates) directly affect the fertilizer market and do not favor input dealers' development. The uncertainty created by the ADB fertilizer tender (accounts for about 40% of fertilizer market) and the issue of zoning in the cotton sector²⁵ (accounts for 50%-58% of the fertilizer market) is a hindrance to the development of the fertilizer market. MOFA efforts to resolve the outstanding issues associated with zoning are encouraging.

Regulatory Framework

The procurement and distribution of fertilizer in Ghana are completely liberalized. Import restrictions on the product type and its source no longer exist; however, importers are required to communicate intended orders to MOFA for monitoring purposes. There exists no legislation, let alone accompanying regulations, to govern the marketing of fertilizer products in the country. Furthermore, although required in the inspection guidelines, there is no product inspection and sampling in Ghana. Yet, there are currently four survey companies operating in the country, namely, Société Général de Surveillance (SGS), Cotecna, Gateway Services, and Ghana Standards Bureau Veritas (GSBV). Importers rely on survey and inspection at the point of loading only. The PPRSD has 30 pesticide inspectors and 34 seed inspectors who are not equipped to in-

25. Zoning is a process of dividing the cotton production area into zones and, for each zone, designating a specific cotton company to be the exclusive supplier of inputs (on credit) and buyer of cotton output. This process is being proposed in Ghana to deal with the issue of farmers who get seasonal input credit from one company and sell their output to another and thereby default on their credit.

spect or sample fertilizer products and are not mandated to do so.

The Ghana Irrigation Development Authority (GIDA), an agency under the MOFA, has the only chemical analytical capability of the Ministry. Unlike many sub-Saharan African countries, Ghana does have numerous laboratories with varying capacity to analyze fertilizer samples;²⁶ however, no mechanism exists at the dealer level to take advantage of this important physical capital base. Although the EPA is mandated to collect samples at the port for analysis, this is usually not done. When it is done, it usually results in unnecessary delays of the ships and associated costs.

Given the aforementioned limitations, the quality of fertilizer sold in the Ghanaian market is not guaranteed, particularly in terms of its nutrient content, the net product weight, and its physical quality. Currently, however, evidence of adulterated products is found only among small-scale illegal imports that come into the country by land. Nevertheless, it is important to recognize that quality control and truth in labeling are critical to the proper development of any fertilizer market, particularly when it is becoming as diverse and dynamic as the Ghanaian market. Quality control protects farmers by ensuring that fertilizer products are not nutrient deficient, adulterated, or sold in short weight bags. Furthermore, it provides a rationale for standardizing pricing. Finally, quality control protects honest fertilizer dealers. For example, effective controls are likely to reduce illegal trade practices (adulteration and bogus products) and allow importers to use cheaper domestically produced packages. A recent IFDC assessment in collaboration with the MOFA (IFDC, 2001a) has proposed a draft legislation (IFDC, 2001b) and regulations (IFDC, 2001c) as well as necessary investments and organizations that could help address these problems if these documents are enacted into law and implemented effectively.

26. A recent IFDC assessment of the requirement for establishing a fertilizer regulatory system in Ghana (IFDC, 2001a) reviewed the analytical capacity of the following nine laboratories: SRI Accra Center, the GSB in Accra, the Soil Science Department of the University of Ghana, the Ghana Atomic Energy Commission in Kwabenya, the Soil Science Department of the Nkwame Nkrumah University of Science Technology in Kumasi, the SRI in Kwadaso, the SARI in Nyankpala, and the SGS in Tema.

Market Development-Related Constraints

More than a decade after the liberalization of fertilizer marketing in Ghana, the performance of the market remains below what was expected when reforms were launched. In addition to the absence of monitoring for truth in labeling, the following are some key constraints that limit its development to a more acceptable level:

High Cost of Financial Capital and Limited Credit Availability

High interest rates (30%-40% per annum), requiring a return unusually high for such an investment in the agricultural sector to be profitable, limit market development. Similarly, stringent requirements for obtaining an LC (i.e., 100% of the deposit) and excessive bank charges (up to 6.5% of loan value) deter private interests in fertilizer trade. Consequently, many retailers handle small volumes.

High Transportation and Communication Costs

These costs are a consequence of the poor condition of rural roads, the high prices of spare parts, and the high cost of energy and communication coupled with its low coverage and frequent shortages. There have been some significant investment efforts in the last decade under the Agricultural Sector Investment Project (ASIP), the Agricultural Diversification Project (AgDiv), the Village Infrastructure Project (VIP), and the Department of Feeder Road (DFR), but, the rural road infrastructure is still inadequate (low coverage) and in bad condition, particularly in the Northern and Western regions. The rail transport that could have been the cheapest transport mode is not reliable. For the Northern region, it would be useful to assess the requirement for developing the Volta River transport route that was once used by Wienco. A good illustration of the impact of infrastructure such as roads and communication is the pattern of fertilizer consumption across regions. Much of fertilizer use is concentrated in the Northern, Upper Eastern, and Western regions. This regional pattern is not only influenced by soil characteristics and cropping systems but also by the distribution of the infrastructure during the state monopoly regime, which emphasized the transition and the interior savannah zones (Ofori and Dennis, 1996).

Unfavorable Fertilizer: Crop Price Ratios

Unfavorable fertilizer/crop price ratios are a serious constraint to input market development in Ghana. Compared with international market prices, fertilizer prices in Ghana are high due to the small size of the market and its limited development. At the same time output prices are lower, compared to fertilizer prices, due to inefficient markets.

Uncertainty Associated with the ADB Tender System

The ADB fertilizer tender system, which was started in 1998 to create opportunity for bulk importation, accounts for 40% of the total fertilizer market. With such a large market share, an unsuccessful tender process introduces an element of uncertainty, especially when the process is delayed. This uncertainty is due to the foreign exchange risk associated with fertilizer inventory resulting from making an investment in fertilizer importation only to find that the enterprise has failed to win the tender. Such an occurrence would force importers to carry unnecessary fertilizer stocks while the Cedi is depreciating. As a result, most importers do not place their order until the tender results are issued. Furthermore, tenders have often been awarded at a time when international prices of fertilizers are high and supply usually comes in later than when farmers need the product the most. Finally, the current standoff in the tender outcome clearly demonstrates that the system has weaknesses that some participants use to bring it to a halt.

Lack of Market Information and Poor Linkage with the International Market

Information on sales, inventories, and warehouse conditions is either not available or incomplete and poorly recorded. There is no systematic collection and dissemination of local and international market information. Some importers and dealers are not willing to give out information, while others would quote prices higher than the acquisition prices. To be effective, importers and distributors need information about demand, stocks, supply sources, and prices in the domestic and international markets. The availability and accessibility of timely market information improve decision-making and induce greater private investment as transaction costs decline, resulting in net gain to input suppliers and farmers. The absence of such in-

formation imposes on the traders unwarranted search and transaction costs and often leads to importation of expensive products.

Similarly, bankers need information about the credit worthiness of potential borrowers. With limited information, bankers, importers, and distributors must invest in screening out potential defaulters when extending credit to avoid the problem of adverse selection, thereby increasing transaction costs. Finally, the lack of information on requirements from neighboring countries prevents regional collaboration and consolidation through major ports to achieve economies of scale and on-shore bagging of bulk fertilizers (Debrah, 2000).

Limited Marketing Skills of Potential Dealers

A decade after the liberalization of fertilizer marketing, the number of dealers and retail outlets in the rural area is limited. Consequently, many farmers have to travel long distances to obtain supplies. Potential dealers lack the knowledge of how to effectively reach out to the farmers to sell their products and how to bring finance into the business through their own arrangements. They also lack the knowledge for planning and forecasting quantities, timing, and prices according to the market situation and the needs of the farmers of the area. Consequently, the rural markets in the business are still undeveloped. The independent dealer in rural areas is an essential part of the fertilizer marketing and distribution chain. If properly motivated and trained, this dealer can turn into a very effective agent of change who can develop the market in the local area.

II.6. The Crop Protection Product Market

Need for Pest Control and National Strategy

Pests and diseases are common problems in Ghana's agriculture (MOFA/PPRSD, 2000a-c). They affect most crops grown in the country; however, their incidence varies from region to region. Some of these pests and diseases have become significant economic and/or environmental problems. Crop production losses due to pests and diseases are estimated to be about 30% in the field and at least 5% during the storage of cereals and tubers. The use of chemical pesticides, principally to control sucking pests of cocoa trees, was the crop

protection strategy used in Ghana for decades. During the 1990s, however, MOFA introduced the integrated pest management (IPM) as the national strategy. Nevertheless, chemical control remains the dominant strategy.

Product Use

Over 140 different commercial products are sold in Ghana. The mix of available products varies by locations and time periods; however, the same active ingredients are offered under different labels by various importers, substantially reducing the available technical choice. For example, there are about seven endosulfan-based formulations and six brands of copper-based fungicides.

Insecticides are widely used to control insects in cocoa (mirids), vegetables (tomatoes, okra, and eggplants), cotton production, and grain stocks (maize and rice). Fungicides are principally used to control black pod. Chemical weed control is particularly used with nonselective herbicides in perennial plantations (palm and cocoa) or additional clearing in rice and maize fields. The control of migratory and perennial pests such as armyworms has been the sole responsibility of the government with donors' support. CPPs are also used in public health (e.g., insecticides against mosquitoes, aerosols, anti-cockroach products and rodenticides) and in animal health (e.g., anti-tick products).

Private-Sector Participation

The CPPs used in Ghana are supplied either through direct bulk importation of ready-to-use formulations by the private sector or through domestic formulation. Based on the PPRSD and the Ghana Statistical Services (GSS) data, KR-II aid-in-kind CPPs represent on average only 1.7% of total CPPs imported into Ghana annually. Herbicides (53%), insecticides (27%), and fungicides (20%) dominate KR-II imports. The private sector imports the KR-II CPPs, and the PPRSD manages the supply. The procedure for allocating the KR-II supplies in Ghana is reasonably transparent to the extent that input dealers are informed. However, the practices of wholesale price "fixing" and supply allocation (no matter how genuine) limit private-sector development in market segments with the greatest growth potential (e.g., rice herbicides).

Import Volume and Product Mix

According to FAO data, before the early 1980s, annual CPP imports into Ghana were worth less than US \$5 million. Over the last two decades, however, imports have increased steadily to reach more than US \$30 million in 1999. Between 1995 and 1999, Ghana imported an average of 5,326 mt of CPPs annually estimated to be worth about US \$16.3 million (Table 10). Insecticides account for 80% of the imports, followed by fungicides (11%). Insecticides are mainly used in cocoa and cotton production. The importance of cocoa production and the need for protecting their trees explain the relatively high importation and use of fungicides.

Domestic Formulation Capacity Limited to Insecticides for Cocoa

Ghana has two formulation plants that produce only insecticides and produce exclusively for the cocoa sector: the Abuakwa and Chemico formulation plants.

The **Abuakwa Formulation Plant** established in Kumasi has an annual production capacity of 2 million liters of insecticides in the form of emulsionable concentrate (EC) or SL. The Cocoa Marketing Board (COCOBOD) owned the plant until 1997 and has always been its sole client. So far, the plant has exclusively formulated Uden 200 EC (Propoxur) for the control of cocoa mirids. Until 1997, the COCOBOD supplied the necessary substances, solvents, and packaging to the plant. The COCOBOD imported this material from Bayer, owner of the active ingredient. The Abuakwa Formulation Plant also has a chemical analysis laboratory (solely for carbamates) and significant storage capacities at the site.

Bayer holds 51% of shares against 49% for the COCOBOD. Privatization, followed by the complete removal of subsidies, has dealt a serious blow to the company. In particular, the raw material has not been supplied to the company since 1997, and the company has not been able to move its stocks and to produce minimum quantities of new products. However, there seems to be some hope with the project to formulate a new anti-miride insecticide, Confidor (Imidacloprid), on behalf of Bayer. Wienco would supply this new product. It is expected to replace Propoxur, which is featured on the list of severely restricted pesticides. Furthermore, subject to further investments, the available technical expertise and the existing installations could help diversify the plant production and the repackaging of liquid, powdered, or granulated products for other sectors.

The **Chemico Formulation Plant** was founded in 1958 under the Imperial Chemical Industries (ICI), which became Chemico in 1975. Currently, Chemico and the GOG jointly own the company. Its initial production was limited to the supply of Gammalin 20 (200 g/L of lindane). Although the annual formulation capacity is higher than 1.5 million liters, production volumes over the past 3 years have been below capacity. However, Chemico is about to revamp its activities with a new and more environment-friendly insecticide (Cocostar). This product will replace lindane. Chemico also has a small packaging plant for powdered and granulated products.

A Market Dominated by Four Importers

Since the late 1980s, four dominant importers have been involved in the importation and distribution of

Table 10. Imports of Crop Protection Products by Ghana, 1995-99 (mt)

Pesticide Products	1995	1996	1997	1998	1999	1995-99	
						Average	Share (%)
Insecticides	2,130	1,974	5,418	9,006	2,728	4,251	80
Fungicides	186	939	578	566	718	597	11
Herbicides	79	249	402	205	195	226	4
Others	168	296	244	307	245	252	5
Total	2,563	3,458	6,642	10,084	3,886	5,326	

CPPs in Ghana: Chemico, Wienco, Reiss & Co., and Dizengoff. As in many West African countries, these companies get their supplies of ready-to-use CPPs from big multinational firms. Generally, they operate in the same market segment and have relatively similar procurement and sale conditions. Notably, their suppliers offer 90- to 120-day credit and marketing and technical support. Their most important deals are negotiated directly with their clients (cocoa, cotton, plantations and projects). Each company offers 30- to 360-day credit to their clients. They generally sell on a cash basis, to wholesalers and retailers. However, they offer a 15- to 30-day credit to some well-established wholesalers.

Chemico is the most important of the four main CPP suppliers. Since 1975, Chemico has broadened its range of CPPs by relying mainly on its parent supplier, ICI, and then on Zeneca. Other important suppliers are FMC for insecticides and nematocides and Sanachem/Dow Agro Science for herbicides and insecticides. Chemico holds a leading position in the cocoa sector and directly participates in tenders for the cotton sector. Through the private distribution network, Chemico is also actively involved in the two market segments (horticulture and cereals) that consume the most CPPs. Besides CPPs, Chemico is a long-standing fertilizer importer.

As a long-standing leader in the fertilizer market, **Wienco** diversified its portfolio to include CPPs during the last decade. In the CPP market, Wienco's development strategy is focused on the supply of a few strategic products, namely, cocoa fungicides and fumigants, maize and pineapple herbicides, and cotton insecticides. The company sources its CPPs from Callope (France) or its subsidiary Callivoire (Côte d'Ivoire) and from Bayer. CPP supplies from Bayer will soon include a new cocoa insecticide (Confidor) to be formulated in the Abuakwa plant. Wienco's biggest sales are direct supplies to clients in the cotton, cocoa, and pineapple subsectors. The company uses its fertilizer distribution network to market other accessible CPPs (e.g., maize and rice herbicides, and products for stock treatment) without any additional investment.

Reiss & Co. is a Dutch company established in Ghana almost 50 years ago. The company started doing business in Ghana in general trade (textiles, dyes,

polish, etc.) before shifting to the agricultural sector as a representative of Ciba Geigy in the country in the early 1970s. Today, Reiss & Co. represents Novartis for the sale of cotton insecticides, the cocoa fungicide Ridomil, and selective herbicides used in maize and rice production. Reiss & Co. also represents Griffin for the sale of the cocoa fungicide Kocide. The declining herbicide market and the introduction of competitive and generic cocoa fungicide and insecticide products in the Ghanaian CPP market have forced the company to diversify its activities. As a result, in addition to CPPs, Reiss & Co. also participates in fertilizer tenders and supplies sprayers (Micron Sprayers) and seed industry equipment. However, sales of electrical, computer science, and air conditioner equipment seem to be more important than sales to the agricultural sector.

Dizengoff is a joint venture of British (51%) and Israeli (49%) interests operating in Ghana for over 40 years. It operates in the radio-communication (Motorola), electrical engineering equipment, air conditioning, and agricultural sectors. In the agricultural sector, it supplies irrigation equipment, self-protection equipment, poultry farming equipment, sprayers, seeds, fertilizers, and CPPs. Dizenghoff has two major CPP suppliers, namely Makteshim Agan (Israel) and Monsanto. The company relies on the existing distribution network to market about 10 different products. Roundup is its leading product.

Minor CPP Market Participants

Apart from the four main importers, there are other participants in the CPP market that may be categorized into the following three classes:

- **Small importers** who are linked to international companies, for example, AgriMat and Kuruma who are linked to Aventis and Chimac/Agriphen, respectively. The clients of these small importers are mostly wholesalers and retailers operating in the food crop and vegetable subsectors. Typically, they import in small quantities under relatively less favorable credit terms (e.g., 60- to 90-day letter of credit) and resell through cash transactions.
- **Kumasi wholesalers** who travel to Côte d'Ivoire to source products such as rice herbicides, Roundup, and Maneb directly from the Ivorian CPP companies (STEPC, Callivoire, Aventis) on a cash basis.

- **Illegal importers** who source their products from the black markets in West Africa. These products include, in particular, cotton insecticides and KR-II donations. Some of these illegal importers are wholesalers in Kumasi. To a large extent, the network of illegal importers is responsible for the alarming sale of large volumes of obsolete products found in Ghana as inventoried by FAO RAF (2000).

A Distribution Network Concentrated in Urban Areas

The number of registered CPP retailers increased from 351 in 1989 to 656 in 1990 and 866 in 1991. However, only about 10% of them were actually active in the market. The list of authorized distributors, which the EPA published in May 2001, reveals that there are only 77 registered companies currently operating in Ghana. Between 15 and 20 of the retailers are considered to be **wholesalers**. They are predominantly established in the big cities, particularly Accra (5), Kumasi (3), Tamale, Wa, Tumu, Techiman, Bolgatanga, Bawku, and Bimbila. They all sell fertilizers, CPPs, sprayers, and seeds for vegetable production with no exclusive supply right. The more established wholesalers benefit from a 15- to 30-day credit for the purchase of CPPs from their suppliers. These wholesalers are at the same time retailers at their sales point and suppliers to small networks of about ten rural retailers operating in the region.

Retailers operate in big cities and in small townships. Their activity is often seasonal, especially in the North (4 to 5 months). They buy their supplies in cash from wholesalers. Those who have a good supply system operate in rural areas, while the rest are forced to compete with their own suppliers in the cities such as in the Kejetia market in Kumasi. In their quest to outperform other retailers and to increase their revenues, some of the retailers resort to various unconventional practices such as sales of obsolete products, smuggling, product adulteration by dilution, changing of labels, and illegal repackaging. In many cases, they lack the necessary knowledge of products, and their storage (ventilation) and handling conditions (including covering hands with a simple plastic bag and the use of dust masks as protection against chemicals) offer limited protection. Many complain of skin rashes, headaches, and dizziness. The main clients of these retailers are individuals or cereal and vegetable

producers' groups. The main products sold are nonselective herbicides (glyphosate and paraquat), maize herbicides (atrazine and alachlore), basic fungicides (maneb, mancozeb, and copper), multiple insecticides (cypermethrin, lambda-cyhalothrin, endosulfan, and chlorpyrifos ethyl), and stock protection chemicals (pyrimiphos methyl).

A Segmented CPP Market

The CPP market in Ghana is segmented by crop subsectors (Figure 9). The cocoa and cotton subsectors are the most important in terms of market share. These two subsectors have completely independent input supply systems.

In the cocoa subsector, the COCOBOD single-handedly managed the cocoa sector up to 1997. Through the Cocoa Services Division (CSD), it had the monopoly to supply insecticides, fungicides, harvesting and self-protection equipment, and farm machinery to cocoa farmers. Insecticides were sourced exclusively on the local market. This was the case for Gamalin sourced from Chemico, Uden from Abuakwa, and fungicides from Reiss & Co., Wienco, and Chemico. These inputs were sold on a cash basis to cocoa producers who were members of the Ghana Cocoa, Coffee and Sheanut Farmers' Association (GCCSFA) through a network of 70 shops distributed across the different production zones.

In 1995, input supply responsibility was transferred from the CSD to the GCCSFA. The GCCSFA supplies input to cocoa farmers through its subsidiary the Cocoa Inputs Company Ltd. (CIC). The COCOBOD deducts a percentage on each kilogram of cocoa a member sells. This money is deposited in a compensation fund that the GCCSFA uses to subsidize the prices of CPPs that the CIC sells. This subsidy can be as high as 50% of producer prices. The differential between the subsidized and the full market prices has increased during the last 3 years. During this period, stocks carried over from 1997 and 1998 were sold at constant prices while the Cedi (¢) was losing more than 50% of its value. The decline in world prices for cocoa during the past years seriously affected the activities of the CIC, and since 1998 stocks have not been significantly replenished (Figure 10). It is highly probable that since then, a substantial proportion of farmers have been getting their supplies of pesticides from rural retail-

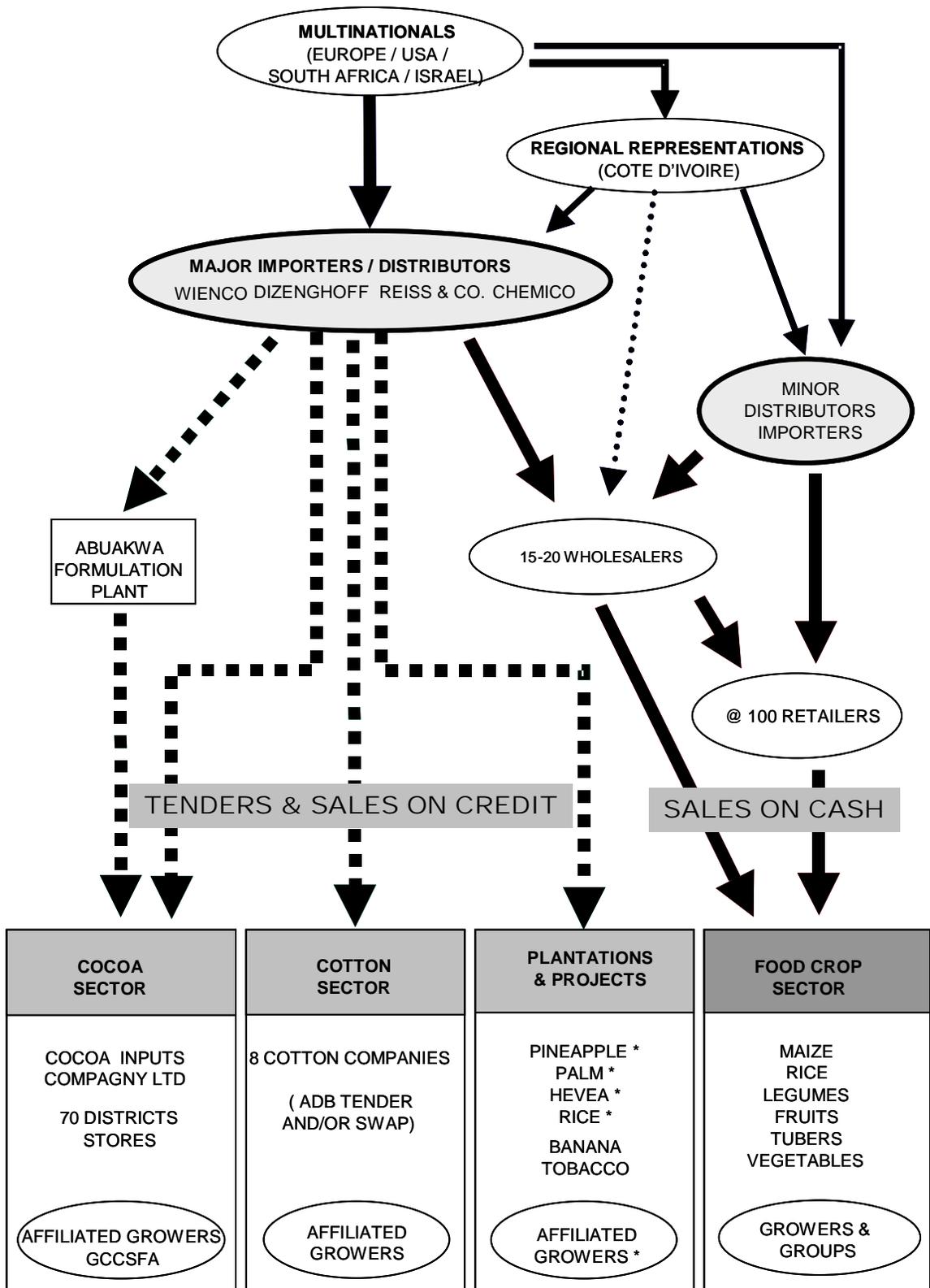


Figure 9. Distribution Channels for Crop Protection Products in Ghana.

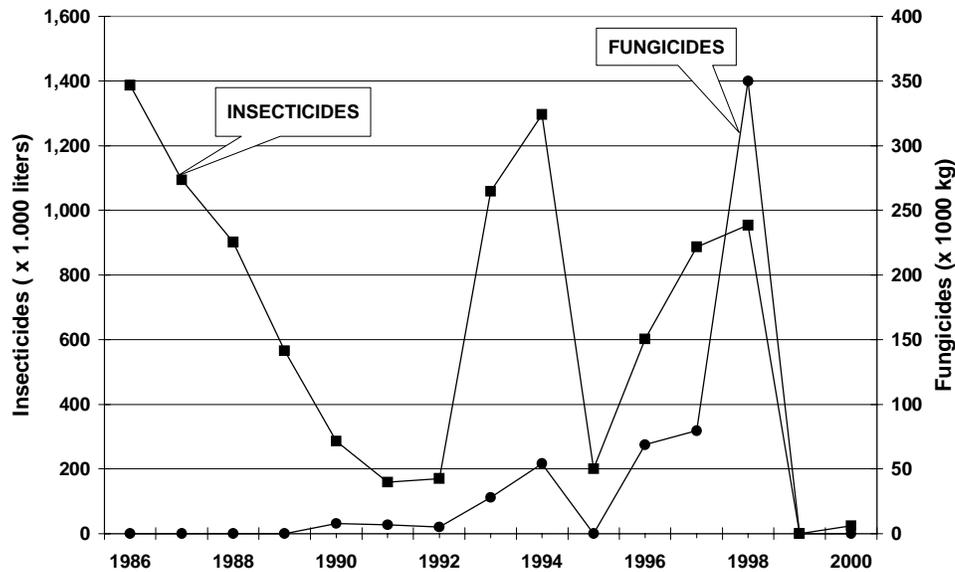


Figure 10. Insecticides and Fungicides Purchased by the Cocoa Sector, 1986-2000.

ers, without guarantee of the quality and origin of the products used (especially for insecticides).

In the cotton subsector, cotton companies supply pesticides to their producers or their respective producer associations. These companies source the products through the ADB tender from the four main importers. The CPPs are part of an input package including fertilizers, seeds, and labor charges that are offered on credit (10 to 12 months) to growers. The cost of such packages is uniform for all companies. In 2000, this package was estimated to cost about €335,000 per acre (about US \$55). This amount is deducted at the source during the sale of cotton at the end of the growing season. For the 2001/2002 season, 104,000 liters of ultra-low-volume (ULV) insecticides and 168,500 liters of EC were required in the tender the ADB issued on behalf of the cotton companies. These quantities valued at about US \$1,270,000 helped cover approximately 55,000 ha of cotton fields.

Currently, cotton companies face difficulties recovering credit extended to producers. The recovery rate is about 70%. This low recovery rate is attributable to defaults created by two significant problems. In some cases, in the absence of an effective contract enforcement mechanism, there are farmers who sell their cotton harvest to rival companies from which they did

not get their inputs and thereby willfully default on their input credit. In other cases, farmers use cotton inputs (especially fertilizers) on their food crops, thereby reducing cottonseed yield and their effective repayment capacities. MOFA has considered a number of alternatives to address this issue. The principle of exclusive zone of intervention (zoning)²⁷ for each company, which is currently being adopted, has created some uncertainty in the marketplace as it continues to be debated. However, a successful resolution of the outstanding issues will soon be achieved.

Associated with the zoning issue is the ADB tender system, which was started in 1998 to create opportunity for bulk importation. It appears that the system is not unanimously accepted among input suppliers and cotton companies. This leads to nonmarket-friendly delays in the tender awards, as conflicts fueled by input suppliers and companies taking advantage of existing weaknesses in the tender system are resolved. Because these tenders constitute a large share of the markets, most importers do not place their order until the tender results are issued. In 2001, the tender is-

27. Zoning is a process of dividing the cotton production area into zones and assigning a specific cotton company the sole responsibility to supply inputs to farmers on credit against purchasing their cotton output.

sued in March was finally cancelled in early June, with companies deciding to get direct supplies from Wienco. Delays in the award process are also associated with higher input prices and supply shortages.

Legal and Regulatory Framework

There are laws governing the certification, approval, importation, transportation, sale, storage, and use of CPPs in Ghana.²⁸ Normally, the EPA provides product certification. Application for product certification is subject to a fixed fee of US \$500. In practice, the certification is issued 6 months to 1½ years after the application submission and is valid for 5 years.²⁹ Furthermore, the certification is issued for a specific formulation of a specific commercial product with specific intended uses. A certification can be extended, but the process must be repeated. Importers are required to register with the EPA and obtain an import license. Once at the port, the EPA clears the product upon inspection by the Custom, Excise, and Preventive Services (CEPS). The PPRSD monitors sales through the different outlets.

However, subsequent amendments to the laws have not been enacted. Furthermore, the supporting regulations have not been approved. As a result, as of May 2001, only one product was certified. Importation of pesticides is therefore done under the provision of temporary permits. Such a provision does not ensure accurate control. Because there is no legal basis for implementing regulations, sanctions are hardly applied in established fraud cases or for illegal practices or environmental pollution. As a result, CPPs are extensively used with little regard for the appropriateness of the product to the pests or for the health hazards they pose.

Main Constraints

Lack of Effective Enforcement of CPP Law—
The lack of an effective enforcement mechanism dis-

28. These are (1) Act 490 of 1994 creating the EPA; (2) Act 528 of 1996 “Pesticides Control and Management Act,” that controls the importation, manufacture, distribution, handling and use of pesticides including pesticide approval procedures, and registration procedures for importers and distributors; and (3) Act 572 of 2000 that updated sanctions and fines applicable according to law 528 of 1996. The 1996 Pesticide Control and Management Act was amended in 1997.

29. However, the US \$500 fee and the period of issuance only relate to the administrative aspect of the certification. Preliminary studies (research station and on-farm trials, various analysis) can account for several thousands of US\$ and extend over a period of up to 5 years.

courages private-sector investments as it has led to the proliferation and use of cheap substandard and/or inappropriate products. These products have potentially significant public health and environmental consequences.

Inadequate and Distorted Market Information—
There is no efficient system of data collection, analysis, and dissemination concerning importation, stocks, and the use of CPPs.

A Poorly Monitored Cross-Border Trade and Illegal Practices That Hurt the Formal Sector—A parallel market of CPPs has developed in Ghana through unapproved or illegal importation of products brought in from neighboring countries. A visit to certain retailers during the field trip revealed the following facts that discourage private investments:

1. Over 80% of products sold do not meet the standards defined by the EPA.
2. Many products found in the market are obsolete. This is particularly true for cotton insecticides (binary pyrethrinoids/organophosphorus) acquired on the black market in Côte d’Ivoire and produced in 1997, 1998, and 1999. These obsolete products have French labels, and retailers wrongly recommend their use on tomato and cocoa. They are sold at a very low price (¢10,000/250 mL) compared with equivalent authorized products (¢25,000 to ¢27,000/250 mL).
3. Many of the products duly purchased from big firms in Côte d’Ivoire also have French labels (e.g., Decis, Thiodan, Roundup, Gramoxone, etc.).
4. Retailers relabel some products locally, notably glyphosate-based products (e.g., Calliope’s Kalach, relabeled Monsanto’s Roundup). Retailers involved in this illegal practice often do so to sell equivalent products that are usually cheaper than the original.
5. Some products are diluted, mixed, or replaced (e.g., Karate, diluted, or Roundup, replaced by 2,4D) despite measures manufacturers take to prevent adulteration (e.g., impregnable stopper, sealed cap).
6. Retailers locally repackage most powdered or granulated products (e.g., maneb, atrazine, carbofuran), and labels, when they exist, are rudimentary and have been photocopied. Consequently, product adulteration exists (e.g., atarazine or diu-

ron mixed with inert products). Because the buyer does not have the capacity to verify the product quality and quantity at the time of the transaction, only original packages or effective control can guarantee truth in labeling.

The lack of effective enforcement of the laws and, to a lesser degree, a supply shortage associated with tenders facilitate such practices.

Insufficient Business and Technical Skills—Even though most of the retail shops were established during the early years of privatization, retailers in particular have limited business and technical skills. Technically, recommendations (about application rates, timing, and pests targeted), and instructions about their use are not clearly provided. Similarly, retailers pay little attention to environmental and safety aspects (e.g., management of empty packages, safe use, storage conditions at the shop and in the farms). Most retailers lack the basic understanding of the requirements for appropriate product management. For example, they lack strong stock management and general accounting skills.

Difficult Access to Affordable Credit—At all levels of the industry, access to credit constitutes a significant constraint. For importers, the difficult access to foreign exchange and the lack of trust by suppliers translate into less than favorable terms of payment at almost prohibitive interest rates (42% to 48% per annum). Such terms include 60- to 90-day letter of credit and payment before delivery. While successful wholesalers can obtain 15- to 30-day credit, retailers and end-users are compelled to pay cash. Only producers who are affiliated with big plantations, private companies (i.e., palm, rubber, and cotton companies) or connected to projects (i.e., rice and pineapple projects) have access to seasonal input credit.

Lack of Demand by Small-Scale Producers—The weak CPP demand by small-scale producers is partly explained by the difficult access to finance throughout the sector. Other factors include (1) unfavorable input/output price ratios during the last decade, particularly in the food crop sector, (2) the low levels of productivity and intensification, and (3) the limited necessary services that the private sector provides to small-scale farmers (e.g., establishing sale points in remote areas, providing relevant technical advice and

appropriate packaging, and ensuring product quality and efficacy).

II.7. Factors Constraining the Performance of the Private Sector

The private-sector input supply system consists of importers, wholesalers, and retailers of fertilizers, CPPs, and imported seeds. Registered seed growers produce the bulk of the cereal seeds in the private sector in Ghana, and vegetable seed growers produce and export vegetables to overseas markets. In general, an unfavorable macroeconomic environment (high domestic inflation, depreciation of the currency, high interest rates, etc.) constrains the functioning of the private sector. There is also a weak partnership between the public and the private sectors mainly because the private sector is not yet organized into trade or producer associations capable of dialoguing effectively with government.

For importers, the greatest problem is that of foreign exchange availability and the accompanying depreciation of the cedi-dollar exchange rate in Ghana. Importers also face high costs of borrowing funds to finance imports because of high interest rates. Other constraints are lack of market information, particularly information on the sources of supply, low volumes and hence high unit costs of imports, and inadequate wholesale outlets developed in most regions in the country. Besides, there are relatively few reliable retail outlets for inputs.

In addition to the general constraints the private sector faces, input dealers (wholesalers and retailers) and importers also have inadequate access to bank financing for their operations. As a result, input dealers are incapable of extending credit facilities to farmers. Because of inadequate infrastructure (roads and warehousing facilities), inputs are generally not available on time. Dealers also face a low demand for inputs because of unavailability of inputs in smaller packaging and their high cost. Registered input dealers also face stiff competition from operations of illegal importers, especially importers of CPPs.

Registered seed growers are constrained by the lack of access to financing and by low and irregular demand for their products. Although the seed growers are organized in associations, there is a weak linkage

between the associations and the input dealers. Because of this, there are generally no contractual and sale agreements between the producers and dealers; therefore, seed growers resort to the open market to sell their seeds. The association of vegetable seed producers and exporters is faced with the constraints of sourcing vegetable seeds from outside Ghana (most of the vegetable seeds are imported) and also with the problem of markets for their products that are by nature perishable.

III. An Action Plan for Developing AIMs in Ghana

III.1. Rationale for the Action Plan³⁰

The proposed *Action Plan* for strengthening the liberalized input markets and for encouraging greater participation of the private sector is based on the rationale of shifting the supply curve to the right. The assessment of all three subsectors has clearly demonstrated that the private sector has not responded as expected to the liberalization of input marketing in Ghana. The assessment stressed that macroeconomic instability leading to devaluation and high interest rates, lack of marketing skills and affordable finance, and inadequate regulatory systems continued to limit their active involvement in input marketing.

This slow private-sector response may mislead policymakers, donors, and various stakeholders to revert to the old practice of subsidizing agricultural inputs and involving the public sector in their procurement and distribution. Such a move would be premature because it would divert the attention from removing the constraints to the participation of the private sector. The assessment of the AIMs in Section II clearly demonstrates that deregulation and liberalization are necessary but not sufficient to encourage private-sector participation. Years of discrimination and neglect have left the private sector underdeveloped and the input markets fragmented. Rather than returning to the past, Ghana and donors should stay the course and invest resources in building the necessary human capital and marketing infrastructure and in strengthening

30. This section is adapted from IFDC/DAI/MTL (2000), pp. 22-24.

the policy environment to further facilitate the private-sector participation in input and output marketing. The private sector has considerable latent potential to perform marketing activities in an efficient manner; to realize that potential, however, structural and capacity constraints restricting its development should be removed.

Shifting the Supply Curve to the Right—Figure 11 illustrates the typical supply and demand curves that economists use in explaining the behavior of prices in a free market situation. The horizontal axis indicates the quantity of input (e.g., fertilizer), and the vertical axis measures the corresponding price. The demand curve D slopes downward from left to right indicating that the quantity of fertilizer that farmers demand 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 fertilizers that traders/manufacturers supply increases. At price OP1, quantity demanded equals quantity supplied (OQ1). Therefore, OP1 is referred to as an equilibrium price and point A as an equilibrium point.

Assuming that the price OP1 is very high (e.g., \$177/mt of 15-15-15), the quantity traded is low (e.g., 12,000 mt of 15-15-15). Because the resource-poor farmers in Ghana and other developing countries cannot afford to purchase fertilizers at such a high price,

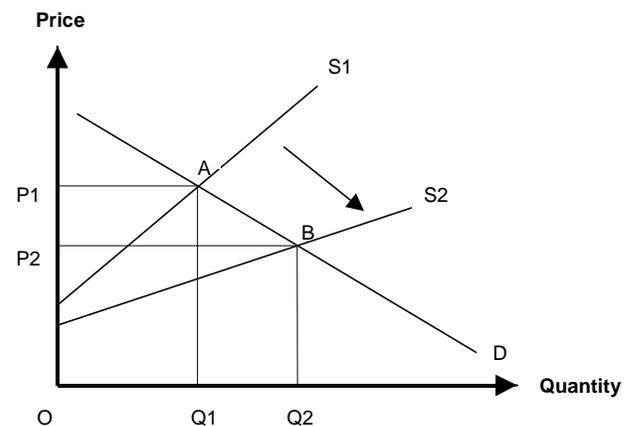


Figure 11. Price and Quantity Relationship.

one possible solution is to provide a subsidy (e.g., \$70/mt), and reduce the price to OP2 (\$107/mt). At this price, the demand outstrips the supply and, therefore, some mechanism for rationing is required to allocate this limited quantity among all farmers. This solution was tried by many African countries, including Ghana, but could not be sustained due to budget deficits. In addition, it led to an inefficient use of resources, created parallel (black) markets, and induced smuggling of inputs into neighboring countries.

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 high. In the case of Ghana, this is true because 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 sufficiently tapping into the cheapest source in the global market due to limited access to information and finance. Because of all these constraints, the supply price is generally very high.

Rather than following the subsidy route, the price of fertilizers can 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 can be realized and the fertilizers can be procured from cheaper sources through better access to information and finance. By shifting the supply curve to the right (point B), prices can be reduced, and the quantity of fertilizer farmers use can be increased, thereby promoting food security at both household and national levels. Such a move also reduces the need for subsidies and ensures a higher return on the capital invested in business (because under the S2 supply situation, the fixed cost per unit sold is lower). Thus, by shifting the supply curve to the right, benefits can 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 Ghana? The analysis of various constraints in this report suggests that these constraints have kept the supply curve at S1 position in Ghana. 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 and thereby realize 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 formation, improved financial services, market information system, and regulatory frameworks are all geared to shifting the supply curve to the right and to helping the private sector in realizing its potential.

Although 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 activities are expected to help the farmers in realizing more benefits and higher yields from the same amount of inputs. Thus, this activity will help the farmers in realizing more incomes by shifting the demand curve and improving nutrient use efficiency.

III.2. Components of the Action Plan

This plan recommends that a free market system be used to supply inputs in rural areas because such a system is efficient and sustainable and does not strain the fiscal resources of the country. To strengthen the functioning of the AIMS, concurrent actions, with appropriate sequencing and phasing, are proposed in the following areas:

- Supportive Policy Environment.
- Market Development Activities.
- Technology Transfer Activities.
- Output Market Development.
- Association Building.

Supportive Policy Environment

A conducive policy environment is essential for strengthening private-sector participation in input markets in Ghana. As indicated earlier, during the reforms of the 1990s, Ghana removed most of the distortions that government interventions had introduced in the marketing and pricing of inputs. However, the creation of macroeconomic stability has persistently eluded Ghana. The exchange rate has depreciated from ₵400/\$ in 1990 to over ₵7,000/\$ in 2001. Such depreciation is counterproductive for input market development. High interest rates also discourage private-sector involvement in the input business.

Issues related to monetary and fiscal policies are beyond the scope of this *Action Plan*; however, it is

stressed that the GOG should leave “no stone unturned” to stabilize its exchange rate. Without stability in the exchange rate, investment in input business may not be forthcoming and without such investments, farmers will not have an easy access to affordable inputs that are so badly needed to modernize agriculture, raise incomes in rural areas, and protect the environment. Likewise, the development of rural infrastructure, especially feeder roads, is essential for reducing the transaction costs associated with the supply of inputs (Action Plan Matrix 1).

Making foreign exchange available for importing fertilizers requires special attention on assessing and changing commercial banking practices. Actions needed in this area are included under financial services in the following section on market development. It should be stressed that ADB’s current practice of inviting tenders for supplying fertilizers to cotton companies should be discontinued and replaced by the creation of a foreign exchange fund for facilitating the imports of fertilizers in bulk for all crops, rather than one crop, namely, cotton.³¹ Similarly, current thinking about creating zones for cotton-producing areas to improve input loan recovery and contract enforcement warrants reassessment on the part of MOFA in a way that will not create more distortions in the marketplace and hamper the development of efficient and well-functioning input markets. MOFA’s current efforts to resolve the outstanding zoning issues are likely to yield positive results, provided the final agreed-upon arrangements are effectively enforced.

The current CIC practice of providing subsidies on inputs used for cocoa production discourages the entry of retailers into the input business in cocoa-growing areas. Because COCOBOD is a state-owned enterprise involved in purchasing cocoa beans and imposing a surcharge on cocoa sales to subsidize inputs, such a subsidy issue becomes an important policy issue and should be addressed accordingly to strengthen the development of input markets. Because the farmers in the cocoa-growing areas are financially well-endowed, they can provide incentive for dealers to

31. This position was not accepted by a number of stakeholders during the validation workshop. They argued that identifying and resolving the problems associated with the current tendering process is preferable to ending the practice of tender.

develop retail networks in these areas and to supply inputs at reduced prices to both cocoa growers and food crop producers by reducing transaction costs.

Market Development Activities

In addition to a supportive policy environment, well-functioning AIMs mandate actions in the following areas:

1. Development of Human Capital and Dealer Networks.
2. Strengthening of Financial Services.
3. Creation and Operation of the Market Information System (MIS).
4. Implementation of Regulatory Systems.

Development of Human Capital and Dealer Networks

Post-reform experiences in many African countries have indicated that human capital needed for making competitive markets function efficiently does not develop overnight or by itself. Conscious efforts are needed to nurture the cadre of dealers at all levels—import, wholesale, and retail trade. Dealers involved in these activities will have to be trained in marketing and management skills, business development knowledge, and technical understanding of the products—seed, fertilizers, and pesticides.

To create a cadre of dealers needed for making input markets effective and efficient, training and technical assistance programs should be implemented. Training should focus on both technical and management issues. Training programs should be conducted for importers, wholesalers, and retailers. At the retail level, people interested in developing an input business should be trained in all aspects of product knowledge, financial management, and business development. Local retailers (general merchants) and retired extension workers could be tapped for training in input business development. After providing training, newly trained dealers should be helped to have access to funds. Approaching banks with adequate loan proposals will require technical assistance. A business development fund suggested under the financial services section will be needed for these people to enter into business.

The creation of a large number of dealers and dealer networks will not only help in improving access to

Action Plan Matrix 1. Policy and Market Development Issues

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
A. Macropolicy Issues									
1. Devaluation of Cedi discourages private investment in input supply and negatively impacts input use. High interest rate also restricts investment in market development.	Ensure macroeconomic stability by appropriate management of monetary, fiscal, and exchange rate policies.	The Bank of Ghana (BOG) and Ministry of Finance (MOF) with support from IMF and the World Bank.	X	X	X	X	X	X	X
2. Inadequate availability of foreign exchange for input (especially fertilizer) imports.	Ensure adequate supply of foreign exchange (US \$45.0 million/year) in the market for the importation of inputs; include it in estimating overall balance-of-payment support requirements.	MOF, MOFA, BOG, and donors.		X	X	X	X	X	X
3. Poor quality of rural roads adds to the cost and discourages traders from penetrating into rural areas.	Long-term program of constructing all-weather rural roads should be initiated.	Ministry of Road and Transport, and District Assemblies.		X	X	X	X	X	X
B. Market Development Issues									
1. Uncertainty associated with ADB tenders.	A clear fertilizer policy statement with regard to the end of tender is required ³¹ .	MOFA to issue fertilizer policy. Cotton companies to tender individually or collectively for the inputs.	X	X					
2. Uncertainty associated with the issue of zoning in the cotton sector.	Resolve the issue of zoning as soon as possible through fresh round of talks/discussions among major stakeholders (farmers, landlords, cotton companies and MOFA).	MOFA to initiate the talks/discussions.	X	X					

31. A number of stakeholders did not accept this position during the validation workshop. They argued that identifying and resolving the problems associated with the tendering process is preferable to ending the practice of tender. The fertilizer syndicate group recommended that if ADB has the willingness and capacity, it should continue the tender; otherwise MOFA should facilitate the establishment of a neutral council to handle the tender. However, if ADB should continue, then all the bottlenecks identified with the system should be addressed especially the timing of the tender. The most appropriate time for inviting tenders is November, so that fertilizer products are available in the market before the start of the planting season.

Action Plan Matrix 1. Policy and Market Development Issues

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
			3. Inadequate access to financial resources and services.	<p>(3a) Create a US \$45 million Agricultural Input Import Fund (AIIF) in interest-earning foreign account (US \$30 million in Year 1, US \$45 million in Year 2).</p> <p>(3b) Work with bankers and input traders and provide training to develop rapport and trust between them.</p> <p>(3c) Create a ₦70.0 billion AIBDF. Possible sources of funding include District Assembly Common Fund (Poverty Alleviation Fund), BOG, AfDB, and donors.</p>	<p>MOFA, BOG, and donors with support from specialized institutions and/or project entity. Possible sources of funding include AfDB Group, USAID, DFID, IFAD, AFD and the GOG from the indirect receipts from HIPC.</p> <p>Specialized institutions and/or project entity, commercial banks and traders.</p> <p>MOFA, designated commercial banks and donors with support from specialized institutions and/or project entity.</p>		X	X	
4. Lack of human capital for competitive marketing.	<p>(4a) Conduct short-term and long-term training programs for importers, bankers, wholesalers and retailers.</p> <p>(4b) Facilitate the creation of and/or strengthen existing agri-input traders' associations.</p> <p>(4c) Arrange study tours of trader associations in developed and developing countries.</p>	<p>MOFA and donors with support from specialized institutions and/or project entity.</p> <p>MOFA and donors with support from specialized institutions and/or project entity.</p> <p>MOFA and donors with support from specialized institutions and/or project entity.</p>	X	X	X	X	X	X	
5. Lack of enforcement of Truth-in-Labeling laws.	<p>(5a) Enact draft fertilizer laws and regulations and approve draft amendments to existing seed laws and regulations.</p> <p>(5b) Strengthen EPA and PPRSD's capability to enforce laws and regulations governing the importation and marketing of agricultural inputs.</p> <p>(5c) Conduct training programs and study tours.</p>	<p>MOFA to speed up the process.</p> <p>EPA and PPRSD with support from MOFA, donors and specialized institutions and/or project entity.</p> <p>EPA and PPRSD with support from MOFA, donors and specialized institutions and/or project entity.</p>	X	X					
6. Lack of market information about global, regional, and local prices and quantities	Strengthen the SRID of the MOFA to collect, analyze, and disseminate information about prices, stocks and availability of inputs.	SRID and donors with support from specialized institutions and/or project entity.	X	X	X	X	X		

inputs by farmers in rural areas but also may create a new cadre of technology transfer agents. With sound technical and business knowledge, these dealers could become the first source of information about new technologies of production and help in reducing the burden on extension workers. In the long run, dealers could complement public sector extension agents. MOFA could focus its resources on preparing subject matter specialists who could pass on the new knowledge to dealers who will transmit it to farmers. Such an arrangement will create a true partnership between the public and private sectors.

With proper training in financial management, these dealers could also become a potential source of credit for farmers. These dealers would be located closer to farmers and would have first-hand knowledge of those farmers who are most likely to repay loans. Hence, if these dealers get loans from the proposed business development fund (see next section), they can use part of these funds to sell input on credit to farmers during the cropping season. As dealers begin to extend credit to farmers, this will in effect supplement any formal bank credit available to farmers and could reduce both the risk of loan default and the transaction cost of administering loans in rural areas.

Importers and wholesalers should also be trained in all aspects of business development and provided information on business linkage opportunities. Establishing linkages with the global and regional markets will be essential for importers to get low import prices for their inputs. Currently, few importers in the Ghana markets have full knowledge of the functioning of regional and global markets and the cheapest sources of supply of inputs. Through a multipronged program of training and technical assistance and through improved access to finance and information, importers should be trained to access the cheapest source of fertilizers and CPPs and thereby reduce transaction costs.

The existing capacity of MOFA and EPA for enforcing quality control regulation and enforcement is also insufficient. Manpower and supporting structures needed to randomly check truth-in-labeling of products for fertilizers, seeds, and pesticides are in limited supply. Training and technical assistance for quality control inspectors should be provided. Such training

programs should focus on the nature of products, quality and measurement standards, mechanisms for quality control assessment and truth-in-labeling, and other associated activities.

Strengthening of Financial Services

The earlier assessment of the financial services showed that access to finance remains a significant bottleneck for all dealers (wholesalers, retailers, and importers) involved in input marketing in Ghana. To alleviate this constraint, certain measures are proposed in the form of business development funds. One of the underlying rationales for the proposed funds is that food security, poverty reduction, and environmental protection are national goals and the risks involved in achieving these goals should be shared by various stakeholders, not just by farmers or agri-input dealers. Another rationale for the fund is its educational dimension because reducing risks to the banks and providing training to both bankers and dealers (importers, wholesalers, and retailers) helps to bring these two groups together as they learn to deal with each other and the input marketing business. Typically, over a short period of time, banks would develop a better understanding of the input business and more effective ways to finance it, thereby making financial support to input marketing sustainable. Based on that shared-risk principle and the educational objective, the following measures are proposed to improve access to finance (Action Plan Matrix 2):

1. Establishment of an Agricultural Inputs Importation Fund (AIIF).
2. Establishment of an Agricultural Business Development Fund (AIBDF).
3. Improving financial services outreach in rural areas.
4. Reducing willful default.

Establishment of AIIF—To improve access to foreign exchange for importing inputs, especially a foreign-exchange-intensive input like fertilizer, it is proposed that an AIIF be created with the following features:

- Amount: US \$45 million.
- Principal Stakeholders: Banks, importers, government/BOG and Guarantee Fund Manager.
- Risk-Sharing Mechanism/Modus Operandi: Commercial banks will provide LC for 100% financing

Action Plan Matrix 2. Finance

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
1. Limited access to credit for importers: (a) Inadequate locally available foreign exchange for input importation, particularly during the critical import-financing period.	Review of macro-economic policy to secure availability of US \$45 million per annum for purchase by importers of fertilizer, seed and CPPs to maintain food security programs and generate continuing export crop production.	MOFA to repeatedly raise the issue with supporting documents at cabinet meetings and with MOF, BOG, World Bank and IMF review.	X	X				
		Donors/GOG to ensure continuing availability of US \$45 million in balance-of-payment support.		X	X	X	X	X
(b) Commercial/merchant banks lend limited foreign exchange to existing customers. New entrant small- and medium-sized importers without track record unable to compete due to stringent loan conditions on up-front contributions as collateral.	(b1) Establish Agricultural Inputs Importation Fund (AIIF) (US \$30 million in Year 1, US \$45 million in Year 2) in interest-earning foreign account.	(b1-1) AfDB Group, USAID, DFID, IFAD, AFD and the GOG from the indirect receipts from HIPC to provide US \$45 million AIIF.		X	X			
		(b1-2) Foreign bank to hold the AIIF.		X	X	X	X	X
		(b1-3) BOG to manage use of the AIIF.		X	X	X	X	X
	(b2) Commercial and merchant banks to provide all required lending services by sharing default risk with importers and the AIIF and reducing collateral requirements proportionately. Loans to be limited to US \$1.5 million per client per season.	(b2-1) Banks to provide LC for 100% financing of the cost of the inputs and to share 40% default risk.		X	X	X	X	X
		(b2-2) The AIIF to guarantee 30% of the LC.		X	X	X	X	X
		(b2-3) Importer-borrower to contribute 30% of the LC in foreign exchange Cedis equivalent ³⁴ .		X	X	X	X	X
(b3) Train bankers and potential new entrant importers on all aspects of inputs marketing and financing to establish lender/borrower rapport and trust.	MOFA and bankers to select specialized institutions and/or project entity to conduct training for bankers and traders and to establish business rapport with them.		X	X	X	X	X	

34. However, a number of stakeholders at the validation workshop noted that a requirement of 30% contribution from the borrower is likely to be a constraint.

Action Plan Matrix 2. Finance

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
<p>2. Limited access to credit for agri-input wholesalers and retailers: Existing and new entrant small traders and potential dealers unable to obtain credit for agricultural input trading due to bank-perceived high risks and related stringent security/collateral requirements.</p>	<p>(a) Establish a ₪70.0 billion Agri-Input Business Development Fund (AIBDF).</p> <p>(b) Commercial and merchant banks to provide all required lending services by sharing default risk with importers and the AIBDF and reducing collateral requirements proportionately.</p> <p>(c) Train existing and new dealers on all aspects of inputs marketing and financing to establish lender/borrower rapport and trust.</p>	<p>(a1) District Assembly Common Fund (Poverty Alleviation Fund), BOG, AfDB, and donors to provide funds held in Cedis with BOG.</p> <p>(a2) BOG to manage use of the AIBDF.</p> <p>(b1) Banks to provide 70% financing of the cost of the inputs.</p> <p>(b2) The AIBDF to guarantee 30% of the loan.</p> <p>(b3) Selected trained graduate dealer-borrowers to provide 30% of the cost of the inputs³⁵.</p> <p>Project to use external training organization selected for the AIIF and local institution to handle all training for lending institutions staff and dealers and to establish business rapport between them.</p>		X	X				
				X	X	X	X	X	
				X	X	X	X	X	
				X	X	X	X	X	
				X	X	X	X	X	
				X	X	X	X	X	

35. As in the case of the AIIF, a number of stakeholders at the validation workshop noted that a requirement of 30% contribution from the borrower is likely to be a constrained. As a result, the use of warehouse collateral (bonded warehouse) should also be considered during the implementation to reduce the burden of liquidity on the borrower.

Action Plan Matrix 2. Finance

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
3. Poor financial service outreach Higher returns available on Treasury Bills and nonagricultural urban lending. Consequently, essential cash depositories and cash transit services in rural areas are lacking--- Few DMBs and rural banks' branches and agencies in rural areas due to low levels of demand for credit, low profitability, and high default risk.	(a) The Rural Financial Services Project (RFSP) should be implemented to the letter to build the capacity of rural banks and other Microfinance institutions.	MOFA to repeatedly raise the issue with supporting documents at cabinet meetings and with MOF, BOG, World Bank and IMF review. MOFA, MOF and BOG to collaborate to ensure effective implementation.	X	X	X	X	X	X
	(b) Encourage private security arrangements to safeguard transmission of cash.	MOF and BOG to assist in implementation.	X	X	X	X	X	X
	(c) Provide incentives such as risk-mitigating provisions or tax relief for DMBs and rural banks servicing agriculture in remote areas.	GOG to finance with donor support if required.		X	X	X	X	X
4. High levels of default affecting all lending institutions (a) Unfavorable input/output price ratios due in part to rapid cedi depreciation, high interest, and low output price, especially at the time of harvest.	(a1) Macroeconomic measures to stabilize the cedi and reduce inflation and interest rates.	MOFA to continuously raise the issue with National Economic Council for review by MOF, BOG and IMF.	X	X				
	(a2) Improve the performance of output markets, especially for small-scale food crop farmers by: - Linking borrowers to markets. - Developing the post-harvest market through agro-processing and value added to pull input demand. - Cost-effectively enforcing contracts between producer and buyer to ensure a guaranteed market for both the producer and the processor (buyer). - Collecting, analyzing and disseminating accurate and timely market information (price signals, spatial distribution of product). - Facilitating access to storage and processing facilities (e.g., Ghana Warehouse Operators' Union). - Educating farmers and traders about quality requirements and trade regulations in the outside markets. - Promoting external trade in agricultural products.	MOFA through AgSSIP implementation. Involve private sector and lenders.		X	X	X	X	X

Action Plan Matrix 2. Finance

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
(b) High default rate due to ineffective post-financing monitoring and supervision by lenders. (c) Farmers' limited skills in credit management.	Lenders should strengthen their own monitoring and recovery activities.	Relevant lenders.	X	X	X	X	X	X
	(c1) Educate farmers about the operations of a bank, both borrowing and lending.	MOFA through AgSSIP to ensure implementation. Involve private sector and lenders.	X	X	X	X	X	X
	(c2) Encourage formation and strengthen cohesiveness of associations and lending groups.	MOFA through AgSSIP to ensure implementation. Involve private sector and lenders.	X	X	X	X	X	X
	(c3) Encourage credit delivery by dealers.	MOFA through AgSSIP to ensure implementation. Involve private sector and lenders.	X	X	X	X	X	X
	(c4) Introduce reliable and effective systems of identification.	GOG with donor support.	X	X	X	X	X	X
(d) Increased transaction cost and moral hazard due to limited information about creditworthy dealers.	Plan and establish an autonomous Credit Reference Bureau (CRB) as a commercial service available for access by all lending institutions.	GOG, banks, private sector to finance. Project entity to help set up.	X	X	X	X	X	X

of the cost of inputs, but the borrower will contribute 30% paid in foreign exchange Cedis equivalent, and the AIIF will guarantee 30% of the LC.³³

- Sources of Funding: AfDB Group, USAID, DFID, IFAD, AFD and the GOG from the indirect receipts from HIPC.
- Beneficiaries: Input importers.
- Management: BOG.
- Maximum guaranteed foreign exchange support: US \$1.5 million/importer/year.

The main attributes of AIIF include a risk-sharing and mitigating system, availability of foreign exchange to support imports, a savings mechanism based on the cash margin, reduced or no collateral requirements, no subsidy, enhanced outreach, and increased competition among importers. The fund will be managed by the BOG, who will nominate a fund manager for interacting with commercial banks. Coupled with appropriate training for bankers and importers to establish rapport and trust, these features are designed to ensure the sustainability of the financial support to the importation of agricultural inputs and its operation without any element of direct subsidy. The fund will greatly enhance the ability of Ghanaian importers to access low-cost fertilizers and other inputs in the global market.

AIBDF—To improve access to bank finance by existing and newly trained dealers (wholesalers and retailers), an AIBDF is proposed. Unlike its counterpart for input importation, this fund will be in local currency and will be used by dealers in the country to develop an input business. The main features of the AIBDF include:

- Objectives: To promote input business development by providing guarantee for distributors and retailers in leveraging loans from the banks.
- Amount: ₵70.0 billion.
- Principal Stakeholders: Banks, dealers, district assemblies, guarantee fund manager.
- Risk-Sharing Mechanism: Dealers to cover 30% of cost of the inputs. Commercial banks to provide the remaining 70% of the needed funds with a 30%

33. However, it should be noted that a number of stakeholders at the validation workshop noted that a requirement of 30% contribution from the borrower is likely to be a constraint.

guarantee from the fund. Thus, the concerned commercial banks will be exposed to only 40% risk.³⁴

- Sources of Funding: District Assembly Common Fund (Poverty Alleviation Fund), BOG, AfDB, and donors.
- Beneficiaries: Dealers, grain merchants, seed growers, and associations interested in developing an input business.
- Management: BOG.

The fund can be recycled, if needed, at least twice in every year in that the credits are very likely to be short term in nature. Coupled with appropriate training for bankers and input dealers to establish rapport and trust, the fund is designed to ensure the sustainability of the financial support to the domestic marketing of agricultural inputs and its operation without any element of direct subsidy. The fund greatly enhances the ability of Ghanaian dealers to access funds, thereby engendering competition and ultimately better services at competitive prices for farmers. It will also create jobs.

Improving Financial Services Outreach—In the cash crop sectors, such as cocoa and cotton, access to finance is enhanced through credit unions (e.g., KKCU) and commercial banks. However, in the food crop areas there is a need for MFIs to penetrate into rural areas and provide services such as savings and credit products. The rural banks in particular should play a strategic role in this direction. However, to be able to operate and provide financial services, they will need some incentives such as tax reductions and other risk-mitigating provisions. In this context, nucleus and “master” farmers could serve as financial intermediaries between banks and smallholder farmers. Ownership, transparency, and accountability should be promoted to ensure sustainability. Other motivating initiatives include deposit mobilization assistance to financial institutions to develop innovative ways for mobilizing deposits from smallholders. This will include fostering associations between formal-sector institutions and informal savings and loans associations and input suppliers.

34. As in the case of the AIIF, a number of stakeholders at the validation workshop noted that a requirement of 30% contribution from the borrower is likely to be a constraint. As a result, the use of warehouse collateral (bonded warehouse) should also be considered during the implementation to reduce the burden of liquidity on the borrower.

Reducing Willful Default by Borrowers—The occurrence of willful default is one of the factors inhibiting credit providers' willingness to loan funds to their potential clients in the agricultural sector. To minimize this risk and ensure profitable operations, the following are recommended:

- Educating farmers about bank operations, both borrowing and lending.
- Encouraging group lending. However, steps should be taken to ensure that group formation, development, and animation are expertly done.
- Involving well-respected opinion leaders (i.e., traditional leaders or chief farmers and, if possible, spiritual heads) in any particular community in the credit delivery and recovery processes.
- Establishing a reliable system of identification of creditworthy clients.
- Involving the unit committee structures or the district assemblies in the credit-delivery process.
- Forming or strengthening cohesive associations or societies among farmers of common crops to encourage the sharing of best practices and common problems and experiences with access to credit and repayment.
- Encouraging the culture of savings through the formation of credit unions and savings and loans associations among existing farmers associations and thus helping to create savings, which can be used to leverage credit by the societies.
- Encouraging financial institutions to place timely sanctions on defaulting borrowers as a message to other farmers and input dealers.
- Ensuring that workable, cost-effective, and enforceable legislation exists to prosecute defaulters.
- Creating credit reference bureaus for exchanging information about borrowers and lenders.

Creation and Operation of MISs

Information is crucial for the proper functioning of agricultural inputs and product markets. Dealers, importers, and other participants in the marketing chain need information about local, regional, and global market situations for inputs and outputs. Presently, there is no organization solely responsible for the systematic collection, analysis, and diffusion of information on inventories, sales, imports, distribution, and consumption of agricultural inputs and products in Ghana.

Rather, different directorates of the MOFA collect and manage different types of agricultural data. The Crop Services Directorate keeps data on fertilizer importers, quantities imported, and prices at which they are sold at the wholesale level. The PPRSD keeps similar information on crop protection chemicals and seeds while the recently created SRID keeps market information on crop prices. Outside the agricultural sub-sector, the CEPS and the Ghana Statistical Services (GSS) keep import data on agricultural inputs. Data related to crop response rates, profitability of fertilizer use, farmers' fertilizer use by crop, and fertilizer recommendations are diffused among the agricultural research institutes and the universities.

Based on the recommendation in the FAO-IFDC study (Debrah, 2000) and information obtained during the field work, the following actionable plan for strengthening the market information system is proposed:

1. SRID of MOFA to be encouraged and provided with the necessary resources to the present SRID of MOFA to play the role of a one-stop center of excellence for agricultural statistics and other information in Ghana.
2. SRID to collaborate with relevant departments that deal with agricultural statistics and with input dealers and their associations in the collection and diffusion of agricultural market information.
3. SRID to create and manage a country agricultural market information system website containing information relative to:
 - Statistics
 - Fertilizer consumption, import, export, production (annual).
 - Monthly regionwise/districtwise fertilizer retail prices (urea, MOP, SOP, TSP, DAP, AS, 15-15-15 in local currency, US\$ and exchange rate).
 - Monthly regionwise/districtwise prices of CPPs.
 - Monthly regionwise/districtwise prices of seeds (maize, cowpea, etc.).
 - Monthly regionwise/districtwise prices of the main staples (maize, rice, sorghum, millet, cowpea, cassava, groundnuts, etc.).
 - Fertilizer marketing cost based on period marketing studies.

- Monthly international fertilizer prices (urea, MOP, SOP, TSP, DAP, AS, 15-15-15 in local currency and/or in U.S. dollars).
 - News/market update (e.g., Tender notice).
 - Regulatory and trade information.
 - Bulletin Board (buy and sell announcements, conferences, meetings).
 - Overview of agricultural inputs and output marketing in the country.
 - Information about SRID (profile, staff e-mails, etc.).
 - Publications.
4. SRID to be linked up with the regional agricultural market information system and other relevant websites for access to regional and international market information.
 5. SRID staff to be trained regularly in using current techniques of information collection, analysis, and diffusion.

A well-functioning agricultural MIS will benefit traders, farmers, government policy decisionmakers, international and regional trade organizations, donor agencies, the community at large, and bankers. To ensure that the information reaches the end users on time, it should be diffused at regular intervals through different media, e.g., a Ghana Agricultural Market Information Network website, the print media, radio, and television. Meanwhile, input dealers in Ghana should be encouraged and organized to form a trade association and be linked with other associations in the region. As the association grows, it could assume a larger share of responsibilities in the public-private partnership for the management of agricultural market information.

Implementation of Regulatory Systems

The PPRSD was established by an act of parliament in 1965 with the mandate to organize, regulate, implement, and coordinate plant protection services in Ghana. In this function, the PPRSD has responsibility among others to provide advice on pesticide management, monitoring and sales, safe use, registration, and regulation.

Seed—Legislation on seeds has existed in Ghana since 1972 (NRCD 100, 1972: Seed Inspection and Certification Decree). It was reviewed in 1991 to consider the seed market privatization (following the abolishing of the GSC). Although the revision to the seed regulations has yet to go through parliament for

the necessary legal backing, the GSID of the PPRSD has been providing useful and professional services for seed growers, dealers, and importers. The services include seed grower and dealer registration, seed certification, and quality control in the field, dealers' warehouses and retail shops, and the laboratory. An action plan to overcome the problems constraining the implementation of seed legislature includes the following:

- Enacting the revised seed legislation into law to provide the legal backing for seed inspectors.
- Strengthening the capacity of the seed inspection staff through training of existing staff and through new recruitment.
- Upgrading the PPRSD/GSID facilities— such as the cold rooms and seed-testing laboratory.
- Providing logistical resources for inspectors to reach seed growers and dealers who are dispersed over large distances in the country.

CPPs—Legislation on pesticides has existed in Ghana since 1996 (Act 528, 1996: The Pesticides Control and Management Act). The PPRSD works closely with the EPA for the management of pesticides in the country. The regulatory services provided include registering new products, licensing importers, licensing dealers, supervising trade and use of pesticides, inspecting and removing obsolete chemicals, and training in safe use. The process of registering new products has been very slow due to lack of manpower. Also, despite the efforts of the PPRSD and EPA, there is evidence of product adulteration, dealers operating under expired licenses, nonrespect for truth in labeling, sale of obsolete products, and use of products without regard for their appropriateness to the pests or for health hazards, particularly at the retail level. Actionable plans necessary for the implementation of the pesticide legislation include the following:

- Steps to have the pesticide regulations approved and enacted to give the legal backing for enforcement.
- Reinforcement of the capacity of staff at EPA and PPRSD to accelerate the product registration, licensing, monitoring, and enforcement of the pesticide legislation, and to undertake residue testing on food products.
- Public education for safe use and medical support services for CPP-induced poisoning.
- Investment in research and extension for developing and promoting IPM.

Fertilizer—There is currently no fertilizer legislation in the country, but the Crop Services Directorate keeps a registry of importers, more for the purpose of generating data on fertilizer importation and consumption than for quality control. In July 2000, MOFA requested IFDC to advise on the requirements necessary for the establishment of a fertilizer regulatory system in Ghana. The assessment report (IFDC, 2001a) and the proposed bill and regulations (IFDC, 2001b and IFDC, 2001c) were submitted to the MOFA in May 2001. The actionable plans necessary to implement the fertilizer quality control regulatory framework include the following:

- Approval of the draft fertilizer laws and regulations by the cabinet and their enactment by the parliament.
- Identify appropriate department within MOFA and appoint a national fertilizer regulatory chief and all staff to implement and administer the Ghana Fertilizer Act and supporting Regulations.
- Develop a Fertilizer Inspection and Fertilizer Analytical Manual for Ghana.
- Develop all report forms corresponding to action procedures in the Act and Regulations and the Fertilizer Inspection and Analytical Manuals.
- Identify and designate an analytical laboratory. Refurbish or upgrade facilities for quality control analysis.
- Procure and ship all equipment (analytical, inspection, and administrative).
- Organize a study tour for the Ghana fertilizer regulatory supervisory officials. The study tour should include visits to one or two countries to observe and learn how the fertilizer regulatory systems in those countries are managed and how they function.
- Conduct a training program in Ghana for inspectors, chemists, technicians, and administrative personnel.

Technology Transfer Activities

Although efforts to improve the supply side of the market equation are the focus of this plan, adequate efforts to promote demand through technology transfer activities are recommended. New technologies of crop production are science-based and knowledge-intensive, but the uneducated farmers do not have the requisite skills to incorporate and use the knowledge embodied in the new technologies of crop production. A greater knowledge about and exposure to these technologies will induce an increased demand for inputs. To disseminate knowledge and educate farmers about

the proper use of new methods of cultivation, activities in the following areas should be promoted:

- 1. Farm-Level Demonstrations:** Farm-level demonstrations should be conducted to teach farmers about the proper use of improved seed and fertilizers. Technology transfer activities promoted by SG 2000 should be extended to more areas in the country. Demonstrations are generally the most effective tools for disseminating new practices because they embody the principle of “seeing is believing.” Such demonstrations should be conducted on the farmers’ fields and should educate farmers about the proper use of the technology, including product selection, seeding rate, and timely application. Both the public and private sectors have roles to play.
- 2. Promoting the Use of Hybrid Seeds:** The use of hybrid seed of maize and other cereals is limited. Through the use of nucleus farmers and the development of seed enterprises, concerted efforts are needed to promote the use of hybrids because crop yields are much higher from hybrids than from open-pollinated varieties. Through education and demonstrations and through the timely supply of inputs and output market development, propagation and dissemination of hybrids should be encouraged.
- 3. Strengthening Extension Activities:** Because many farmers do not have high levels of literacy and education, extension agents and subject matter specialists become important media for knowledge transfer. In addition to strengthening extension department activities, efforts should be made to tap into creating new dealers as technology change agents. MOFA should run training programs for dealers about new methods of cultivation so that these dealers can transfer that knowledge to farmers. With limited resources, MOFA could focus on devoting its resources on upstream activities—linking with research institutes and transferring that knowledge to subject matter specialists, who, in turn, could pass that information on to dealers for transmission to farmers. Such an approach will optimize returns on MOFA’s limited resources and build an effective partnership between the public and private sectors.

- 4. Improving Fertilizer Recommendations:** Farmers in Ghana have traditionally relied on fertilizer recommendations based on the products introduced in the late 1960s and the early 1970s. Such products include SSP, AS and NPK (15-15-15). NPK is a balanced fertilizer product supplying all three nutrients; AS and SSP are low-analysis products. The cost per unit of nutrient supplied when using these products is higher than that associated with high-analysis products such as urea (46% N), DAP (18% N and 46% P₂O₅) and MOP (60% K₂O). Consequently, because (a) the use of high-analysis products can reduce the cost of nutrients supplied and (b) relative prices, yield expectations, and the amount of nutrients and their ratios in Ghanaian soils have changed, there is a need to revise fertilizer recommendations to consider products' cost-effectiveness in supplying the required nutrients. Also, there is need to improve crop-specific recommendations. Admittedly, extensive and appropriate demonstrations should support the introduction of new fertilizer recommendations. Declassifying urea as a hazardous product is recommended.
- 5. Soil Fertility Management:** Increased population pressures in many parts of the country are believed to have led to reduced fallow and continuous cultivation of soils. Without adequate replenishment of nutrients, many soils are suffering from nutrient depletion and becoming degraded. Naturally, crop yields from such soils are also decreasing. To promote and sustain soil productivity, a soil fertility action plan was prepared in 1997 (MOFA, 1998). Recommendations of that plan should be implemented to strengthen the efforts in technology transfer areas.
- 6. Environmental Impacts:** Fertilizer use levels in Ghana are very low, and increasing the amount of fertilizer used to as much as 200 kg of product per hectare is not likely to cause any significant damage to the environment. Contrary to the view held by proponents of organic farming, low use of mineral fertilizers is inducing soil degradation and will continue to do so because nutrients removed in harvested crops are not adequately replenished. Referring to sub-Saharan Africa, Henk Bremen (in IFDC 2000b) stresses that there might be some dangers associated with the nonappropriate use of chemical fertilizers, but the dangers for not using them under the condition of inherently low soil fer-

tility are even greater. This concern clearly applies to Ghana as well. Henao and Baanante (1999) estimated that during the mid-1990s, approximately 80 kg/ha of nutrients (N+P₂O₅+K₂O) was lost through nutrient depletion in the cultivated areas of Ghana. Unless checked through proper management of nutrients from both organic and mineral sources, such nutrient losses may spell environmental disaster in the long run. Soils are losing vegetative covers, and thus reliance on organic sources alone cannot satisfy the nutrient requirements. Increased use of mineral fertilizers to supply nutrients is indispensable. In a much broader framework, the implementation of the integrated plant nutrient management component of the national action plan for soil fertility management is essential.

Output Market Development

The demand for agricultural inputs is a derived demand, derived from the demand for the product for which the inputs are required. Farmers' motivations to use modern inputs (fertilizers, improved seeds, and CPPs) depend, in part, on the availability of a marketing outlet and the demand for their product. The supply and use of inputs on large-scale commercial farms are regular and sustainable because the farms usually contract the sale of their produce with agroprocessing plants. This is the case, for example, with Ejura Farms, which supplies maize to the Ghana Agro Food Company (GAFCO) for processing composite flour for the baking industry. Ejura Farms also contracts with Nestlé to supply cowpea for processing into baby food and with the breweries to supply maize grits for the manufacture of beer. The supply and use of modern inputs is equally regular on plantations such as oil palm, cotton, rubber, and tobacco because the companies buy the produce for industrial processing, thereby offering farmers an ensured marketing outlet. The oil palm estates (Benso and Twifo), GCC, GREL, and BAT usually conclude predetermined product prices with their farmers prior to the season; hence, input use is not a problem for their farmers.

Outside the plantations and the large-scale food crop commercial farms, input supply and use are irregular because of the market and price risks that most farmers face. Some NGOs (e.g., TechnoServe) are assisting farmers to develop post-harvest strategies such as the inventory credit and storage schemes to reduce

risks. If a private-sector-led input distribution system is to be sustainable, the post-harvest markets (value added) should be developed to pull the demand for inputs.

Actionable plans for the development of the output markets include the following:

- Developing the post-harvest market through agro-processing and value added to pull the demand for inputs.
- Enforcing contracts between producers and buyers to ensure a guaranteed market for both the farmer (producer) and the processor (buyer).
- Improving access to market information (price signals and spatial distribution of product).
- Improving access to storage and processing facilities (e.g., Ghana Warehouse Operators Union).
- Providing effective quality control and trade regulatory knowledge to facilitate access to the outside markets.
- Promoting external trade in agricultural products.

Association Building

To galvanize the energies of farmers and dealers scattered all over the country, farmers and agri-input dealers' associations should be formed and/or strengthened. The farmers' associations will be trained in pooling farmers' resources in buying inputs and selling crop produce to get a better price. They will also assist in developing linkages with banks and policymakers and serve as group collateral for bank loans by members. Appropriate training and technical assistance should be given to association members to operate the association in an accountable and transparent manner.

The agri-input dealers' association should act as a reservoir of information and policy guidance for members. In the long term, such an association could operate its MIS and set up a self-monitoring mechanism to develop a reputation for ensuring the quality of inputs sold by its members. It can develop its brand name and logo that farmers will associate with the good quality of products sold by its members. It can be equipped to conduct dealer training and farm demonstrations and to provide extension advice to farmers.

Action Plan Matrices for Seed, Fertilizers, and CPPs

In addition to the market development efforts proposed earlier, there are certain input-specific measures

that should be undertaken to develop input markets. Action Plan Matrices 3, 4, and 5 summarize all measures recommended for seed, fertilizer, and CPP markets, respectively.

IV. Implementation of the Action Plan: A Holistic Approach

The implementation of the *Action Plan* requires a holistic approach. Such an approach should focus on functional integration, private-public sector partnership, and institutional arrangements.

IV.1. Functional Integration

Important reforms have been implemented in Ghana to allow the private sector to assume responsibility for agricultural inputs marketing after the government's withdrawal from their direct procurement and distribution in the context of the ERP and the follow-up strategies (i.e., the structural adjustment program and the MTADP). The privatization process (for fertilizer distribution) was initiated in selected regions and then extended to the entire country.

Earlier reforms on the exchange rate regime and the interest rate liberalization launched in 1986 were also intended to contribute to the private-sector involvement in agricultural input supply. More than a decade after this process was launched, total fertilizer consumption remains low and input prices are higher. Furthermore, the seed industry remains dormant with no private seed enterprise operating in country. Very few operators are involved in the importation of fertilizer. Similarly, there are few retailers offering inputs to farmers in rural areas. Public health has never been so endangered by obsolete or inappropriate use of chemical products.

Many of the changes have focused on policy reforms. Clearly, as in many other countries that have adopted this reform path, policy reforms are necessary but not sufficient for the development of efficient and effective input markets in systems previously under public-sector monopoly. This is largely because such an approach to market development does not consider issues related to other components of the agribusiness system. The agribusiness system comprises the manufacture, production, or procurement of inputs, the marketing of these to farmers (including

Action Plan Matrix 3. Seed

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
<p>1. Lack of effective legal and regulatory framework and enforcement:</p> <p>The revised seed regulations have not been approved yet for the necessary legal backing. The PPRSD/GSID has limited human and financial resources, and many of its facilities are not functional.</p>	(a) Enact into law the amendments to the 1972 Certification and Standards Decree and the 1973 Certification and Standards Regulations to provide the legal backing for seed inspectors.	MOFA.	X	X					
	(b) Strengthen the human and financial resource capacity of the PPRSD/GSID, and SGAs through effective collaboration in enforcing the regulatory framework, and training of existing staff and new recruitment.	MOFA and donor.		X	X	X	X	X	X
	(c) Provide logistical resources for the GSID's inspectors to reach seed growers and dealers who are dispersed over large distances in the country.	MOFA and donors.		X	X	X			
	(d) Upgrade the PPRSD/GSID facilities (e.g., cold rooms and seed testing laboratory).	MOFA and donors.		X	X	X			
<p>2. Lack of seed regulations compatible with international practices:</p> <p>Although Ghana's existing seed regulations are sound, some regulations are lacking or needing revision to assist Ghana's seed companies to take part in the international seed industry.</p>	(a) Establish a plant variety protection (PVP) system; draft and approve a new law and regulations.	NSC in collaboration with its secretariat (the NSS) and the GSID and private sector, with technical (legal) assistance from donors.	X	X					
	(b) Establish regulations to allow patenting of selected biotechnology, to supervise GMO field testing, to supervise introduction of GMOs in agriculture, and to supervise marketing of agricultural products with GMO content.	NSC in collaboration with the patent office, the GSB, GSID and the private sector, with support from one or more donors.		X	X	X			
	(c) Harmonize seed quality and phytosanitary rules among ECOWAS countries. Assess variety controls to facilitate introduction of varieties approved in regional countries.	MOFA to take part in regional discussions and adjust regulations and procedures based on agreements.	X	X	X	X	X	X	
<p>3. Weak international linkages:</p> <p>Ghana's seed industry is not well linked to regional and international seed industries (for access to new varieties and seeds, seed trade, etc.).</p>	(a) Establish a national seed trade association, which then joins AFSTA, so that Ghana seed dealers can take part in international and regional seed industry meetings and affairs.	Seed dealers in Ghana, with possible assistance from a bilateral donor.		X	X				

Action Plan Matrix 3. Seed

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
3. Weak international linkages (cont'd):	(b) The national seed growers' association and the national seed trade association to collect and publish information on Ghana and regional seed companies and markets and advises government and donors on seed-related issues.	National seed associations, with grant or contract support from a bilateral donor or other project.		X	X	X	X	X	X
	(c) Encourage entrepreneurs and researchers to be linked with private and public breeding organizations for access to new varieties, including hybrids.	Entrepreneurs share expenses with government and/or NGO program to promote new seed companies.		X	X	X			
	(d) Establish and/or maintain membership in OECD Seed Schemes, International Seed Trade Association (ISTA), FAO's Interim Commission on Phytosanitary Measures and other international organizations dealing with seeds.	MOFA/WASDU, with assistance from a bilateral donor to cover several years' annual fees.	X	X	X	X	X	X	X
4. Insufficient Dealer Outlets: Farmers lack convenient access to commercial seeds through town and rural stores.	(a) Existing stores, including stores in remote rural areas, to add seeds to their shelves; new stores open to sell seeds and other inputs.	Entrepreneurs invest money and time to carry seeds. Government/NGO/District Assemblies could offer other temporary incentives for stores to add seeds (other than hybrid maize) to their shelves.	X	X	X	X	X	X	
	(b) Encourage agricultural extension agents to take up input distribution as a business.	MOFA and NGOs.	X	X	X	X	X	X	
	(c) Regional workshops and training for store managers and other traders interested in selling seeds and other inputs.	The national seed associations, GSID, and/or NGO field days and programs to interest and train seed traders and dealers.		X	X	X			
5. Thin seed market: Does not favor the emergence of a major seed company in the country. Hence limited number of varieties and limited competition.	(a) Big increase in number of demonstrations for all crops for which commercial seeds are available. Demonstrations should also be in remote rural areas, not only along major roads.	(a-1) Seed dealers arrange more demonstrations. Seed dealers should also extend technical backup to farmers and stores selling seeds.		X	X	X	X	X	
		(a-2) GLDB, GSID, MOFA Regional Directors' office, District Assemblies, and NGOs cooperate with seed dealers to demonstrate selected promising varieties.		X	X	X	X	X	

Action Plan Matrix 3. Seed

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
5. Thin seed market (cont'd):	(b) Preparation and distribution of a list of varieties tested and recommended, with relevant information for farmers.	NSC in collaboration with the GSID, SARI and CRI.		X	X	X	X	X	X
	(c) Encourage links between seed growers' associations (SGAs) and dealers.	SGAs, dealers, and project entity.		X	X	X	X	X	X
	(d) Support research and extension on hybrid development to improve profitability for both farmers and dealers.	(d-1) GOG and donor support.		X	X	X	X	X	X
		(d-2) GLDB, GSID, MOFA Regional Directors' office, District Assemblies, and NGOs to cooperate with seed dealers to demonstrate selected promising varieties.		X	X	X	X	X	X
		(d-3) MOFA to train field extension workers on specific subjects related to the seed promotion program so that the extension personnel can provide the essential information concerning improved seed use to farmers.		X	X	X	X	X	X
	(e) Improve the functioning of the grain market (see details in issue #4 action recommended (a2) in the Action Matrix 2 for Finance).	See details in issue #4 action recommended (a2) in the Action matrix 2 for Finance.		X	X	X	X	X	X
	(f) Entrepreneurs establish seed companies (including joint ventures and stand-alone companies) to import and/or produce, bag, label, and distribute to retail outlets.	Entrepreneurs invest in seed, office, etc. Government and NGOs may design programs to provide technical and/or financial assistance to new seed companies. Existing programs—e.g., credit programs to support small businesses—may assist.		X	X	X	X	X	X
(g) Establish and announce price list and procedures for anyone to buy breeder and basic seeds for varieties of all crops released from Ghana's public research institutes. (If breeders' rights are an issue, protect through PVP and/or contracts with royalties and limits on use of seeds.)	Research institutions (e.g., SARI and CRI) and NSC and GLDB.		X	X	X	X	X	X	

Action Plan Matrix 3. Seed

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
5. Thin seed market (cont'd):	(h) Design projects to offer temporary technical or financial assistance to emerging seed companies, which could include matching grants for employing breeders, demonstrating new varieties, assisting with seed processing machinery, etc.	MOFA, NGOs, donors.	X	X	X	X	X	X
	(i) Offer training for contract farmers and entrepreneurs engaged to produce seed for commercial seed trade.	National seed growers' association with assistance from the GSID, NGOs, and donors.		X	X	X	X	X
6. Limited access to affordable finance	See details in Action Matrix 2 for Finance	See details in Action Matrix 2 for Finance		X	X	X	X	X

Action Plan Matrix 4. Fertilizers

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
1. Market uncertainties associated with: (a) The ADB tender. (b) The zoning issue in the cotton sector.	See action recommended in the Action Plan Matrix 1 for policy and market development issues (issues/constraints B.1).	See Action Plan Matrix 1 for policy and market development issues	X	X				
	Resolve all outstanding issues on the zoning and ensure effective enforcement of agreed-upon recommendations.	MOFA to continue current efforts aimed at resolving the issues and ensuring enforcement.	X	X	X	X	X	X
2. Inadequate finances available for importers, wholesalers and retailers. Existing players and newcomers have problems obtaining foreign exchange for import LCs and financing for marketing operations—Stringent collateral requirements and high interest rates.	(a) Set up the AIF and the AIBDF to encourage commercial banks' involvement.	See finance Action Matrix 2 for details about the funds.		X	X			
	(b) Examine possibility of joint ventures with international organizations to attract foreign investment.	Private companies with GOG and donor support.	X	X	X	X	X	X
	(c) Develop dealer network to bring in finance and share risk.	Donors to provide financing for two funds: the Agri-Input Import Fund and the Agri-Input Business Development Fund.		X	X	X		
3. Limited banks outreach in rural areas There are limited bank's branches to facilitate business transactions in rural areas.	See finance Action Matrix 2 for details (issues/constraints #3).	See finance Action Matrix 2 for details (issues/constraints #3).	X	X	X	X	X	X
4. High inland road freight rates Because of poor roads in rural areas and high import duties on truck spares/fuel.	(a) Develop rural road infrastructure and a maintenance program.	District Assemblies and GOG/donors to undertake rural road projects.	X	X	X	X	X	
	(b) Take a second look at transportation on the Volta Lake to facilitate fertilizer transportation to the northern part of the country.	Ministry of Road and Transport to assess the requirements in collaboration with MOFA and the private sector.	X	X				
	(c) Improve the cost-effectiveness of the railway transport mode.	Ministry of Roads and Highways (MRH) and Ministry of Transport and Communication (MTC) to assess requirements in collaboration with MOFA and private sector.	X	X				
	(d) Advise and inform the public on the infrastructural development of the port. In recognition of the importance of fertilizers, facilitate the handling of fertilizers at the port.	GPHA to advise, inform and facilitate.	X	X				

Action Plan Matrix 4. Fertilizers

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
<p>5. Small effective demand.</p> <p>(a) Unfavorable fertilizer/output price ratios largely due to:</p> <ul style="list-style-type: none"> - (a1) High fertilizer import costs³⁶ - (a2) Uneconomic use of fertilizers 	(a1-1) Run training programs for developing linkages with international markets to allow importers to take advantage of low-cost supply sources.	MOFA in collaboration with project entity.	X	X	X				
	(a1-2) Organize informal groups—farmer associations/ harmonize regional trade to join orders and import larger parcels of high-analysis fertilizers.	MOFA and Ministry of Economic Planning and Regional Integration (MEPRI) to work towards regional trade harmonization.		X	X				
	(a2-1) Intensify field extension-demonstration activities, farmer meetings, use of mass media to improve farmers' knowledge of cost on a nutrient basis.	Better financing of the MOFA extension activities through AGSSIP. Encourage private sector and NGO involvement.		X	X	X	X	X	X
	(a2-2) Encourage the use of high-analysis fertilizers (low analysis products with higher nutrient costs are currently dominant).	MOFA to promote through extension message with the support of good research. Encourage private sector and NGO involvement.		X	X	X	X	X	X
	(a2-3) Declassify urea as hazardous. Fertilizers should not be classified as hazardous, except Ammonium Nitrate if imported.	MOFA to liaise with the Ghana Ports and Harbors Authority (GPHA).		X	X				
	(a2-4) Update outdated fertilizer recommendations. Strengthen soil-testing facilities for farmers and dealers. Continued research on phosphate, liming, micronutrients, organic matter, timing of application, and tillage response.	SRI, SARI and CRI to review recommendations. Better financing of the MOFA extension activities through AGSSIP. Encourage private sector and NGO involvement.		X	X	X	X	X	X
	(a2-5) Support research to improve fertilizer use efficiency.	MOFA through AGSSIP to expedite the implementation of the national action plan for soil fertility improvement (see plan for details). MOFA to promote integrated soil fertility management.		X	X	X	X	X	X

36. During the stakeholders' workshop, some delegates did not consider fertilizer import costs to be unusually high in Ghana, thereby arguing that importers are well linked to the international markets. The assessment team disputes this claim and stresses that not all importers are well linked to the international markets. In addition, providing information about supply sources is needed for potential entrants.

Action Plan Matrix 4. Fertilizers

<p>5. Small effective demand (cont'd).</p> <ul style="list-style-type: none"> - (a3) Low output price - (a4) Low crop response (b) Absence of local independent dealers in rural areas resulting in limited market coverage because supplies do not reach remote areas and farmers have to travel 10-50 km to purchase inputs. (c) Limited availability or accurate and timely market information for proper planning and decision making. 	<p>Develop output market—See details in issue #4 and action needed (a2) of the Action Matrix 2 for finance.</p> <p>Support research and extension for higher yielding varieties, including hybrids.</p> <p>(b1) Develop dealer network.</p> <p>(b2) Encourage rural trading activities by providing business training and improved access to finance.</p> <p>(c1) Strengthen the SRID of MOFA to collect, analyze, and disseminate data.</p> <p>(c2) Set up regular meetings of MOFA, research and private fertilizer organizations for planning and review.</p>	<p>MOFA and donors to promote development of output markets. Project entity can help.</p> <p>Better MOFA and Ministry of Environment, Science and Technology (MEST) financing of research and extension. Encourage private-sector involvement.</p> <p>Private sector using the AIBDF and other sources.</p> <p>MOFA through AgSSIP to provide funds for financial package and training for developing rural markets.</p> <p>SRID to collaborate with relevant departments dealing with agricultural statistics, dealers and their association.</p> <p>MOFA to organize suitable forum.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>					
<p>6. Lack of legal and regulatory framework for monitoring product quality and illegal traders:</p> <p>There is currently no fertilizer legislation in the country. However, upon MOFA request, IFDC drafted a bill and accompanying regulations that were validated in a national workshop.</p>	<p>(a) Submit the draft fertilizer law to cabinet and eventually to parliament for enactment. Subsequently, approve the draft supporting regulations.</p> <p>(b) Develop a Fertilizer Inspection and Fertilizer Analytical Manual for Ghana.</p> <p>(c) Develop all report forms corresponding to action procedures in the Laws and Regulations and the Fertilizer Inspection and Analytical Manuals.</p> <p>(d) Identify and designate analytical labs. Refurbish or upgrade facilities for quality control analysis.</p> <p>(e) Organize appropriate training in and outside Ghana for fertilizer regulatory supervisory officials, including inspectors, chemists, technicians, and administrative personnel.</p>	<p>MOFA to expedite.</p> <p>MOFA in collaboration with specialized institutions.</p> <p>MOFA in collaboration with specialized institutions.</p> <p>MOFA in collaboration with specialized institutions to initiate action.</p> <p>MOFA to strengthen existing special laboratories selected with donor support.</p> <p>MOFA in collaboration with specialized institutions.</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>	<p></p> <p></p> <p></p> <p>X</p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>	<p></p> <p></p> <p></p> <p></p> <p></p> <p></p>

Action Plan Matrix 5. Crop Protection Products

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)						
			0	1	2	3	4	5	
1. Uncontrolled status of the pesticides market.	(a) Urgent enactment of the 1997 amendment of the 1996 Pesticide Control and Management Act 528 and approval of supporting pesticide regulations.	(a.1) MOFA, FAO, GTZ, UNDP and the pesticide suppliers to form an IPM Task Force (strengthened National IPM Committee). The Task Force should enlist the involvement of WHO and other necessary stakeholders to actively campaign for the enactment of the amendment of the Act in the next session of Parliament and its enforcement.	X	X					
		(a.2) GOG and Parliament.	X	X					
		(a.3) Public-private partnership.	X	X					
		(b) Strengthening the capacity of the EPA and PPRSD to accelerate the product registration, licensing, monitoring and enforcement of the pesticide legislation.	(b.1) Recruiting and training inspectors.	X	X				
		(b.2) Establishing a fund for the operation of the EPA and PPRSD. Create a Board to manage the fund to allow proper disbursement and allocation of money.	X	X					
		(b.3) MOFA to publish a list of designated analysts and suitable laboratories.	X	X	X	X	X	X	
		(b.4) MOFA and donor to provide in-country short-term training for product analysts to strengthening product analysis and quality control.		X	X	X			
	2. Substantial obsolete and dangerous stocks.	(a) Extending the survey of obsolete pesticides to cover the whole country (e.g., in the cocoa production areas and retail stores).	PPRSD to complete the survey started as soon as funding is available.	X	X				
(b) Disposing of existing stock.		National IPM committee to consider the issue with the MOFA, MOH, and MOEST to secure the necessary funding, possibly from outside sources such as FAO.	X	X					

Action Plan Matrix 5. Crop Protection Products

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
2. Substantial obsolete and dangerous stocks. (cont'd)	(c) Establishing a system of regular inventory of stocks.	(c.1) Inspector to undertake routine checks.	X	X	X	X	X	X
		(c.2) Pesticide dealer/importer association to develop a self-monitoring mechanism.	X	X	X	X	X	X
	(d) Building an adequate pesticide storage facility for government migratory and perennial pest products in each region.	Donor can help.		X				
	(e) Establishing a mechanism for safe and sound disposal of future obsolete stocks.	(e.1) MOFA to provide for ways of disposing of obsolete products in the pesticide regulatory framework.	X	X				
		(e.2) Manufacturer or supplier to incur the full cost of disposing of products (both for government and non government stocks).	X	X	X	X	X	X
	(f) Establishing government guidelines to avoid accumulation of obsolete stocks in the public sector.	MOFA to develop guidelines outlining responsibilities of government, donors, and dealers.	X	X				
	(g) Offering stock management training programs to dealers.	EPA, MOFA and Pesticide dealer/importer association to conduct appropriate short-term training programs.	X	X	X	X	X	X
3. Limited products and use knowledge by extension agents.	Designing and conducting a training program for extension agents.	Project training program.	X	X	X	X	X	X
		Dealer/importer or association to conduct safe use training programs in collaboration with EPA and MOFA.	X	X	X	X	X	X
4. Limited products and use knowledge by farmers and general public.	Intensify education on the safe use of pesticides for farmers and the public.	Public/private partnership in designing and conducting demonstration programs.	X	X	X	X	X	X
		MOFA to develop multi-media strategies to sensitize the public on pesticides and their safe use.	X	X	X	X	X	X
5. Inadequate number and quality of pesticides dealers.	Conducting dealer development programs.	Project training programs for dealers, bank staff, and public sector staff.	X	X	X	X	X	X

Action Plan Matrix 5. Crop Protection Products

Issues/Constraints	Actions Recommended	Stakeholder Responsibility	Year Implementation (0=2001)					
			0	1	2	3	4	5
6. Market uncertainties and distortions.	(a) Developing a market information system.	Donor, MOFA, and Project to work to strengthen the SRID.	X	X	X	X	X	X
	(b) Aid-in-kind CPPs distribution to be done through a public-private partnership—except for government security stocks for major outbreaks.	MOFA.	X	X	X	X	X	X
7. Regional harmonization	Revamp negotiations for a regional harmonization of the testing and registration of pesticides and risk-based duties. This includes the HIP initiative (regional registration process).	MOFA, Ministry of Regional Cooperation and Integration, and dealer/importer association to be involved.	X	X	X	X	X	X
8. Public health and environmental risks	(a) Support research and extension on bio-control and IPM (crop rotations, pheromones, biological control, BTs, biopesticides).	Research and extension budgets		X	X	X	X	X
	(b) Developing easier, cheaper, and low-risk regulations for biopesticides with appropriate risk tests.	MOFA and industry.		X				
	(c) Conduct residue testing on food products.	EPA and Ghana Bureau of Standards. Requires strengthening their capacity to enable them to conduct these tests.	X	X	X	X	X	X
	(d) Developing user-friendly, cheaper, small, and low-risk packages of CPPs	Industry and MOFA.	X	X	X	X	X	X
	(e) Strengthening the capacity of the health services to deal with cases of pesticides poisoning.	MOH, MOFA, and industry.	X	X				
	(f) Conduct appropriate training programs on health and environmental risk issues for appropriate staff in various support services, dealers and users.	EPA in collaboration with the industry and health services.	X	X	X	X	X	X

the provision of technical advisory services to farmers), and the use of these inputs by farmers in crop production to enhance agricultural productivity and farm income (Figure 12). It also involves the sale and value-added sorting, grading, storage, processing, and marketing of foods and fibers as food products for livestock or human consumption or as inputs for other industrial manufacturers.

Farmers and farm production are at the center of the total system with both vertical and horizontal dynamic linkages among all the subcomponents and the facilitating services required for each of the subcomponents. The performance of an agricultural input supply system is only as robust as the weakest link in the total agribusiness system. As a result, to ensure that these links are strengthened, a holistic approach to promoting sustainable input marketing systems is imperative.

Therefore, to realize the full benefits of the activities proposed in this plan, they should be implemented in a holistic manner so that the synergy of various activities can be captured. Developments in the financial sector, market information, monitoring and regulation in the marketplace, and human capacity building should support activities in policy reform. Without financial resources, trained entrepreneurs cannot put their training to work. Likewise, laws and regulations about truth in labeling should be fully enforced so that unscrupulous traders do not compromise the

good reputation of law-abiding traders and the quality of the products they sell. To integrate various segments of the market efficiently, these traders should also have access to the information about national, regional, and global markets.

IV.2. Private-Public Sector Partnership

As in most SSA countries, inward-looking state-led development strategies dominated Ghana's policy choices in the 1960s and 1970s. In Ghana, this strategy resulted in deteriorating terms of trade (largely due to falling cocoa price) and balance of payment, and a large fiscal deficit and declining use of mineral fertilizers and agricultural productivity. The ensuing disenchantment gave way to reforms that replaced the state intervention, ownership, and protection with private incentives and ownership and with market-based input supply systems. Although these reforms initially delivered a strong agricultural growth and enthusiastic participation of the private sector in input supply, they eventually failed to yield the expected results because the reform process was too sudden and failed to build the necessary institutional and infrastructure support for competitive markets. Furthermore, there was not enough domestic leadership and broad-based consultations on the reform process. It has now become clear that the private sector cannot develop input markets on its own to an efficient level without the public-sector support through appropriate policies and institutions.

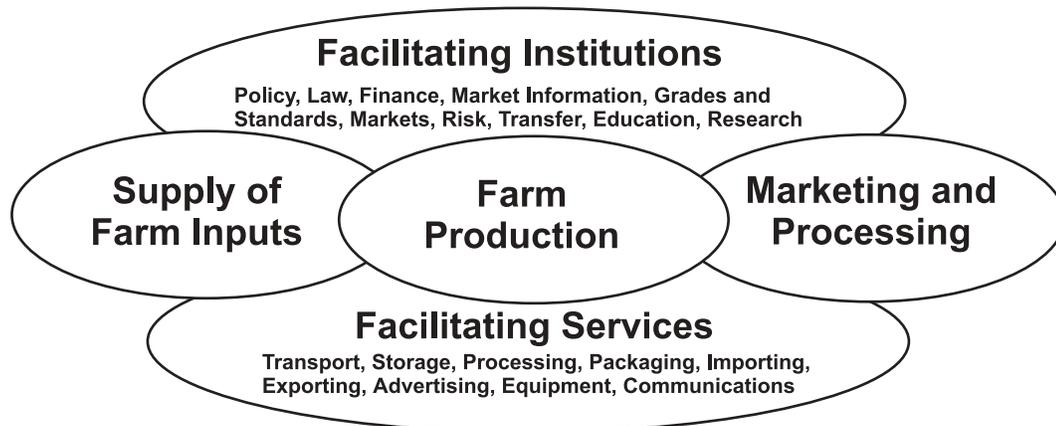


Figure 12. The Agribusiness System.

The public and private sectors have interlinked roles to play, and they need to work together as equal partners, each party bringing its strengths to the relationship. For input market development as in other sub-sectors of the economy, both the private and public sectors need a greater understanding of which functions remain in the public-sector domain and which ones in the private-sector domain. Working in partnership in developing input markets facilitates discussion as to the main issues and how well they might be resolved successfully. Furthermore, such a partnership helps achieve the following:

1. Offering the opportunity to develop a common agenda and to exchange information and data, and thereby operate off the same base.
2. Facilitating the development of input markets in an efficient and cost-effective manner for both the public and private partners by offering the opportunity to best leverage their combined resources and creativity.
3. Enabling MOFA and the GOG to devote more of their resources to their core functions, the delivery of essential public services and regulations, thereby allowing for better use of public resources and enabling MOFA and GOG to operate within their means.
4. Increasing the efficiency of the public sector by allowing it to access, in an orderly and disciplined manner, and benefit from the private-sector expertise with respect to the efficient execution and administration of certain functions.
5. Ensuring that preferences of the private sector are reflected in the choices and design of interventions.
6. Transferring useful expertise and skills to the private sector, thereby creating economic opportunities in the private sector.
7. Improving implementation, transparency, and accountability.

However, it is important to understand that establishing public-private partnership and communication is not a singular act or that of few meetings. It is and should be a continuous process. Furthermore, it is not and would not always be easy to bring both public and private interests together as equals. What is critical is the parties' willingness to come together and discuss issues and try new ideas with the understanding that

not everything is going to be a success and successes breed second-generation problems that need to be addressed also. The occurrence of problems throughout the process usually does not offset the benefits of collaboration. This rule fails only when one side is trying to take advantage of the other.

In Ghana, there are several opportunities for public-private partnership in both the short and long terms. These include:

1. Partnership in sharing the use of existing government infrastructure (silos, warehouses, depot, and cold storage facilities).
2. Partnership in managing the MIS.
3. MOFA and trained dealers working together to share demonstrations/extension responsibility.
4. Encouraging retired extension officers to work as input dealers and financial intermediaries between rural banks and farmers.

IV.3. Institutional Arrangements

The implementation of the proposed *Action Plan* will require some new institutional arrangements because it is essential that various components be implemented in a concurrent fashion so that the synergy of different efforts can be harnessed. If different components are implemented in a disjointed manner, resulting efforts may not produce the necessary synergy and cohesiveness. It is therefore recommended that an *autonomous* project entity be created to implement the *Action Plan*. The Project Leader should have the responsibility of implementing the project activities and liaise with the Chief Director of the MOFA. The Chief Director should provide general monitoring and guidance.

In addition, a Steering Committee should be created to provide policy guidance. The Steering Committee will be an advisory body to the project through the Chief Director, MOFA. It should consist of stakeholders from the private sector, farmer/representatives, donor community, and the government. The MOFA should coordinate the Steering Committee's activities and assist in making the necessary arrangements for stakeholders' meetings.

As the *Action Plan* focuses heavily on working with the private sector, the project entity should remain autonomous and outside MOFA. Otherwise, actors in the

private sector may feel hesitant to approach the project staff for necessary help and may perceive the project as another approach by MOFA to interfere in the functioning of the agricultural input markets.

It is envisaged that the implementation of the *Action Plan* will require three long-term experts, namely, a market development specialist, a seed specialist, and a finance specialist. This core group of experts will be supported by 10 national experts and 20-25 administrative and support staff members. This team will receive help, when needed, from short-term specialists in the area of policy, regulatory system, MIS, finance, project management, and agronomic issues.

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