Roadmap for the CATALIST Project to Strengthen Agricultural Input Markets in Rwanda

Prepared by

IFDC

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Funded by

Directorate-General for Development Cooperation (DGIS)

April 2007

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Preface

More than half of Rwanda's population lives on less than US $1 a day, making it one of the poorest countries in the world. Extremely high population pressure (337 persons/km^2), a tight resource base, declining soil fertility, and a very low use of modern inputs (improved seeds and inorganic fertilizers) are the key causes of social instability, environmental degradation, and food insecurity. Agriculture plays a distinctive role in Rwanda's economy and the livelihoods of the rural population. The country cannot reduce poverty and hunger without expanding agricultural activities by intensifying the use of inputs that increase productivity, such as improved seeds and fertilizer.

To speed up broad-scale agricultural intensification in Central Africa's Great Lakes Region, the Dutch Embassy in Rwanda has awarded IFDC a 5-year project called CATALIST—Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability in Central Africa's Great Lakes Region. CATALIST proposes a radical regional approach to agricultural development. The existing smallholder farming systems are unsustainable and oriented toward self-sufficiency. The project seeks to change those into sustainable market-oriented production systems through the adoption and efficient use of external inputs, intermediate forms of mechanization, and product chain development.

At the onset of the CATALIST project, a team was sent to Rwanda to provide the staff with in-depth insight into agricultural intensification and market development opportunities. The team was also to draft a need-based and practical action plan for the development of fertilizer and seed markets. The assessment was conducted during November and December 2006. The assessment team included:

H. B. Singh, Senior Marketing Specialist and Team Leader, IFDC

O. Camara, Agricultural Economist, IFDC

F. Muhhuku, Seed Specialist, IFDC Consultant

V. Ngarambe, Managing Director, Multi-Sector Investment Group (MIG)

The team traveled to Gisenyi, Gikongoro, Butare, Kigali, and Ruhengeri. The assessment began with a stakeholders' meeting, organized by the Network of Producers' Associations of Rwanda (ROPARWA), to identify key information, studies, and reports that were available. The next days were devoted to scheduling and holding in-depth interviews with approximately 100 stakeholders, ranging from agri-input traders, farmers' cooperatives, and financial, government, and development institutions. The team shared their preliminary impressions at a debriefing with key stakeholders (Ministry of Agriculture, or MINAGRI, donors, farmers' associations, and traders). This report is the result of the information gathered during the assessment.

The assessment team extends its deepest gratitude to all stakeholders interviewed during the assessment: *Planet Farm Tech; AGROTECH S.A.R.L; AGROSA; Mudasomwa Wheat Mill; DUCURIZA input shop; AFRICHEM S.A.R.L.; Multisector Investment Group; Union of Popular Banks in Rwanda; Rwanda National Bank; Banque Rwandaise de Developpement; URWEGO Community Banking s.a.; Institute of Agronomic Sciences of Rwanda; ROPARWA; COIMU; UNICOOPAGI; CECMA; UCORIBU; Rwanda Tea Development Authority; Ministry of Finance and Economic Planning; Rwanda Bureau of Standards; MINAGRI; OCIR-CAFÉ; HelpAge; MINAGRI-IFAD Cash Crops Development Project; AFSR Seed Project; Clinton Foundation; Belgian Technical Cooperation; JICA; and USAID-Rwanda.*

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Acronyms and Abbreviations

AP	Action Plan
ADB	African Development Bank
ADF	Agribusiness Development Fund.
AFSR	Rwanda Seed Sector Support Project
AFSTA	African Seed Trade Association; Nairobi
AGF	Agricultural Guarantee Fund
AGRICORD	Alliance of Agro-Agencies
AMT	Appropriate (adapted) Means of Rural Transport
ATDT	Agricultural Technology Development and Transfer
ASARECA	Association for Strengthening Agricultural Research in East and Central Africa
ASSR	Rwanda Selected Improved Seeds Support Project
BADEA	Arab Bank for Economic Development in Africa
BCDI	Bank of Commerce, Development and Industry
BCR	Commercial Bank of Rwanda
BK	Bank of Kigali
BNR	National Bank of Rwanda or Central Bank
BRD	Rwanda Bank of Development
BS	Basic Seed
BrS	Breeder Seed
CS	Certified Seed
CTB/BTC	The Belgian Technical Cooperation
CAADP	Comprehensive Africa Agricultural Development Program
CASE	Competitive Agricultural Systems and Enterprises
CATALIST	Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability in Central Africa's Great Lakes Region
CDF	Common Development Fund
CETSE	Commercial Enterprises and Technical Support Entities
CGF	Credit Guarantee Funds
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture
CIMMYT	International Maize and Wheat Improvement Center
COFIDE	Financial Company for Development
COGEBANQUE	General Company of Banks
COMESA	Common Market for Eastern and Southern Africa
COPED	Education and Development Advisory
COPO	commodity oriented producer organization
CPPs	Crop Protection Products
CPRB	Rice Production Cooperative of Bugarama
DFID	Department for International Development
DGIS	Directorate General for Development Cooperation
DRC	Democratic Republic of Congo
EAC	East African Community
EAFF	Eastern Africa Farmers Federation

ECAAS	Eastern and Central Africa Advisory Services
ECOWAS	Economic Community of West African States
EDPRS	Economic Development and Poverty Reduction Strategy
ESARC	East and Southern Africa Regional Center-IITA
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FARA	Forum for Agricultural Research in Africa
FASEPE	Facilitation of Agricultural Socioeconomic and Policy Environments
FDC	Community Development Fund
FHIA	Honduran Foundation for Agricultural Research
FO	farmers' organization
FOREDEM	Fund for the Strengthening and Development of Microfinance
FRW/RWF	Rwanda Francs (1 dollar US = 500 RWF)
GDP	Gross Domestic Product
GOR	The Government of the Republic of Rwanda
HIMO	High Intensity Manpower
IARCs	International Agricultural Research Centers
ICIF	Input Credit Insurance Facility
IITA	International Institute for Tropical Agriculture
IFA	International Fertilizer Industry Association
IFAD	International Fund for Agricultural Development
IFDC	An International Center for Soil Fertility and Agricultural Development
IMF	International Monetary Fund
ISAR	Rwanda Institute of Agronomic Sciences
ISFM	Integrated Soil Fertility Management
KR2	Kennedy Round 2 = Japanese aid program regarding agricultural inputs
LOC	Letters of Credit
LOC	Line of Credit
MDG	Millennium Development Goals
MFI	Microfinance Institutions
MIG	Multi-sector Investment Group
MINAGRI	Ministry of Agriculture
MINECOFIN	Ministry of Finance and Economic Planning
MIS	Market Information System
NAP	National Agricultural Policy
NARES	National Agricultural Research and Extension Systems
NEPAD	New Partnership for African Development
NGO	Non-Governmental Organization
NRM	Natural Resources Management
OCIR CAFE	Rwanda Board of Industrial Crops-Coffee
OCIR THE	Rwanda Board of Industrial Crops-Tea
OPVs	Open Pollinated Varieties
PADEBL	Dairy Cattle Development Project
PAFOR	Rwanda Forests Management Project, NGO
PASAB	Food Security Support Project in Bugesera (Project of Caritas, NGO)
PBS	Pre-Basic Seed

PDCRE	Cash and Export Crop Development Project
PDL-HIMO	High Labor-Intensive Local Development Program
PDMAR	Agricultural and Rural Market Development
PFI	Participating Financial Institutions
PGR	plant genetic resources
PRF	Preferential Refinancing Facility
PRSP	Poverty Reduction Strategy Papers
PSA	private sector association
PSTA	The Strategic Plan for Agricultural Transformation
PVP	Plant Variety Protection
QDS	Quality Declared Seeds
QPM	Quality Protein Maize
RADA	Rwanda Agricultural Development Authority
RARDA	Rwanda Animal Resources Development Authority
RAQCCA	Rwanda Agency for Quality Control and Certification of Agriculture
RDC	Rural Development Cluster
RIF	Rural Investment Facility
RNE	Royal Netherlands Embassy
ROPARWA	Network of Farmers' Associations of Rwanda
RPSF	Rwanda Private Sector Federation
RRDP	Rural Recovery and Development Program
RSSP	Rural Sector Support Project
SAADA	Strategic Alliance for Agricultural Development in Africa
SADC	Southern African Development Community
SCFF	Structured Commodity Finance Facility
SDU	Seed Development Unit
SESAI	Social and Environmental Stability through Agricultural Intensification in Central Africa's Great Lakes Region
SFICF	Small Farmer Input Credit Facility
SSA	Sub-Saharan Africa
SWAP	Sector Wide Approach
TSBF	Tropical Soil Biology and Fertility Institute of CIAT
UBPR	Union of Popular Banks in Rwanda or Peoples Bank
UBUDEHE	Local Collective Action
UCORIBU	Union of Rice Cooperatives of Butare
UNICOOPAGI	Union of Agricultural Cooperatives of Gikongoro
USAID	United States Agency for International Development
VCR	Value: Cost Ratio

Roadmap for the CATALIST Project to Strengthen Agricultural Input Markets in Rwanda

Executive Summary

I. An Assessment of the Agricultural Input Markets in Rwanda

Agri-input use in Rwanda is among the lowest in Africa. Less than 5% of farmers use fertilizer and less than 2% use improved seeds. Reasons for such low use rates include the following macro policy and market development issues:

Macro Policy Constraints

Agri-input traders in Rwanda face difficult macroeconomic environments, making input business development costly and risky, and limiting farmers' access to productivity-enhancing technologies. For instance, fluctuations and depreciations in national currencies create risk and uncertainty for traders, increase the price of imports, and reduce the size of imports. Inflation rates (8% in Rwanda) are high and unstable, due to domestic electricity shortages, rising fuel costs, and increased food prices. High interest rates (8%-17%) and poor lending terms and conditions (stringent collateral requirements; length of the loan) make access to agri-input finance extremely difficult for traders and farmers. Bureaucratic inefficiencies cause trade policies to inhibit agri-input trade. Rural roads are severely degraded and marketing infrastructures (warehouses; input shops) are poor quality.

Market Development Constraints

Market development constraints include uncertain policy environments, inadequate human capital, weak legal and regulatory systems, limited access to finance, and lack of market information. These five constraints refer to the five pillars of market development.

Uncertain Policy Environment—Despite the liberalization of agri-input markets, the Government of Rwanda (GOR) engaged in the procurement and distribution of fertilizer in 2006, perceiving the private sector as unable to supply fertilizer in a cost-effective manner. The existing private sector is profit driven and the distribution networks for fertilizers (a function of market size, degree of competition, and operation costs) try to satisfy the effective demand.

Justifying their intervention, governments often perceive this as a reflection of the private sector's inability to perform their functions. The GOR did not attempt to strengthen the capacity of the private sector or inform them in advance of its intentions to procure fertilizer. While the effects of these interventions remain to be ascertained, it is clear that the private sector now views the sector with greater risk and uncertainty and knows that such interventions are unsustainable. As a result, the relationship between the government and the private sector is one of mistrust. This will have a major impact on fertilizer imports and the future supply of fertilizer in the country.

Inadequate Human Capital/Underdeveloped Markets—First, farmers are inexperienced regarding the importance of agri-inputs, their safe and proper use, application rates, improved seed production techniques, and the suitability of agri-inputs to their cropping purposes. Second, farmers' associations lack technical knowledge, business skills, and good governance. Third, extension systems are weak and inadequate, lacking the technical and financial capacity to disseminate knowledge to the farming community. Only a small number of government officials provide extension, technical, and market information services and most of them need training. Fourth, agri-input dealers' capacity to conduct business is weak because they lack technical knowledge of the products they market and of banking procedures; their marketing and business skills (business plans, recordkeeping) are grossly inadequate. Finally, Rwanda lacks the human resources to conduct research. The inadequacy of national research capacity is shown in the inexistence of soil fertility research, little know-how and technological innovations, and scarcity of extension agents and scientists. This is a major constraint in the promotion of agri-input use.

Lack of Access to Finance—The findings of this assessment indicate that farmers and agri-input traders are excluded from financial services in four ways: (1) access exclusion: e.g., through risk screening; (2) condition exclusion: product design inappropriate for the needs of farmers and agri-input traders; (3) price exclusion: financial products too costly; and (4) self-exclusion: some farmers and dealers believe that they would be refused and do not apply.

Weak Legal and Regulatory Systems—Legal systems in Rwanda are rigid with lengthy statutorily-based processes, which create uncertainty regarding the predictability, speed, and fair enforcement of contracts. Regulations on quality control and truth-in-labeling for fertilizer and seed are inadequate and not effectively enforced. As a result, the country faces a heavy supply of substandard agri-inputs, illegal border trade, and weak quality assurance systems. These constraints seriously hinder market development.

Lack of Market Information Systems—Although MINAGRI's division of statistics regularly collects market information about prices, dissemination is inadequate. As a result, farmers, agri-input traders, and the government critically lack access to reliable information on quantities, prices, stocks, and transactions of agri-inputs in various market segments in the country.

High Procurement Cost of Fertilizer—Domestic fertilizer marketing costs are extremely high in Rwanda, and they account for more than 50% of the farm-gate price of fertilizer. Inland transportation costs alone account for up to 20% of the farm-gate price of fertilizer. Dealer costs and margins are high, reflecting the risk created by an uncertain policy environment.

Uncoordinated Logistics Planning—The existing system of fertilizer warehousing and delivery is unplanned and unsystematic. All formalities related to custom clearance, quality inspection, interim storage, and outward movement to customer stores are to be completed in Kigali. Such a situation results in the overuse and choking of facilities, delays in fertilizer delivery, and additional costs of fertilizer importation.

II. Proposed Measures for the CATALIST Project

The constraints prevailing in agri-input markets point to the fact that seed and fertilizer supply systems in Rwanda are in a subsistence and early development stage, respectively. In this case, the critical elements for market development are absent or very limited. There is, therefore, little demand for improved seeds and fertilizer, disorganized markets, and limited skills in the public and private sector, resulting in excessive transaction costs. To achieve substantial gains in agricultural productivity and to reduce food insecurity, Rwanda must move from this subsistence/emergence stage of market development to a growth and maturity stage. These stages are characterized by (1) a vibrant seed industry producing certified seed and a large number of farmers using improved seeds and (2) increased use of fertilizer on food crops using economically optimum levels. Therefore, priority requirements for Rwanda lie in activities that will initially stimulate demand, establish private sector market networks, and reduce the cost of agri-inputs. It is within this framework that several recommendations, in line with the Competitive Agricultural Systems and Enterprises (CASE) approach, were formulated. This approach is grounded on three pillars: (1) agribusiness cluster formation, (2) commodity value chain development, and (3) facilitation of enabling institutional environments. With that in mind, the AIMs assessment team recommends that the CATALIST project supports the development of maize, wheat, and Irish potato commodity chains in Rwanda. To implement the above recommendation, it is suggested that the project undertake the following activities:

1. **Groundwork—**To identify actors and functions in each commodity chain, to characterize project target areas, to select project stakeholders and partners, to identify site-specific constraints, and to select an appropriate technology package: seed, fertilizer, and field management practice.
2. **Strengthen Farmers' Incentives and Capacity to Use High-Yielding Inputs—**Once the project area has been defined and stakeholders' identified, it is advised that technology promotion activities be conducted using an array of tools (farmers' field schools [FFS]), field days in established demonstration sites, market day demonstrations, and technical promotion material (posters, radio announcements). The activities would showcase the benefits of using modern inputs compared with traditional practices to stimulate the demand for fertilizer and improved seeds. The CATALIST project should partner with MINAGRI, the Rwanda Institute of Agronomic Sciences (ISAR), the Rwandan Seed Sector Support Project (AFSR), successful commercial farmers, and prominent agri-input dealers to conduct these activities. Technology promotion activities should be followed by building farmers' capacity to access modern inputs. This is done by transferring the following knowledge to members of producers' associations through

targeted training programs, technical knowledge, business skills, knowledge on how to access credit, knowledge of policy issues, and advocacy capacity.

3. **Form Crop-Specific Agribusiness Clusters for Maize, Wheat, and Potato Commodities—**Once farmers' demand for modern technologies has been stimulated and their capacity to access such inputs strengthened, it is recommended that agribusiness clusters be formed for maize, wheat, and potato commodities in Gikongoro, Gitarama, and Kigali Rural. Agribusiness clusters can be developed by organizing workshops to bring farmers, local entrepreneurs, lending institutions, and business development services together. Through these workshops, the CATALIST project can help develop business linkages between small farmers and buyers, such as milling factories, to help them secure markets for their product and to access credit in input form. Such credit arrangements would stimulate farm productivity through access to inputs and embedded market services, such as technical advice and information on market quality requirements and prices. It could also help farmers organize themselves into market-oriented producer associations and cooperatives.
4. **Establish Input Voucher Schemes**—It is recommended that the project take advantage of the synergies developed between its various components, Social and Environmental Stability Through Agricultural Intensification (SESAI), and HelpAge, to build terraces and roads using voucher schemes in project areas. In these schemes, farmers in project areas construct progressive terraces and roads in exchange for vouchers that they can redeem for seed and fertilizer. Upon completion of roads and progressive terraces, each farmer in the target area would be issued a voucher entitling them to 50 kg of urea and 10 kg of hybrid maize/potato seeds.
5. **Develop Dealers' Capacity to Supply Quality Inputs at Low Prices Through the Establishment, Strengthening, and Training of Dealers Associations—**It is recommended that the CATALIST project facilitate the registration of operators in the input supply chain; establish a seed trader association; operationalize the existing fertilizer supplier associations (within Rwanda Private Sector Federation [RPSF]); and transfer technical knowledge and business skills to members of these associations.
6. **Improve Access to Finance**—It is recommended that the CATALIST project, in collaboration with MINAGRI, lending institutions (Microfinance Institutions [MFIs],

Peoples' Bank, Rwanda Bank of Development [BRD], National Bank of Rwanda [BNR], and commercial banks), and ROPARWA members, make it a priority to sensitize lending institutions on the business of agriculture. Sensitization programs can be best done by training bank staff on the nature of the demand for agricultural credit. It is also encouraged to organize meetings annually between farmers and bank staff to remove the misunderstanding and mistrust between them, to bring banks closer to agricultural entities, and to improve farmers' understanding of lending procedures. The CATALIST project should establish a Structured Commodity Finance Facility in each project area in partnership with existing MFIs to help farmers gain access to credit.

7. **Create an Enabling Policy Environment—**The CATALIST project can create an enabling policy environment for farmers and agri-input traders in Rwanda by organizing training workshops. The workshops would do the following: (a) build trader and farmer associations' awareness of the impact of various policies and regulations on their livelihoods, and of the benefits of removing trade barriers and harmonizing laws and regulations; (b) enhance traders' and producers' understanding of their role in triggering policy and institutional change; (c) reinforce trader and producer associations' lobbying capacity; and (d) help associations identify forums and other means to express their members' needs. It is also important for the CATALIST project to facilitate the adoption of regulatory frameworks in Rwanda. This can be done by helping MINAGRI and the Rwanda Bureau of Standards develop regulatory frameworks and train enforcement staff.
8. **Reduce the Delivery Cost of Fertilizer and Seed—**The CATALIST project can reduce the cost of seed and fertilizer by organizing regional workshops to bring traders from Tanzania, Burundi, Uganda, Rwanda, and East Democratic Republic of Congo (DRC) together to build business linkages. For instance, linking seed traders from Rwanda to those in Uganda can improve the availability of seed in Rwandan markets. Fertilizer costs can be reduced by consolidating fertilizer importation orders (regional procurement to capture economies of scale).

III. Implementation Arrangements

The action plan matrices, presented below, were developed to complement the proposed measures in addressing the policy and market development constraints in Rwanda. These matrices should show the CATALIST project *how* to implement the recommendations.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**
1. Groundwork	□ Conduct sub-sector analysis (this has already been completed by the output market assessment team) to identify actors and functions in each commodity chain. □ Characterize project target areas. □ Selecting project stakeholders and partners. □ Identify site-specific constraints. □ Develop quantifiable indicators for monitoring and evaluation of project performance. □ Collect baseline data on project beneficiaries. □ Select an appropriate technology package: seed, fertilizer, and field management practice. This can be done by reviewing agroeconomic response data.

2. Strengthen farmers' incentives and capacity to use high-yielding inputs	□ Revise fertilizer recommendations.
	□ Strengthen the capacity of extension agents assigned to project areas.
	□ Organize farmer field schools.
	□ Conduct field days in established demonstration sites.
	□ Organize market day demonstrations.
	□ Produce technical promotion material.
	
	□ Identify farmers' training needs.
	□ Prepare training materials.
	□ Organize training programs on:
	  □ Input handling and storage, seed certification, growing conditions, plant diseases, and buying and safely applying quality inputs.
	  □ Basic accounting, bookkeeping, credit sources, contract negotiations, dispute settlements, planning, marketing, and business plan development.
	  □ Approaching financial institutions, preparing credit application documents, managing credit, and profitably implementing farming activities.
	  □ Effective farmers' participation in processes of policy formulation, planning, and implementation.
	  □ Policy issues and advocacy capacity.
	  □ Roles that trigger policy and institutional change.
	  □ Helping associations identify forums and other means to express their members' needs.
	□ Follow up.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**

3. Form crop-specific agribusiness clusters for maize, wheat, and potato commodities	□ Identify key stakeholders in each commodity chain using the output assessment findings.
	□ Prepare workshop materials/plans.
	□ Organize workshops to bring the following stakeholders together and develop business linkages:
	    □ *Farmers*: this would include farmers in suggested project areas (Gikongoro, Gitarama, and Kigali Rural).
	    □ *Local entrepreneurs*: input suppliers, processors, and traders of agricultural products, stockists and transporters, farmers, and farmer cooperatives involved in input provisioning, processing, or marketing agricultural products.
	    □ *Lending institutions*: especially Peoples Bank and Vision Finance.
	    □ *Business development services*: public or private organizations (research institutions, NGOs, extension services, rural development projects, market information structures) that provide information on markets and technologies, training, or specific business advice.
	□ Provide information during the workshop to stakeholders on drafting contracts and the negotiation process.
	□ Facilitate post-workshop meetings between stakeholders to formalize business linkages.

4. Establish input voucher schemes	□ Identify roads and fields in project area. □ Select beneficiaries. □ Identify dealers to act as distribution points. □ Train dealers (see next component). □ Issue vouchers upon completion of roads and terraces. □ Pay dealers.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**

5. Develop dealer's capacity to supply quality inputs at low prices	☐ Identify agri-input traders.
	☐ Operationalize fertilizer trader associations.
	☐ Develop seed trader associations.
	☐ Encourage the registration of agri-input traders.
	☐ Encourage the registration of inputs imported, manufactured, and sold in Rwanda.
	☐ Encourage private sector involvement in policy formulation, planning, and implementation.
	☐ Help traders articulate needs in terms of policy change.
	☐ Facilitate traders' lobbying to simplify registration procedures and trade licenses.
	☐ Encourage dealers to provide services (advisory, credit) to farmers.
	☐ Identify traders' training needs.
	☐ Prepare training materials.
	☐ Organize training programs for strengthening dealers' technical knowledge and business skills.
	☐ Follow up with trader associations.
	☐ Improve access to business finance by training:
	  ☐ Staff of commercial banks and Peoples Bank on the technical aspects of agri-input business and lending mechanisms that are available in other countries for agri-input traders.
	  ☐ Private traders in business organization and management; investment analysis and feasibility studies; writing project proposals; loan applications; lending mechanisms to farmers associations and farmers.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**

6. Improve farmers and traders' access to credit	☐ Establish Structured Commodity Finance Facilities in each project area:
	  ☐ Identify countries that have established such facilities.
	  ☐ Draw lessons.
	  ☐ Develop action plans and begin implementation.
	☐ Organize meetings and interactions between farmers and bank staff to remove the misunderstanding and mistrust between the two.
	☐ Training bank (Peoples Bank, Vision Finance) staff on:
	  ☐ Basics and nature of agricultural production.
	  ☐ Characteristics of agri-input businesses and farmer associations.
	  ☐ Nature of the demand for agricultural credit.
	  ☐ Types of collateral available to agricultural entities and best practices to assess their credit worthiness.
	  ☐ Timely evaluation of the project submitted by farmer associations and agri-input dealers and importers.
	  ☐ Timely evaluation of the collaterals requirements.
	  ☐ Providing constructive feedback to agricultural entities so that they learn from the process.
	  ☐ Timely approval or rejection of loan application.

7. Create an enabling policy environment	☐ Organize Training Workshops to:
	  ☐ Build traders' and farmers' associations' awareness of the impact of various policies and regulations on their livelihoods and of the benefits of removing trade barriers and harmonizing laws and regulations.
	  ☐ Enhance traders' and producers' understanding of the role they can play to trigger policy and institutional change.
	  ☐ Reinforce trader and producer associations' lobbying capacity by helping their members articulate their needs.
	  ☐ Help associations identify forums and other means to express their members' needs.

8. Reduce the delivery cost of fertilizer and seed	☐ Organize regional workshops to bring traders from Tanzania, Burundi, Uganda, Rwanda, and East DRC together to build business linkages.

Roadmap for the CATALIST Project to Strengthen Agricultural Input Markets in Rwanda

I. Introduction

Agricultural sector productivity gains lie at the heart of a robust agricultural economy and pro-poor growth in Rwanda. Given the distinctive role that agriculture plays in Rwanda's economy and the livelihoods of the rural population, the country cannot reduce poverty and hunger without stepping up agricultural activities by means of intensifying the use of productivity-enhancing inputs. With poverty concentrated in rural areas and scarce land resources, raising agricultural productivity and creating rural non-farm employment are crucial for increasing rural incomes. Agricultural intensification can reverse the downward spiral of overexploitation, resource depletion and social unrest. However, it calls for adequate and efficient use of agro-inputs and well-functioning input markets.

To speed up broad-scale agricultural intensification in Central Africa's Great Lakes Region, the Dutch Embassy in Rwanda has awarded IFDC a 5-year project called Catalyze Accelerated Agricultural Intensification for Social and Environmental Stability (CATALIST) in Central Africa's Great Lakes Region. CATALIST proposes a radical regional approach to agricultural development. The existing smallholder farming systems are unsustainable and oriented toward self-sufficiency. The project seeks to change those into sustainable market-oriented production systems through the adoption and efficient use of external inputs, intermediate forms of mechanization, and product chain development.

At the onset of the CATALIST project, a team was sent to Rwanda to provide the staff with in-depth insight into agricultural intensification and market development opportunities. The team was to draft a need-based and practical action plan for the development of fertilizer and seed markets. The main goal of the action plan is to propose a set of measures to develop well-functioning input markets—ones that ensure the availability and affordability of adequate and timely supply of good quality inputs at low prices to farmers in Rwanda. The key issues addressed in the assessment of agricultural input markets (AIMs) in Rwanda are:

- Current and past consumption levels and application rates of fertilizer and seed.

- Geographical outreach of retailers and their characteristics.
- Delivery and quality of extension service.
- Production/import levels and costs.
- Access to finance by farmers and traders.
- Government policies, regulatory and legislative framework.
- Donors' programs and impacts.

The assessment was conducted during November-December 2006. The assessment team included:

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This report is the result of a synthesis and examination of the information gathered during the assessment. Section II presents an assessment of agricultural input markets in Rwanda. This is followed by proposed recommendations to improve the functioning and performance of AIMs in Rwanda in Section III and Implementation Arrangements in Section IV. Detailed information on the fertilizer and seed sector assessments along with an analysis of access to agri-input financing is presented in Annexes IV, V, and VI, respectively.

II. An Assessment of the Agricultural Input Markets in Rwanda

The assessment of AIMs reveals that agri-input use in Rwanda is among the lowest in Africa. Less than 5% of farmers use fertilizer and less than 2% use improved seeds. Reasons for such use rates include the unavailability of quality agri-inputs at the right time in rural areas, their costs, farmers' purchasing power, inadequate extension services, and the weakness of the private sector. As a result, the range of fertilizer products that are available in the markets is extremely limited. Fertilizer recommendations are outdated. The private sector does not seem confident of appropriate returns from agri-input business due to uncertainty of demand and policies, business risks in selling seasonal products, and high transaction costs including high interest rates and bank charges, foreign exchange fluctuations and depreciations, and long delivery period (usually 3 to 4 months). These constraints are compounded by extremely high transport cost.

This section provides a summary of the assessment findings. Findings can be summarized under three groups: policy issues; market development issues; and donors' programs. In addition to these findings, important complementary and detailed information is provided in the Annexes. For instance, information on the current Rwanda socioeconomic context is presented in Annex II. Annex III provides a description of recent developments and new initiatives in agricultural policy in Rwanda. More details on the structure of the fertilizer and seed sectors can be found in Annexes IV and V. Annex VI provides an account of access to agri-input financing by traders and farmers.

Policy Issues

Policy issues affecting the functioning and performance of AIMs can be grouped into macro policy issues and policy-induced uncertainty resulting from various government interventions despite the liberalization of agri-input markets.

Macro Policy Issues—Given Rwanda's dependency on imported agri-inputs, depreciating and fluctuating exchange rates have a direct impact on the local prices of fertilizer, seed, and crop protection products (CPPs). It translates into risk and uncertainty for agri-input importers. Unless there are efficient banking sectors to provide larger loan sizes to agri-input importers on favorable terms and conditions to finance the purchase of foreign currencies, devaluations will result in reduced sizes of imports and increases in the price of agri-inputs. Importers will undoubtedly pass the whole price increase to farmers. Between 2000 and 2006, the exchange rate depreciated from 430 RWF/$ to 566 RWF/$ in 2006. As of December 2006, the Rwandan Franc stood at RWF 571 per $ against RWF 554 in 2005, an appreciation of 3%, due to the influx of foreign aid in the country.[1]

Therefore, despite substantial improvements in macroeconomic performance since 1995, Rwanda's economy remains vulnerable to external shocks because the country has among the lowest saving rates (3% of gross domestic product [GDP]) in Africa and relies heavily on foreign aid to finance the government budget. Thus far, the Central Bank has managed foreign aid flows adroitly to prevent appreciations in the national currency, which usually result in increases in the price of tradable goods such as fertilizers, seeds, and CPPs.

In spite of this good management, the depreciation in the exchange rate is a contributing factor to increased input prices for farmers in Rwanda. In addition, condition and price exclusion (inappropriate product design; financial products are too costly) make access to agri-input finance extremely difficult for agri-input traders and farmers. Extremely high interest rates, ranging between 8% and 17%, reduce the scope of agri-input traders' initiatives. This situation is partly due to large government borrowings from the banking system, which reduce banks' incentives to decrease the cost of borrowing capital since their biggest borrower, the government, is essentially risk-free. This situation is compounded by high and unstable inflation rates due to domestic electricity shortages, rising fuel costs, and increased food prices brought about by poor weather and consequently low harvests.

1 Republic of Rwanda MINECOFIN, April 2005, *Annual Economic Report*.

Finally, the business climate for agri-input traders remains non-conducive to trade despite the national governments' initiatives to reduce trade barriers. For instance, as shown in Table 1, traders need to submit 14 types of documents in order to import goods. It takes an average of 94 days in Rwanda from the time contractual agreements are signed to when the goods are delivered.[2] Import costs are high and amount to $4,080 per dry-cargo, 20-foot, full-container load (approximately $192/ton).

Table 1. Trading Across Borders (2006)

Indicator	Rwanda	OECD
Documents for export (number)	14	4.8
Documents for import (number)	20	5.9
Time for export (days)	60	10.5
Time for import (days)	95	12.2
Cost to export (US $ per container)	3,840	811
Cost to import (US $ per container)	4,080	88

Note: The container is a dry-cargo, 20-foot, full-container load (21 tons).

Uncertain Policy Environment—The recent widespread recognition that growth and poverty reduction must begin with agricultural intensification and commercialization, as shown by national and international commitments to the New Partnership for African Development (NEPAD) Comprehensive Africa Agricultural Development Program's (CAADP) targets, has fundamentally altered Rwanda's policy scenes. Today, there are no longer questions pertaining to whether fertilizer, improved seeds, and CPPs are important for food security and economic growth. The most important question is *how* to rapidly increase the use of agri-inputs. In line with the market liberalization policy, the GOR passed a ministerial decree banning the distribution of free or subsidized inputs in 1999. This was followed by the enactment in 2000 of two laws regulating the importation of agricultural inputs. The first one eliminated import duty and another exempting all imported agricultural inputs from sales tax all for 3 years. In 2006, the GOR prepared and submitted a national fertilizer strategy to the Africa Fertilizer Summit, which was convened by NEPAD and implemented by IFDC in Abuja, Nigeria. The GOR set to raise national average inorganic fertilizer use from 10.2 kg/ha to 42 kg/ha within the next 5 years and outlines strategies to reach this target. One such strategy included the call for the GOR to procure

2 World Bank, 2006, *Doing Business Report*.

fertilizers in volume and sell to farmers for a period of 5 years after which the effective demand would have developed and the private sector would then fully take over fertilizer marketing and distribution functions.

The rationale for the government's intervention in the fertilizer sector was to create an effective demand for fertilizer and demonstrate to the private sector that there was no justification for the high cost of fertilizer. The GOR perceived the private sector as being capable but unwilling for rent-seeking purposes of supplying inputs in a cost-effective manner. Thus, as a follow up to the above draft strategy in October 2006, the GOR, with the support of Clinton Foundation, arranged the procurement and importation of 38,000 tons of fertilizer for the 2-year period 2006-08. As of December 2006, the fertilizer had been offered for sale at fixed prices at an ex-Kigali warehouse to all stakeholders including cooperatives, private dealers, producer associations, and tea and coffee parastatals. The government was now faced with the problem of how to distribute such a quantity of fertilizer since only four cooperatives had placed orders as of December 2006. The private sector clearly showed no interest in purchasing fertilizer from the government because they were not offered to buy the fertilizer on preferential terms and thus had no incentive to purchase from the government. In addition, traders argued that they were left with excess inventory and that (a) there was no significant price differential between their selling price and that of the government and (b) if they had access to foreign exchange on the same terms and conditions as the government, the price differential would not exist.

While the effects of this intervention remain to be ascertained, what is clear is that the private-sector operators now view the sector with greater risk and uncertainty and know that such interventions are unsustainable. The government's intervention in the sector was neither accompanied with efforts to strengthen the capacity of the private sector nor to inform them beforehand of its intentions to procure fertilizer. As a result, the environment between the government and the private sector is now one of mistrust and this will have a major impact on fertilizer imports and the future supply of fertilizer in the country.

Market Development Issues

Besides an enabling policy environment, well-functioning agri-input markets require adequate access to finance, market information, human and physical capital, and effective legislative and regulatory mechanisms.

High Procurement Cost of Fertilizer

As shown in Table 2, inland transportation costs contribute significantly to the price of fertilizer in Kigali, accounting for 26% of the price of fertilizer in Kigali.

Table 2. Break up of Fertilizer Importation Cost by a Private Importer, 2005

	Cost Item	% of total cost
1	f.o.b. (Black Sea) Sea freight Bagging + discharge	NA
	c.i.f.–Mumbasa/Dar es Salaam	64.83
2	Transportation Mombassa/Dar es Salaam to Kigali (road)	25.60
	Total landed cost—Kigali	-
3	Hidden costs (10%)	
4	Deposit Magerwa custom fee	4.15 0.68
5	Parking fee—Magerwa	0.28
6	Bank charges	0.90
7	Insurance fee for transportation	0.30
8	Unloading cost	0.50
9	Warehouse rent	1.72
10	Staff cost	1.02
	Total cost sale price ex-Kigali	100.00

Source: A private importer based in Kigali.

Lack of Access to Finance—The banking sectors in Rwanda operate in an environment characterized by macroeconomic instability, weak legal systems and a dearth of credit information. World Bank Doing Business (2006) indicators, shown in Table 3, indicate that property registration requires the completion of five procedures, taking an average of 371 days and costing 9.6% of the property value. The Legal Rights Index ranges from 0 to 10, with higher scores indicating that those laws are better designed to expand access to credit, is 1 in Rwanda.

The Credit Information Index[3] (ranges from 0 to 6), with higher values indicating that more credit information is available from a public registry or private bureau, is 2 for Rwanda. To enforce commercial contracts in Rwanda, banks would need to engage in 27 types of procedures, taking an average of 310 days, and costing 43.2% of debt.

Table 3. Access to Finance Indicators (2006)

Indicator	Rwanda	OECD
Registering Property (2006)		
Procedures (number)	5	4.7
Time (days)	371	31.8
Cost (% of property value)	9.6	4.3
Getting Credit		
Legal Rights Index	1	6.3
Credit Information Index	2	5.0
Public registry coverage (% adults)	0.2	8.4
Private bureau coverage (% adults)	0.0	60.8
Enforcing Contracts (2006)		
Procedures (number)	27	22.2
Time (days)	310	351.2
Cost (% of debt)	43.2	11.2

The non-conducive environment within which lending institutions operate in Rwanda translates into a small and weak banking sector, ineffective financial systems, and a small supply of agricultural credit. As a result, despite the increasing trend in investment activities, the involvement of the private sector in agricultural financing remains marginal. Farmers and agri-input traders face enormous challenges in obtaining loans even with Micro Finance Institutions (MFIs). The findings of this assessment indicate that farmers and agri-input traders are excluded from financial services in four ways: (1) access exclusion, e.g., through risk screening; (2) condition exclusion—product design inappropriate for the needs of farmers and agri-input traders; (3) price exclusion—financial products too costly; and (4) self-exclusion—some farmers and traders are not applying in the belief that they would be refused.

3 The Credit Information Index measures the scope, access, and quality of credit information available through public registries or private bureaus. World Bank. 2006. Doing Business Report.

Inadequate Physical Capital—One can witness the degradation of rural roads and the destruction of marketing infrastructures (warehouses; input shops) throughout the country. Bad road conditions result in delays in transit and high transport costs. The truck drivers are required to make some unauthorized expenses at cross inter-country checkpoints. Although security concerns were a serious issue in the 1990s, the situation has now greatly improved.

Inadequate Knowledge of Farmers—Farmers throughout the country critically lack knowledge on the safe and proper use of agri-inputs, application rates and the suitability to their cropping purposes, and seed production techniques. Farmer associations' ability to transfer adequate knowledge to their members is limited by the fact that they lack the technical knowledge (seed certification, growing conditions, plant diseases, and buying and safely applying quality inputs); business skills (basic accounting, bookkeeping, credit sources, contract negotiation, dispute settlements, planning, and marketing); and good governance (transparent policymaking and decision-making, openness to diversity of opinions, frequent communications, solid financial controls, good accounting system, and independent audits).

Weak Extension Systems—There is uncertainty regarding whether or not an extension service exists in Rwanda. In 2001, through the decentralization process, MINAGRI's role became one of policy and strategy formulation. Since February 2005, extension services have become the responsibility of two semi-autonomous bodies under MINAGRI—Rwanda Agricultural Development Authority (RADA) and Rwanda Animal Resources Development Authority (RARDA). These institutions have the mandate to conduct all promotional activities related to crop production (agricultural inputs, agronomic techniques, soil conservation, water protection, and post-harvest activities) and conducts activities for the promotion of the entire sector of animal resources development. However, these institutions lack the technical and financial capacity to disseminate knowledge to the farming community. In a survey conducted by MINAGRI in 2002, the public sector stakeholders considered extension services as important as research on fertilizer use. However, recent evidence suggests that RADA may be addressing some of its shortcomings. For instance, in 2006 rice-producing farmers affirm receiving frequent visits from RADA's extension service to help them set up demonstration plots. Currently, RADA is also organizing fertilizer demonstrations in all rural sectors (almost 400).

Inadequate Knowledge and Business Skills of Agro-Dealers—There is a serious shortage of critical human resource in the area of agribusiness development in Rwanda. The number of importers, wholesalers, and retailers involved in the input supply chain in Rwanda is very small with estimates varying between 150 and 200 operators. This considerably limits the availability and accessibility of inputs in rural areas because most farmers have to travel more than 20 km to purchase inputs. In addition, agri-input traders critically lack knowledge on the products they market and of banking procedures, limiting their ability to advise farmers and their capacity to access credit. Finally, traders' marketing and business skills (business plans, record keeping) are weak, which is a crucial constraint to business development.

Inadequate Research Capacity—The inadequacy of national research capacity, shown in the inexistence of soil fertility research, little know-how and technological innovations, and dearth of scientists, is an important constraint in the promotion of agri-input use. Rwanda had, as of 2000, 245 agronomists working for 154 communes for agricultural development including promotion of input use. These weaknesses translate into shortages in basic seed production, which farmers' associations throughout the country complain arduously about as the most limiting factor in increasing production, especially of maize.

Weak Legal and Regulatory Systems—Legal systems in Rwanda are weak and still in their infancy stage. Legal systems are rigid with lengthy statutorily based processes that create uncertainty with respect to the predictability, speed, and fair enforcement of contracts. The costs involved in the enforcement of contracts deter lending institutions from providing loans and decrease agricultural entities' incentives to repay loans. The prevalence of such non-conducive environments within which lending institutions operate in Rwanda translates into a small and weak banking sector, ineffective financial systems, and a small supply of agricultural credit.

Inadequate Quality Control—Rwanda is faced with heavy supply of substandard agri-inputs, illegal border trade, and weak quality assurance systems. These constraints seriously hamper market development. The Rwanda Bureau of Standards (RBS) inspects all fertilizers imported into the country at customs (MAGERWA) for a fee of 2% of c.i.f. price. Importers are required to produce a certificate of analysis from the manufacturer and the product expiration date must be within 50% of the specified time frame. Inspections take a month and bad products are usually destroyed. Meanwhile, importers need to pay storage fees to the MAGERWA. The storage charges before 2006 were 4% of c.i.f. This has been changed to a fee of 7 RWF/kg per day for the first 15 days and 1 RWF/kg per day for any additional days. RBS has drafted technical specifications for the requirements (physical, chemical, labeling, and certificate of analysis), methods of sampling, and testing for fertilizer; however, this draft has not been finalized yet. Farmers' associations usually suspect products bought from retailers of being of bad quality and pay 5,000 RWF for ISAR to test the quality of the purchased fertilizer. Regarding seeds, although the overall policies of GOR are generally favorable, there are still some weaknesses in the policy, legal, and regulatory environment; for instance, the lack of formal variety release procedures and the absence of plant variety protection (PVP) legislation. RADA is currently developing a national seed policy and plans to draft a seed plan for the next 5 years. RADA's National Seed Service bears the responsibility of overseeing all seed inspection functions. However, farmers have reported that the service only inspects how multiplication fields are set up but doesn't inspect seeds. Seed laws exist but are hardly enforced.

Lack of Market Information Systems—Currently, there are no adequate market information systems established in Rwanda. The current system of collection and dissemination of information on availability and market price of inputs and crop produce in domestic and regional markets is grossly insufficient and needs to be upgraded. MINAGRI's division of statistics regularly collects very good information on the price of agri-inputs in all provinces of Rwanda, but dissemination of this information is very weak. There is an urgent need to provide transparency in Rwanda national markets. Farmers, agri-input traders, and the government critically need access to reliable information on the quantity and price of agri-inputs in the country.

Weak and Uncoordinated Logistics Planning—The existing system of fertilizer warehousing and delivery is generally unplanned and unsystematic. In Rwanda only one dry port, Kigali, is used for inward clearance and delivery of cargo. All formalities related to custom clearance, quality inspection, interim-storage, outward movement to customer stores, and secondary movement to dealers/retailers/co-ops/farmer organizations, etc., are to be completed in Kigali for all goods imported to Rwanda. Such a situation results in overuse and choking of facilities, delays in delivery of fertilizers, and adds to the cost of fertilizer importation. Inspections can be made at other locations, but the cost and shortage of inspectors curtails this practice by the private sector importers.

Donors' Programs in the Agri-Input Markets

The two most prominent initiatives to promote the development of the seed and fertilizer markets in Rwanda are:

1. The World Bank's Agriculture and Rural Market Development Project (ARMDP).
2. The Belgian Technical Cooperation and GOR's Support to the AFSR Project.

These projects are described in detail in Box 1 and Box 2. In addition to these projects, several international donors, including the World Bank, IFAD, Arab Bank for Economic Development in Africa (BADEA), the Netherlands, and the United States Agency for International Development (USAID) have been active in improving the availability and access to agricultural finance in Rwanda.

Details of the projects implemented by these donors are listed in Table 4. As of December 2006, the mechanisms used to increase access to agricultural credit were Lines of Credit (LOC) and Credit Guarantee Funds. These included: (1) the Rural Investment Facility (RIF), the Preferential Refinancing Facility (PRF) for agricultural exports; (2) the Export Promotion Fund (Cash and Export Crop Development Project [PDCRE]); (3) the Guarantee Fund from the project PADEBL; (4) USAID Agribusiness Development Fund (ADB); (5) STABEX special export promotion program for coffee, tea, and horticulture; and (6) the Agricultural Guarantee Fund (AGF).[4]

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4 World Bank Rwanda. 2001. Rural Sector Support Project. Africa Regional Office. Project ID RWPE64965. Project Document.
International Fund For Agricultural Development (IFAD). Rwanda: Project for Support to Operationalize the Strategic Plan for Agricultural Transformation Appraisal Report—Working Paper 3: Institutional Support to Agriculture Sector.
Le Banquier. Juin 2006. Magazine d'Information de la Banque Nationale du Rwanda. Numero 10/2006.

Box 1. The World Bank's Agriculture and Rural Market Development Project (ARMDP)[5]

Between 2000 and 2004, the World Bank's Agricultural and Rural Market Development Project implemented a 3-year program aimed at: facilitating access to credit for modern farm inputs; providing technical advisory services to farmers on the use of modern farm inputs; encouraging the emergence of a sustainable modern input import and distribution system; and encouraging investments by private traders in marketing services in rural areas. The project established three mechanisms toward the achievement of these objectives: a **Line of Credit** to mobilize the private sector in the import and distribution of inputs to farmers; an **Input Credit Insurance Facility** (ICIF) to provide incentives to private traders to sell fertilizers on credit; and a **Small Farmer Input Credit Facility-revolving fund** (SFICF) to ensure broad access to credit to farmer groups. Complementary activities included advisory services to farmers, producers' organizations, and specialized local organizations for the adoption of modern inputs and access to credit and multiplication and distribution of improved seeds. Training programs and demonstrations were also conducted to improve farmers' technical knowledge of modern inputs. In this manner, the project aimed to address both supply and demand-side constraints.

The project was temporarily successful in promoting private sector-based fertilizer distribution systems in Rwanda, complemented by the removal of import taxes and subsidies by the GOR. The project resulted in an increase in the number of importers of agricultural inputs from 5 to over 30. However, the facilities weren't fully utilized because the information about their existence wasn't properly disseminated to project stakeholders and beneficiaries. The project suffered from problems of information transfer to project stakeholders. Importers in Kigali received information on the project late and many importers outside Kigali were not aware of the existence of a Line of Credit. In addition, banks were still lending at high interest rates. Commercial banks were unenthusiastic about using the LOC to refinance their operations because they considered the 4% margin too low. This led to the BNR authorizing them to set their own interest rates (versus the established 9% initially) from August 2001. Finally, the rigid lending procedures discouraged the participation of several traders and farmers' associations. The lessons learned from this project include widely disseminating information on credit schemes to stakeholders and beneficiaries prior to project launching; providing information to importers outside Kigali; enhancing the skills of local bank staff on procedures and management of inputs credits; sensitizing local leaders on credit activities; and monitoring credit activities regularly using specific criteria.

Regarding the demand-side activities, the training and demonstration activities had far more success. In late 2001, lead farmers had established about 2,000 fertilizer demonstration plots on their farms in 18 project districts and 6 provinces (Cyangugu, Gikongoro, Gitarama, Kibungu, Kigali Rural, and Gisenyi). Fertilizer use was found to be profitable (VCR>2) for Irish potatoes and maize in DAP + urea treatments, suggesting that promoting fertilizer use on these crops could be taken up on a nationwide scale.

5 World Bank Rwanda. 2001. Rural Sector Support Project. Africa Regional Office. Project ID RWPE64965. Document de projet.

Box 2. The Belgian Technical Cooperation and GOR's Support to the Rwandan Seed Commodity Chain (AFSR) Project[6]

On June 3, 2005, the AFSR project was launched through direct bilateral cooperation between Belgium and Rwanda with a budget of 6.5 million EUROS. The National Seed Service (SNS) is called upon to play the central role in this project. The project seeks to remove the major constraints hindering seed commodity chain development. The objective of the AFSR project is the increased and sustained production of quality seeds, suited to the local agro-biological and climatic conditions, produced in adequate quantities, and accessible to farmers. The specific objectives of the project are to: (a) strengthen the institutional and organizational framework of the seed commodity chain (associations, traders, farmers, transporters); (b) strengthen private sector seed production contributing to improving food security; and (c) ensure seed quality throughout the sector.

The first project objective is one of paramount importance given the significant gaps within the critical functions (stakeholders' consultation and sharing of information; regulations and arbitration) of the seed commodity chain. This underscores the fact that the functions of stability of supplies, availability, and accessibility of seeds are not entirely satisfied by the seed commodity, resulting in the problem of seed insecurity remaining virtually chronic. The project identified the lack of organization in the seed commodity chain as the central problem of the sector. A study on effective demand for seed and the profitability of seed use found that it was profitable for potato, maize, and rice. The key project activities include:

(a) **Create a favorable environment for a better organization of seed production and marketing activities and actors** by drafting annual seed action plans and modalities for their implementation (NGOs will be involved in this activity). This is to be done through the establishment of a support unit within the National Seed Service (SNS), the identification of key actors in the sector, the organization of a workshop and brain-storming sessions, and the conduct of studies on the sector. The first study is to identify Rwandan seed sub-sector operators while the second one is to focus on effective demand and economic profitability of seed production.

(b) **Establish an information system for the seed sector**—Support the registration of private seed producers and certified seeds, establish an information system, conceptualize and disseminate a letter of information on the seed sector to various stakeholders.

(c) **Create a favorable environment for the transfer of seed production and marketing activities to the private sector**—This would be done through training programs targeted to strengthen private operators' technical and business skills and supporting activities to improve their access to production and marketing infrastructure (multiplication fields, agricultural equipments).

(d) **Establish financing mechanisms adapted to seed sector**—The project will establish within the SNS a revolving fund to support the production of basic and certified seeds.

(e) **Organize the production of breeder seeds within ISAR**—This will be done by providing ISAR with a revolving fund for breeder seed production and strengthening their capacity (physical infrastructure; laboratory equipments; breeder seed production equipment).

(f) **Implement a policy for the promotion of commercial seed quality**—This is to be done by the SNS through the publication of procedural manuals for the control of multiplication fields, the follow-up of operators after harvest and the control of laboratories. This activity will also include the training of staff to strengthen and operationalize the regional units for seed quality promotion.

6 AFSR. 2001.

Table 4. Public Sector Initiatives

Project	Financing Agency	Begin-End	Type	Amount in RWF	Percentage
				(billion)	
PDMAR	World Bank	2000-2003	Loan	2.75	4.0
	World Bank	2001-2006	Loan	26.13	38.5
RSSP—RIF/PRF	Rwanda	2001-2006	Counterpart	0.59	0.9
	ADB	2001-2006	Loan	5.85	8.6
PADEBL	Rwanda	2001-2006	Counterpart	1.31	1.9
	IFAD	2003-2009	Loan	8.46	12.5
PDCRE	BADEA	2003-2009	Loan	3.78	5.6
	Rwanda	2003-2009	Counterpart	0.91	1.3
STABEX	EU	2002-2007	Grant	12.46	18.3
AGF	Netherlands			2.760	4.1
	Rwanda			0.100	0.1
ADF	USAID			2.805 ($5.1 million)	4.1
Total				67.905	100.0

- **The Rural Investment Facility**—RIF is a FRW 1.760 billion project that provides financial incentives through investment cost subsidy to qualified private sector operators. This includes farmer groups, who are willing to invest in activities with substantial economic or environmental externalities. For instance, investment by private entrepreneurs in value-adding activities in the processing sector would generate collective benefits in terms of providing incentives for the intensification of crop and livestock production activities. The RIF finances sub-projects in the following activity areas: (a) the operation of farmer-owned Commercial Enterprises and Technical Support Entities (CETSE); (b) processing, storage, and trading of crop, livestock, and forestry products; (c) transport infrastructure construction and maintenance activities; (d) acquisition of appropriate (adapted) means of rural transport (AMT) by farmers to be tested under pilot activities; (e) investment by private operators in the construction and/or maintenance of AMTs and transport infrastructure; (f) investment by private operators in agricultural services delivery activities, and (g) selected pilot off-farm productive activities. A total of 220 projects were financed with an equivalent of US $3,073,001, representing only 40.97% of the total amount available. The financed activities include cattle (39.54%), industrial crops (coffee, tea, and pyrethrum) (28.63%), processing (13.72%), and food crops (4.14%).
- **The Preferential Refinancing Facility**—PRF is a fund constituted of reimbursements of consolidated debt of the GOR from the BNR. This fund covers medium- and long-term loans for agricultural export and agro-industrial promotion activities. This facility was

established in June 2003 to finance agricultural processing and export activities. It is financed through the government consolidated debt owed to BNR. By July 2004 a total of 15 projects, including 9 cooperatives of pyrethrum farmers had been refinanced for a total amount of 1,024,612,000 RWF.

- **PDCRE Export Promotion Fund** is an IFAD fund earmarked by the GOR to refinance export and processing activities in the provinces of Gikongoro, Kibuye, Kigali, Ngali, and Kibungo. BNR refinances 100% of all long-term loans and short-term loans for SMEs and 75% of all short-term loans for tea and coffee producers.[7]
- **The Credit Guarantee Fund of PADEBL**—The Dairy Breeding Cattle Support Project is a FRW 300 million fund provided by the ADB and managed by the Central Bank to guarantee loans provided by participating financial institutions to dairy cattle projects. In case of default, private banks are reimbursed 50% of the principal and interest over a maximum period of 3 years.
- **USAID Agribusiness Development Fund**—In 2006, USAID struck a $5.1 million agribusiness deal with the Bank of Kigali and the Rwanda Commercial Bank to share risk and overcome the credit problem that hinders the growth of the rural sector. The money is to be disbursed over a 3-year period (2006-2009) through these two banks to encourage Rwandan private banks to lend money to rural agribusinesses. However, this initiative is especially geared toward cash crops, because the loans are expected to be allocated to the coffee industry. Other products that could benefit from this scheme include tea, pyrethrum, chili peppers, passion fruit, and essential oils. In case of default, the program will support 40% of the loan.
- **The Agricultural Guarantee Fund** was established by the GOR within the framework of the National Poverty Reduction Program[8]. The Fund has a sum of FRW 2.869 billion, of which 60% is provided by the Netherlands Cooperation and 40% by the GOR. The fund will serve as a palliative measure for insufficiency of collateral, because it will guarantee 30% to 50% of loans to the agricultural sector from 2005 to 2008. This mechanism aims at helping agricultural entities to overcome the constraint of collateral requirements. Its main

7 International Fund For Agricultural Development (IFAD). Rwanda: Project for Support to Operationalize the Strategic Plan for Agricultural Transformation Appraisal Report – Working Paper 3: Institutional Support to Agriculture Sector.

8 Le Banquier. June 2006. *Magazine d'Information de la Banque Nationale du Rwanda*. Numero 10/2006.

goal is to reduce the risk a lending bank may encounter in providing agricultural loans. The fund is managed by the Central Bank. Partner institutions include the Bank of Kigali, BCR, FINA Bank, BRD, COGES Bank, UBPR, and several MFIs. All agricultural activities from production, processing, and distribution, including the marketing of agri-inputs, qualify for this program.

III. Proposed Measures to Improve the Performance and Functioning of AIMs in Rwanda

The constraints prevailing in agri-input markets point to the fact that seed and fertilizer supply systems are in a subsistence and emergence development stage, respectively, in Rwanda (Table 5).[9] In this case, the critical elements for market development are absent or very limited. There is limited demand for improved seeds and fertilizer, disorganized markets, and limited skills in the public and private sector, resulting in excessive transaction costs.

How does Rwanda move from this subsistence/emergence stage of market development to a growth and maturity stage? These target stages are characterized by (1) a vibrant seed industry producing certified seed and a large number of farmers using improved seeds and (2) increased use of fertilizer on food crops using economically optimum levels. According to IFDC's Strategic Framework for African Agricultural Input Supply System Development, since Rwanda's agri-input sector is a subsistence/emergence phase, priority requirements lie in those activities that will initially:

(a) Stimulate demand.

(b) Establish private agro-dealer networks.

(c) Reduce the delivery and marketing cost of agri-inputs.

9 IFDC. 2000. *A Strategic Framework for African Agricultural Input Supply System Development*. Technical Bulletin IFDC-T63.

Table 5. Input Supply System Development Stage in Rwanda

Input	Current Development Stage	Target
Seed	**Subsistence**: no commercial seed multiplication and distribution; farmers retain own seed; government produces foundation seed in limited quantity; improved seed is usually available through costly and inefficient single channel state-controlled scheme.	**Growth/Maturity**: a vibrant seed industry develops; private firms produce certified seed with government support; a large number of farmers use improved seeds.
Fertilizer	**Emergence:** significant use of fertilizer on cash crops; limited use on food crops, where farmers rely on manure to maintain soil fertility.	**Growth/Maturity:** increased use on food crops; farmers use economically optimum levels; farmers are knowledgeable about fertilizer attributes, requirements, timing and methods of application; dealers provide informal extension services.

IFDC's strategic framework is based on the principle that efficient input supply systems are driven by effective demand from farmers. Demand-pull factors include: profit, level of risk, and level of non-farm income. In this context, the private sector plays the leading role in input supply while the government has the crucial role of providing public goods and services and creating enabling policy, legislative, and regulatory environments. The sustained commitment of the government to policies and their implementation ability, stability, and consistency of policies, and reliable, transparent, accountable, and cost-effective legal and regulatory systems are critical elements for the successful promotion of competitive agri-input supply systems.

It is within this framework that several recommendations were formulated to contribute toward the achievement of the CATALIST project objectives, which aim to:

1. Promote and support agricultural product chain development.
2. Support farmers in using agri-inputs in an integrated way.
3. Improve the performance of agricultural input markets.
4. Increase market opportunities for agricultural products.
5. Contribute to the creation of an enabling policy environment.

The proposed recommendations are framed and grounded in the Competitive Agricultural Systems Enterprises (CASE) approach. This approach was developed by IFDC to promote agricultural intensification and to strengthen integration of farmers and local entrepreneurs in attractive commodity value chains through agribusiness cluster formation. It is based on three pillars: (1) agribusiness cluster formation, (2) commodity value chain development, and (3) facilitation of enabling institutional environments.

To improve the availability, accessibility, and affordability of fertilizer, seed, and finance to farmers in Rwanda, it is recommended that the CATALIST project support the development of maize, wheat, and Irish potato commodity chains in Rwanda for several reasons. First, according to the results of the World Bank ARMD project demonstrations,[10] these crops are very responsive to fertilizer use. As shown in Table 6, value cost rations (VCR) for DAP and urea treatments were greater than 3 for potatoes and maize in Southern Rwanda (Kigali Rural, Gitarama, and Gikongoro). Irish potato is a crop with high fertilizer response and largely grown for the market while maize also has high fertilizer response but is mostly grown for domestic consumption. Thus, these crops have both the potential to reduce food insecurity in rural households through increased production and income. Furthermore, several rice (Union of Rice Cooperatives of Butare [UCORIBU]) and maize (CECMA) cooperatives are already established in Rwanda. In addition, established output markets exist for maize and wheat. There are maize-milling factories in Kigali and Butare, which are currently operating below capacity because they cannot access sufficient raw materials.

Table 6. Value Cost Ratios for Potatoes and Maize

Crop	Value Cost Ratio>3 (DAP+Urea treatments)
Potatoes	Gikongoro
Maize	Gitarama; Kigali Rural

Source: Abt Associates (2002).

To implement the above recommendation, several activities, ranked in order of priority, are suggested. Specific implementation steps for these activities are presented in the action plan matrices in Section IV.

1. Groundwork

The groundwork for the CATALIST project should consist of:

10 Abt Associates. 2002. *Key Issues in Achieving Sustainable Rapid Growth of Fertilizer Use in Rwanda.* Agricultural Policy Development Project Research Report No. 16.

a. Conducting sub-sector analysis (this has already been completed by the output market assessment team) to identify actors and functions in each commodity chain.
b. Characterizing project target areas.
c. Selecting project stakeholders and partners.
d. Identifying site-specific constraints.
e. Developing quantifiable indicators for monitoring and evaluation of project performance.
f. Collecting baseline data on project beneficiaries.
g. Selecting an appropriate technology package: seed, fertilizer, and field management practice. This can be done by reviewing agro-economic response data.

2. **Strengthen Farmers' Incentives and Capacity to Use Modern Inputs**

Once the project area has been defined and stakeholders' identified, it is advised that the following activities are conducted:

a. **Technology Promotion Activities to Stimulate the Demand for Fertilizer and Improved Seeds—**It is recommended that intense technology promotion activities be undertaken using an array of tools, such as farmers' field schools (FFS), field days in established demonstration sites, market day demonstrations, and technical promotion material (posters, radio announcements) to showcase the benefits of using modern inputs compared with traditional practices.
b. **Training Activities to Strengthen Farmers' Capacity to Access Modern Inputs—** Capacity-building activities should aim at transferring to members of producers' associations:
   - *Technical knowledge*—Seed production and certification; growing conditions; plant diseases; plant nutrition and fertilizer types, storage, handling, and efficient use; and safety in use of quality inputs.
   - *Business skills*—Basic accounting, bookkeeping, credit sources, contract negotiation, dispute settlements, planning, and marketing.
   - *Knowledge on accessing credit*—(a) knowledge of which financial institutions to approach, (b) knowledge of preparation of credit application documents, (c) knowledge in the management of credit, and (d) skills to profitably implement their farming activities. Training programs should include explanation of the work of

banks, loan application procedures, and reasons for acceptance or denial of loans; preparation of profitable projects that are to be submitted to banks and MFIs (writing, editing); development of business plans; liaison between organizations and banks (assistance with contacts and meetings with bank staff) before and after credit requests are submitted to the bank; and management of credit and repayment to reduce repayment risks and sustain access to credit. Small farmers who approach financial institutions in well-organized groups with a clear sense of their business goals are far more likely to be successful in accessing financial resources.

- *Knowledge of policy issues and advocacy capacity:* It is crucial that the project builds farmers' associations' capacity to articulate policies and programs for proper regulatory frameworks for quality control to be established and enforced. Producers' understanding of the role they can play to trigger policy and institutional change should be enhanced in the training programs. The project should also help associations identify forums and other means to express their members' needs.

In conducting these activities, it is recommended that the CATALIST project partners with MINAGRI, ISAR, the AFSR project, successful commercial farmers, and prominent agri-input dealers to promote technology adoption in defined project areas and train farmers' associations. Specific implementation steps for technology promotion and farmers' training activities are presented in action plan matrices below.

3. Form Agribusiness Clusters for Maize, Wheat, and Potato Commodities

Once farmers' demand for modern technologies has been stimulated and their capacity to access such inputs strengthened, it is recommended that agribusiness clusters be formed for maize, wheat, and potato commodities in Gikongoro, Gitarama, and Kigali Rural. The project may also wish to extend these activities to selected areas in northern Rwanda, such as Ruhengeri and Gisenyi where substantial maize and potato production takes place. Nevertheless, it is crucial for the CATALIST project, given its regional dimension, to initially keep a narrow focus, in terms of crops and regions selected. This will help the project produce significant results and have sizable impacts.

Agribusiness clusters can be developed by organizing workshops to bring the following stakeholders together and develop business linkages:

a. *Farmers*—This would include farmers in suggested project areas (Gikongoro, Gitarama, and Kigali Rural).
b. *Local entrepreneurs*—Input suppliers, processors, and traders of agricultural products, stockists and transporters, and farmers and farmer cooperatives involved in input provisioning, processing or marketing of agricultural products.
c. *Lending institutions*—Peoples Bank, and Vision Finance, in particular.
d. *Business development services*—Public or private organizations (research institutions, NGOs, extension services, rural development projects, and market information structures) providing information on markets and technologies, training, or specific business advice.

Through these workshops, the CATALIST project can help develop linkages between small farmers and buyers, such as milling factories, to help them secure markets for their produce and to access credit in input form. Such credit arrangements would stimulate farm productivity through access to inputs and embedded market services, such as technical advice and information on market quality requirements and prices. It could also help farmers organize themselves into market-oriented producer associations and cooperatives. This could result in increased access to better market channels with higher return and volume by increasing the scale and quality of their production. Also, producers' associations help lower transaction costs for processors. The project's role in this area would consist of organizing workshops, bringing farmers and buyers together, and developing business relationships.

4. Establish voucher schemes

It is recommended that the project takes advantage of the synergies developed between its various components, Social and Environmental Stability Through Agricultural Intensification (SESAI) and HelpAge, to build terraces and roads using voucher schemes in project areas. In these schemes, farmers in project areas will engage in construction of progressive terraces and roads in exchange for vouchers and a minimal cash payment that they can redeem for seed and fertilizer. This would provide project beneficiaries with a mix of inputs and some cash as payment for their labor. HelpAge would work with district planning authorities to identify roads in project areas that require repair or upgrading. Once these roads are identified, heads of villages should be contacted to select beneficiaries.

The project can then identify agricultural dealers in each area to act as distribution points for inputs. A precondition of participation can be membership in the Rwanda Private Sector Federation. Once selected, dealers can be trained in the voucher redemption process, business management methods, inputs storage, and usage, and be required to open a bank account to facilitate the payment of service commissions. Because dealers are also expected to play a role in transferring messages on correct inputs usage, they should be trained in demonstration plot management and receive leaflets depicting correct usage techniques for distribution to beneficiaries when they redeem their vouchers (see dealer development component in action plan matrices).

Upon completion of roads and progressive terraces, each beneficiary would be issued a voucher entitling them to 50 kg of urea and 10 kg of hybrid maize/potato seeds. The voucher should be designed in such a way that the seed portion can be redeemed before the fertilizer portion to allow timely planting of seeds if necessary. Once vouchers are exchanged for inputs, dealers can return them to IFDC or HelpAge for payment.

5. Develop Dealers' Capacity to Supply Quality Inputs at Reduced Prices Through the Establishment or Strengthening and Training of Dealers' Associations

The goal here is to develop dealers' networks by strengthening their capacity to conduct business and providing quality services and inputs at low prices to farmers. This activity will consist in:

a. *Registering operators in the input supply chain*—To get reliable information about the operators of the input supply chain (importers, wholesale, and retail dealers), it is recommended that MINAGRI issue a directive for registration by all enterprises as agro-dealers at the provincial and national levels, depending on their place of business. The registration may be a simple documentation with a nominal fee, giving a complete/verifiable address of business, products sold, and name of contact person(s), etc. This should be applicable to all categories of input supply chain, i.e., private sector, parastatals, and cooperatives.

b. *Establishing dealers' associations*—It is recommended that the CATALIST project forms strategic partnerships with successful agri-input dealers (e.g., AFRICHEM, Multi-sector Investment Group [MIG]) and the Rwanda Private Sector Federation (RPSF), to operationalize the existing fertilizer supplier associations (within RPSF) and establish seed trader associations in Rwanda. The forum of stakeholders started by AFSR should be developed into a seed industry association.

c. *Transferring technical knowledge and business skills to members of these associations*—Once fertilizer and seed traders' associations are established and operational, the project is encouraged, in collaboration with commercial banks (Bank of Kigali and Bank of Commerce, Development and Industry [BCDI]) and successful agri-input traders, to help organize training programs to professionalize the input trade, bring ethics to business, and undertake policy advocacy with the government. Agro-dealers, the first nearest contact of farmers, play an important role in use promotion of yield-enhancing inputs including soil amendments and anti-erosion barriers.

A need-based professional training curriculum may be developed. It will be substantially similar to that suggested in Section 2 on strengthening farmers' capacity to use inputs. CATALIST and other agricultural development projects should organize the training workshops in collaboration with MINAGRI. Cooperative sales personnel dealing in inputs should be treated as agro-dealers and included in the training programs. Training activities should aim to:

a. Create skilled entrepreneurs.
b. Improve dealers' knowledge of the products they wish to market and their advisory skills and help them develop business plans, record keeping, and promotion materials.
c. Improve traders' knowledge in import procurement and demand forecasting.
d. Improve traders' capacity to lobby effectively for policy change.
e. Improve access to business finance: traders' access to credit, including funds from the AGFs, can be substantially improved through targeted training programs in business organization and management; investment analysis and feasibility studies; writing project proposals; loan applications; and lending mechanisms to farmers' associations and farmers.

6. Improve Access to Finance

There are scopes and opportunities for improving farmers and traders' access to finance in Rwanda because agricultural financing capital is available through public and donors' programs. There is a conscious effort from the government to create an enabling policy and regulatory environment to facilitate the establishment of a sustainable financial sector. However, the limited success of previous and current financing initiatives, such as the RIF, PRF, PDMAR, and the Agricultural Guarantee Facility (AGF) in Rwanda, in increasing the volume of loans for agri-input trade can be partially attributed to the unfavorable attitudes and behaviors of financial institutions toward agricultural entities, the rigidity of the lending mechanisms, and the lack of access to credit. The CATALIST project should capitalize on existing initiatives, such as the AGF, to design strategic areas of interventions that are consistent with the GOR development priorities. By spreading lending risk among various stakeholders, farmers, and traders, access to credit for the acquisition of agri-inputs can be improved. Given the nature of the constraints related to financing agricultural activities faced by the agricultural sector, two actions are recommended for the CATALIST project:

a. **Sensitize Lending Institutions to Tailor Lending Mechanisms to the Needs of Farmers and Agri-Input Traders**—It is recommended that the CATALIST project, in collaboration with MINAGRI, lending institutions (MFIs, Peoples' Bank, BRD, BNR, and commercial banks), and ROPARWA, makes it a priority to sensitize lending institutions on the business of agriculture. Sensitization programs involving bank staff can be best done by training bank staff on the basics and nature of agricultural production; the characteristics of agri-input businesses and farmers' associations; the nature of the demand for agricultural credit; the types of collateral available to agricultural entities and best practices to assess their credit worthiness; timely evaluation of the project submitted by farmers' associations and agri-input dealers and importers; timely evaluation of the collateral requirements; providing constructive feedback to agricultural entities so that they learn from the process; and timely approval or rejection of loan applications. It is also encouraged to organize meetings annually between farmers and bank staff to remove the misunderstanding and mistrust between them, to bring banks closer to agricultural entities, and to improve farmers' understanding of lending procedures.

b. **Establish Structured Commodity Finance Facility (SCFF)**—Unlike traditional financing mechanisms that look to the flow of funds and the sources of money, the SCFF looks to the flow of goods. Farmers stock their commodities at harvest with a local entrepreneur in a safe warehouse to make deposits in "commodity accounts," accounts expressed in kilograms of product. They can pledge the respective warehouse receipts to obtain cash or buy inputs on credit. Together, they sell the produce later during the year when crop prices are high. This allows farmers greater control over their marketing decisions because they are no longer forced to sell directly after harvest at the prevailing low prices to meet cash flow needs. The system also solves farmers' liquidity constraints and allows them to raise cash to buy farm inputs including fertilizers and improved seeds. This approach has been successfully practiced for many years in Asia and several African countries in the form of the "warrantage credit facility" or the "warehouse receipts facility." It is recommended that the CATALIST project establish such a Structured Commodity Finance Facility in each project area in partnership with existing micro-finance institutions. This would be a partnership between banks, farmers, and the project, which will gradually become a partnership between banks and farmers only. The bank will ensure professional management. The project will help set up the facility and build the warehouses.

7. **Create an Enabling Policy Environment**

This is clearly a function to be assumed by the public sector but one that can be facilitated by the CATALIST project. It is one that is challenging and very costly but crucial for input market development. It is therefore recommended that the CATALIST project facilitates the creation of an enabling policy environment for farmers and agri-input traders in Rwanda. This can be done by organizing training workshops to:

a. Build trader and farmer associations' awareness of the impact of various policies and regulations on their livelihoods and of the benefits of enforcing quality control, removing trade barriers, and harmonizing laws and regulations.

b. Enhance traders' and producers' understanding of the role they can play to trigger policy and institutional change.

c. Reinforce trader and producer associations' lobbying capacity by helping their members articulate their needs.

d. Help associations identify forums and other means to express member needs.

There are significant opportunities for improvement of policies affecting agricultural inputs if agricultural associations are empowered to achieve effective representation of their concerns at the national and regional levels. Advocacy through associations is a powerful strategy for those who individually have the least representation in the political process to trigger changes in policies. Providing associations with the necessary tools to lobby effectively will catalyze and drive change by focusing policymakers' attention on specific issues.

The critical policy issues that have been thus far identified in the AIMs assessment include:

1. The *need to improve rural roads and marketing infrastructure* to ensure the availability of agri-inputs in the most remote areas at affordable prices, since the cost of transportation makes up the biggest portion of procurement costs and the majority of marketing infrastructures were destroyed during the war.
2. The *need to stabilize exchange rates* through the skillful management of foreign aid by the Central Bank. This is essential to the development of input markets because depreciating exchange rates result in increased prices of imported goods and discourage investments in the input procurement business by introducing risk and uncertainty for importers.
3. The *need to induce banking sector reforms* so lending terms and conditions are tailored to the needs of farmers and traders. One way this can be done is through sharing of agricultural knowledge and the specificities of input procurement between farmers, traders, and financial institutions.
4. The *need to promote competition among banks* by encouraging market access and ensuring market transparency through dissemination of information on lending terms and conditions.
5. The *need to simplify the loan review system*.
6. The *need to streamline and simplify procedures* for obtaining trade licenses, applications for import permits, customs, and the number of documents required to register and import.
7. The need *to initiate the registration of inputs imported, manufactured, and sold in Rwanda* to check the influx of new and unknown products that may not be suitable for use by farmers under local conditions. It is recommended that MINAGRI develop/modify the system of registration of fertilizers, seeds, and CPPs. The objective will be to allow the

entry only of standard products having verifiable contents/characteristics, which are suitable for the soil and agro-climatic conditions in the country.

8. The *need to reduce tariff and non-tariff trade barriers*.
9. The *need to harmonize policies and regulations* within the East African Community (EAC) and the Southern African Development Community (SADC) block.
10. The *need to provide incentives (tax exemption) to banks* for establishing branches in rural areas.
11. The *need to establish consistency and trust in market liberalization policies*—It is recommended that the GOR discontinue the procurement and distribution of fertilizers because this intervention is a form of explicit subsidy that is costly and unsustainable. It creates doubts with respect to market liberalization policies and results in greater risk and uncertainty for the private sector. Many traders are now incurring expensive warehousing fees to store their excess inventories. The private sector might withdraw from fertilizer procurement and distribution activities if it sees that no profit can be made from it. This would create a huge institutional vacuum once the GOR stops procuring fertilizer because there won't be any structures in place to take over. In the end, the GOR's intervention, a short-term fix to a long-term problem, might be able to stimulate greater demand for fertilizer but a demand that won't be met in the long-run if the private sector pulls out. Therefore, it is recommended that the GOR integrates its fertilizer imports with that of the private sector. This can be done by opening dialogue with the private sector and discussing plans of integrating their imports with that of importers. The integration can be done by selling the government's imports to private importers at cost (on more preferential terms) and on credit. Importers would repay the government throughout the year as they liquidate their stocks. Importers would use their business contacts to distribute and sell the fertilizer in rural areas. The risk of the private sector raising fertilizer prices beyond justification will be almost nil because all stakeholders would be informed of the collaboration between the government and the private sector and would know the private sector procurement price.
12. The *need to establish legal and regulatory frameworks for fertilizer*—It is important for an adequate regulatory mechanism to be in place and to be properly enforced to deter the sale of sub-standard products in the markets and to provide confidence to farmers that the cost they incur will generate the expected benefits. To protect farmers from fraudulent products

(adulterated products, short weights, and nutrient deficiency), it is recommended that a fertilizer regulatory system be enacted and enforced based on truth-in-labeling. In addition, there is an urgent need to strengthen the capacity of the Rwanda Bureau of Standards (RBS) in testing fertilizer samples and enforcing quality control mechanisms at the national borders and in rural agricultural markets. CATALIST, MINAGRI, and RBS may collaborate in the formulation of fertilizer regulations and training of enforcement staff.

13. *The need to establish a Market Information System*—Farmers, traders, and the government should have constant access to reliable information on products, prices, stocks, and quantities in different locations (national and regional). It is recommended that an MIS be established in Rwanda, collecting and disseminating information through radio, weekly bulletins, SMS, and the Internet to all segments of the market. This data should also include information from neighboring countries. This could be done within an industry association so that as the private sector takes root they can own the service as a means to promote their business. It might be beneficial to look at the "Village Information Centers" created by the International Center for Tropical Agriculture (CIAT) and consider integrating them within the MIS.

14. *The need to establish a Credit Information System*—A credit information system needs to be established in Rwanda to help address the issues of high costs to access information on borrowers. Such a mechanism would be built within the Central Bank to help borrowers establish a credit history or "reputation collateral" while reducing the time and cost lenders spend to obtain such information. This would considerably ease access to credit for farmers and agri-input traders by giving them an incentive to repay.

15. The n*eed to develop seed policy and regulations*:—The government's intervention in the seed sector is crucial to establish a seed policy delineating clearly the production and marketing functions; to regulate and enforce varietal release, registration, and certification, and publicize the government's commitments to seed market liberalization. Although the overall policies of GOR are favorable, there are still some weaknesses in the policy, legal, and regulatory environment, e.g., the lack of formal variety release procedures and the absence of PVP legislation. These gaps need to be closed. The National Seed Service (NSS) needs to be expanded and strengthened. The condition of all the input shops visited was poor with seed bags on the floor and mixed with fertilizers. The dust from lime was all

over and ventilation was very poor. A lot needs to be done on improving store/shop hygiene, handling and storage, and safe use of all inputs. This can be achieved through training and follow-up inspections by the NSS. The production and marketing of certified seed (CS) and quality declared seeds (QDS) should be clearly delineated and well defined. Political and bureaucratic support to the privatization of the seed industry should be demonstrated to allay fears of potential investors.

16. The n*eed to strengthen seed research, variety development, breeder seed (BrS), and commercial seed production and marketing*—Both farmers and research institutions acknowledge the shortage of quality seeds on Rwanda markets. To help address seasonal seed shortages, the strengthening of research and variety development and the quick release of new varieties is recommended. One way to do this would be to liaise with seed companies in the region and encourage them to introduce their varieties and work with ISAR to conduct national performance trials in line with the harmonized system. ISAR also requires increased funding for their core research programs and the production of BrS to meet industry requirements. In addition, there should be deliberate efforts to strengthen formal seed production by the private sector. It is necessary to think of some *incentives to serious private investors* (including those from outside) to encourage investment in the industry. Incentives include *tax exemptions on machinery, seed chemicals, and packaging materials; grants or long-term investment loans; support to variety introductions; and support to market development and seed promotion* both within Rwanda and in the region. Companies should be given access to ISAR varieties for multiplication. Developing local capacity in this regard means deliberate targeting, attracting, training, and supporting selected cooperatives, grain millers, and input dealers in order to interest them in the seed business. The training of seed growers should be intensified and the growers linked to upcoming seed companies. As these developments unfold, the seed development unit (SDU) should gradually pull out of producing seeds that attract private sector interest and concentrate on those that do not. Concurrently, production of QDS of the former should be abolished. The seed distribution network is weak and fragmented. There is need to strengthen market development at the same time working on demand creation. Demonstrations should be carried out with private sector seed dealers so that farmers are linked with seed sources. The seed dealers will then be able to continue with the

demonstrations in the future if they see it as an opportunity to develop their businesses. Training and human capacity development will be vital in the entire seed chain. This could include visits to seed industries in the region where considerable experience in the development of private sector seed business exists. It should be noted that some of these ideas are already in the plans/strategies of AFSR. The future development of the seed industry will thus depend on how these strategies are implemented. Any project working, or intending to work, in the seed sector should liaise closely with AFSR in order to exploit synergies and to leverage resources. One notable weakness in the design of AFSR is that it is purely a "seed project" with no mandate for promoting commercial farming. Experience elsewhere shows that an emerging commercial farming sub-sector provides a crucial starting point for developing seed demand. The CATALIST project, with its wider mandate of enhancing agricultural intensification, could provide this missing bit if the two projects work together. Another aspect CATALIST could bring on board the seed industry development is the regional trade dimension. The seed market in Rwanda is still tiny, as it is in Burundi and Goma (DRC), where CATALIST activities extend. To attract private investment in the seed business more readily would require entrenching regional trade from the outset so that there is a bigger seed market, which would be serviced from Rwanda. There will be need to have political support to remove trade barriers in the sub-region so that it operates as one market.

In addition to the above recommendations, the CATALIST project may be able to implement the following recommendations for reducing the cost of fertilizer procurement in Rwanda:

1. **Joint Procurement at National or Regional Level—**Fertilizer procurement costs can be reduced through pooling of orders by importers at the national and/or regional level, which entails taking advantage of economies of scale in procurement at world market prices. This strategy has been under consideration by some regional organizations like SADC and the Common Market for Eastern and Southern Africa (COMESA). Such a system can be more suitable to the East African countries like Rwanda, Burundi, and DRC who buy in small lots less than a shipload of (10,000–15,000 tons). The current demand of three countries can be consolidated into two or three shiploads and transported to a strategically located

seaport (Dar es Salaam in Tanzania or Nairobi in Kenya). The discussions with some importers in the above two countries showed an encouraging response to such an arrangement. Some importers even showed interest in forming a regional association of fertilizer importers to implement this arrangement. It is estimated that timely procurement may lead to 5%-10% savings in the f.o.b. price. In addition, it will reduce the delivery period to about one-half from 4 months for small lots to about 2 months. Similarly, this arrangement may offer a better use of the funds committed in the long term to fertilizer businesses.

2. **Adoption of a Multi-Transport System—**Savings in transport costs can be realized through the adoption of multi-transport systems. The fertilizer can be transported from Dar es Salaam by rail to Kampala and/or Kasese via Malaba. From Kampala and Kasese, goods can be moved by road to north of Congo and other destinations. From Dar es Salaam, cargo can be moved by rail to Isaka dry post and then moved by road to Rwanda. Goods can also be moved from Isaka by Mwanza port on Lake Victoria using boats. There is a possibility of moving fertilizers from Dar es Salaam to Kasama and Lusaka (Zambia) by rail use of the TAZARA rail system that can be improved for future transportation. The incidences of bribery and delays have been reduced considerably under the new management in Dar es Salaam. For ordering small consignments from South Africa and Mauritius, Dar es Salaam is the closest port, which reduces the maritime and shipping costs. Although there exists a control on axle-weight limitation in east African countries, Tanzania transporters still manage to load their lorries more heavily than other countries in the region and thereby offering a lower freight. It is estimated that the road transport costs can result in significant saving. Estimated saving in transport costs through a multi-transport system is shown in Table 7.[11]

11 Please note that this information is based on the unconfirmed figures provided by Jasmine International Clearing and Forwarding Agent—Kigali, Rwanda, and some other importers. The feasibility of transport mix and actual freight structure need to be studied and evaluated.

Table 7. Estimated Saving in Transport Costs Through Multi-Transport System

From	To	Clearing and Transport Cost		% Saving
		Road	Multi-Transport System	
		(US $/ton)		
Mombasa	Kampala	160	112	30
Mombassa	Kigali	240	172	18.7
Mombassa	Bujumbura	320	260	18.7
Mombassa	Toma	320	232	33.6
Mombassa	Bukavu	360	260	33.6
Dar es Salaam Railway	Kampala (Mwanza)	100	100	0
Dar es Salaam	Kigali	212	138	35
Dar es Salaam	Bujumbura	312	138	65.8
Dar es Salaam	Goma	272	198	37.3
Dar es Salaam	Bukavu	300	238	20.7

Improved Logistics Planning (National and Regional Levels)—In the case of fertilizers, the Customs Administration can allow the Clearing Agent to offload the cargo in a private warehouse at specified locations under the supervision of customs officials appointed for that purpose. The Bureau of Standards also is invited to inspect the cargo and allow the Clearing Agent to operate without the under-seal system. This special facility was created to make trade more efficient by reducing some costs like weight-bridge, documentation, and storage and handling, thus saving some cost in fertilizer delivery. This system helps to provide straight and quick delivery to farmers and store the products in main distribution centers. The following towns in Rwanda can be served under the direct home delivery scheme: Butare for the southern Province; Ruhengeri or Pfunda Tea works in Gisenyi for the northern Province; Kibuye and Cyangugu for the western Province; and Kayonza for the eastern Province. In case fertilizer is procured and transported in larger quantities, it will need storage at strategic locations before it is moved to consumption areas in small lots. There is a big warehouse at ISAKA in Tanzania (capacity could not be ascertained). The warehouse at ISAKA can serve as a regional buffer stock for the incoming cargo and for further movement to destinations in Rwanda, Burundi, and DRC. This will reduce the pressure on rail and road movement and help in reducing the costs of transportation. The above calculations are estimated and need to be confirmed before arriving at a final amount of saving in the proposed strategy of joint procurement, transportation, warehousing, and delivery.

IV. Implementation Arrangements

The action plan matrices presented below were developed to complement the proposed measures in addressing the policy and market development constraints in Rwanda. These matrices are to guide the implementation of the proposed recommendations. It is therefore hoped that they will provide the CATALIST project with directions as to *how* the recommendations can be implemented.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**
1. Groundwork	☐ Conduct sub-sector analysis (this has already been completed by the output market assessment team) to identify actors and functions in each commodity chain. ☐ Characterize project target areas. ☐ Selecting project stakeholders and partners. ☐ Identify site-specific constraints. ☐ Develop quantifiable indicators for monitoring and evaluation of project performance. ☐ Collect baseline data on project beneficiaries. ☐ Select an appropriate technology package: seed, fertilizer, and field management practice. This can be done by reviewing agroeconomic response data.

2. Strengthen farmers' incentives and capacity to use high-yielding inputs	☐ Revise fertilizer recommendations.
	☐ Strengthen the capacity of extension agents assigned to project areas.
	☐ Organize farmer field schools.
	☐ Conduct field days in established demonstration sites.
	☐ Organize market day demonstrations.
	☐ Produce technical promotion material.
	☐ Identify farmers' training needs.
	☐ Prepare training materials.
	☐ Organize training programs on:
	  ☐ Input handling and storage, seed certification, growing conditions, plant diseases, and buying and safely applying quality inputs.
	  ☐ Basic accounting, bookkeeping, credit sources, contract negotiations, dispute settlements, planning, marketing, and business plan development.
	  ☐ Approaching financial institutions, preparing credit application documents, managing credit, and profitably implementing farming activities.
	  ☐ Effective farmers' participation in processes of policy formulation, planning, and implementation.
	  ☐ Policy issues and advocacy capacity.
	  ☐ Roles that trigger policy and institutional change.
	  ☐ Helping associations identify forums and other means to express their members' needs.
	☐ Follow up.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**

3. Form crop-specific agribusiness clusters for maize, wheat, and potato commodities	☐ Identify key stakeholders in each commodity chain using the output assessment findings.
	☐ Prepare workshop materials/plans.
	☐ Organize workshops to bring the following stakeholders together and develop business linkages:
	  ☐ *Farmers*: this would include farmers in suggested project areas (Gikongoro, Gitarama, and Kigali Rural).
	  ☐ *Local entrepreneurs*: input suppliers, processors, and traders of agricultural products, stockists and transporters, farmers, and farmer cooperatives involved in input provisioning, processing, or marketing agricultural products.
	  ☐ *Lending institutions*: especially Peoples Bank and Vision Finance.
	  ☐ *Business development services*: public or private organizations (research institutions, NGOs, extension services, rural development projects, market information structures) that provide information on markets and technologies, training, or specific business advice.
	☐ Provide information during the workshop to stakeholders on drafting contracts and the negotiation process.
	☐ Facilitate post-workshop meetings between stakeholders to formalize business linkages.

4. Establish input voucher schemes	☐ Identify roads and fields in project area. ☐ Select beneficiaries. ☐ Identify dealers to act as distribution points. ☐ Train dealers (see next component). ☐ Issue vouchers upon completion of roads and terraces. ☐ Pay dealers.
5. Develop dealer's capacity to supply quality inputs at low prices	☐ Identify agri-input traders. ☐ Operationalize fertilizer trader associations. ☐ Develop seed trader associations. ☐ Encourage the registration of agri-input traders. ☐ Encourage the registration of inputs imported, manufactured, and sold in Rwanda. ☐ Encourage private sector involvement in policy formulation, planning, and implementation. ☐ Help traders articulate needs in terms of policy change. ☐ Facilitate traders' lobbying to simplify registration procedures and trade licenses. ☐ Encourage dealers to provide services (advisory, credit) to farmers. ☐ Identify traders' training needs.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**

	- Prepare training materials.
	- Organize training programs for strengthening dealers' technical knowledge and business skills.
	- Follow up with trader associations.
	- Improve access to business finance by training:
	  - Staff of commercial banks and Peoples Bank on the technical aspects of agri-input business and lending mechanisms that are available in other countries for agri-input traders.
	  - Private traders in business organization and management; investment analysis and feasibility studies; writing project proposals; loan applications; lending mechanisms to farmer associations and farmers.

6. Improve farmers and traders' access to credit
 	
7. Create an enabling policy environment
	- Establish Structured Commodity Finance Facilities in each project area:
	  - Identify countries that have established such facilities.
	  - Draw lessons.
	  - Develop action plans and begin implementation.
	- Organize meetings and interactions between farmers and bank staff to remove the misunderstanding and mistrust between the two.
	- Training bank (Peoples Bank, Vision Finance) staff on:
	  - Basics and nature of agricultural production.
	  - Characteristics of agri-input businesses and farmer associations.
	  - Nature of the demand for agricultural credit.
	  - Types of collateral available to agricultural entities and best practices to assess their credit worthiness.
	  - Timely evaluation of the project submitted by farmer associations and agri-input dealers and importers.
	  - Timely evaluation of the collaterals requirements.
	  - Providing constructive feedback to agricultural entities so that they learn from the process.
	  - Timely approval or rejection of loan application.
	
	- Organize Training Workshops to:
	  - Build traders' and farmers' associations' awareness of the impact of various policies and regulations on their livelihoods and of the benefits of removing trade barriers and harmonizing laws and regulations.
	  - Enhance traders' and producers' understanding of the role they can play to trigger policy and institutional change.
	  - Reinforce trader and producer associations' lobbying capacity by helping their members articulate their needs.

Objective: Support the Development of Maize, Wheat, and Irish Potato Commodity Chains in Kigali Rural, Gitarama, and Gikongoro	
Components	**Implementation Steps for the CATALIST Project**
	- Help associations identify forums and other means to express their members' needs.
8. Reduce the delivery cost of fertilizer and seed	- Organize regional workshops to bring traders from Tanzania, Burundi, Uganda, Rwanda, and East Democratic Republic of Congo (DRC) together to build business linkages.

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Annex I. List of Stakeholders Interviewed

Stakeholder	Name	Designation	Organization	Phone No.	E-Mail
Private Sector	Gaspard Bugingo	Shop Attendant	Planet Farm Tech input shop, Gikongoro	08504644/577979	
	Giancarlo Davite	Pharmacist, Director	AGROTECH S.A.R.L	08300660/575234/572944 /573489	kiphagro@rwanda1.com
	Jean Baptiste Akayezu	Owner	AGROSA Input shop, Butare	530218/08507824	akagrosa@yahoo.fr
	Jean Marie Vianney Mukwiye	Director	Mudasomwa Wheat Mill [Gikongoro].	8560629	mkjmv@yahoo.fr
	John Uzabakiriho	Owner Dealer-importer	DUCURIZA input shop, Ruhengeri.	8570662	
	Paolo Paganin	Managing Director	Africhem Rwanda s.a.r.l.	250 08300784	africhem@rwanda1.com
	Rose Mukahakizimana	Owner Dealer-importer	Input shop, Ruhengyeri	08415999/08413207	
	Veronique Steyaert Paganin	Associate Director	AFRICHEM S.A.R.L.	08300783/578384	veronique@rwanda1.com
	Vincent Ngarambe	Managing Director	Multi-sector Investment Group (MIG)	250 08308112	
	Sam Rubagumya	Managing Director	SOPAAR Agro-Industries, Rubirizi	08301289	Rubasam2@yahoo.co.uk
Financial Institutions	Bernard Itangishaka	Director General	Union of Popular Banks in Rwanda (UBPR)	08301932/573559/573563	bitangishaka@yahoo.fr
	Celestin Sekagilimana	Director	Statistics Department, Rwanda National Bank		csekagilimana@bnr.rw
	Esperance Mutuyimana	Microfinance Unit	Banque Rwandaise de Developpement	250 08304378	
	Faustin Zihiga	Managing Director	URWEGO Community Banking s.a.	250 08306518	
	Prosper Nyirumuringa	Director	Banque Rwandaise de Developpement	250 08305595	
	Safari Philemon	Director	Department of Capital and Money markets, Rwanda National Bank	08302256/573645	saphil2000@yahoo.fr
Research Institutions	Desire Kagabo,	Head of Centre	ISAR, Ruhengeri Centre	8769080	
	Innocent Habarirema,	Scientist	ISAR, Ruhengeri Centre		
	Jonas Mugabe	Deputy Director	ISAR	8308768	j_mugabe@yahoo.fr
	Rose Njeru	Scientist	ISAR, Ruhengeri Centre	8540948	
Farmers' Organizations	Francois Nsengiyumva	Executive Secretary	ROPARWA	250 08307930	mfnsef@yahoo.fr
	Aimee Marie Ange Tumukunde	Advisor	ROPARWA	250 08741334	aimetum@yahoo.fr
	Augustin Bitiriki	Agronomist	Cooperative Ibukwa Muhinzi	8404594	

Stakeholder	Name	Designation	Organization	Phone No.	E-Mail
			[COIMU], Kora, Western Province, Gisenyi		
	Jonas Ngarambe	President	Cooperative Ibukwa Muhinzi [COIMU], Kora, Western Province, Gisenyi		
	Joseph Ndabamenye	Coordinator	Union of Agricultural Cooperative of Gikongoro (UNICOOPAGI)	8465660	
	Laurent Rugerinyange	President	Cooperative d'Exploitation et de Creation des Marches Agricoles (CECMA)	250 08540503	cecma2001@yahoo.fr
	Leopold Ayabagabo	President	Rice Cooperative of Bugarama, Western Province [Member of ROPARWA]	8466157	
	Sylvain Kayisharaza.	President	Union of Rice Cooperatives from Butare (UCORIBU) [Member of ROPARWA]		
Public Institutions	Alex Kanyankore	Managing Director	Rwanda Tea Devt. Authority	514 795/574 281/08303918	kanyalex@yahoo.co.uk
	Andre Habimana	Director of Development Planning	Ministry of Finance and Economic Planning	08526628/570523	andre.habimana@minecofin.gov.rw
	Andre Runiga	Agro-Economist, Team Leader	MINAGRI consultants--fertilizer strategy		
	Baptiste Ngabo Gafarasi	Head, Plant Production Certification Services	Rwanda Bureau of Standards	8355392	baptist_gafarasi@yahoo.com
	Byanone Rusizano	Directeur-SADE consulting Office	MINAGRI consultants--fertilizer strategy		
	Charles Rutagengwa	Head, Agriculture & Livestock Certification Unit	Rwanda Bureau of Standards	08449775/586103	rutacha@yahoo.co.uk
	Dominque Muyango	Veterinian and Agricultural Extension Agent	MINAGRI consultants--fertilizer strategy		
	Dr. Agnes M. Kalibata	Secretary General	MINAGRI	8302180	kalibatts@yahoo.co.uk
	Ernest Ruzindaza	Director of Planning	MINAGRI	08300765/584043	ruzindazaernest@yahoo.fr
	Esdrus Ntagisanimana	Accountant	Cooperative Ibukwa Muhinzi [COIMU], Kora, Western Province, Gisenyi	8794861	
	Faustin Minelli	Director	Division of Planning, MINECOFIN	250 08743797	

Stakeholder	Name	Designation	Organization	Phone No.	E-Mail
	Hon. Daphrose Gahakwa	Minister of State in Charge of Agriculture	MINAGRI	586104/587038	dgahawkwa@gov.rw
	Jane Nyamvumba	Import Control Unit	Rwanda Bureau of Standards	250 08843863	nyambaj@yahoo.com
	Jean Marie Vianney Myabeyende	Director	MINAGRI, division of statistics	8463684	
	Liliane Kamanzi	Head of Information and Documentation Centre	Rwanda Bureau of Standards	250 08452696	lilkamanzi@yahoo.co.uk
	Mapayana Raphael	Member	Horticulture Task Force, MINAGRI	8355616	
	Norbert Sendege	Head	Crop production unit, RADA, MINAGRI	8521320	lenorbert@yahoo.fr
	Peter Muvara	Chairman	Horticulture Task Force, MINAGRI	8307527	
	Zacharie Manirarora	Head of Production Department	OCIR-CAFE	250 08561618	zacmanirarora@yahoo.com
Donors/Projects	Alexis Byamana	Director	HelpAge		
	Alfred Muteebwa	Project Coordinator.	MINAGRI-IFAD Cash Crops Development Project [PDCRE]	08300010/583876	cashcrop@rwanda1.com
	Daniel Binart	Technical Asst.	AFSR [BTC/RADA] Seed Project.	8552904	daniel.binart@btcctb.org
	Edwin Macharia	Director-Agriculture	Clinton Foundation		
	Gervais Ngerero	Director, Seeds	AFSR [BTC/RADA] Seed Project.	8301086	gervaisngereron@yahoo.fr
	Henk Breman	Environmental Specialist	CATALIST/IFDC		hbreman@ifdc.org
	Ian Gregory	Acting Chief of Party	CATALIST/IFDC		igregory@ifdc.org
	Jackson Kimani		Clinton Foundation	250 08301041	
	Jean Marie Byakweli	Plant Genetic Ressources Management Advisor	Belgian Technical Cooperation, MINAGRI	8618015	byakweli@btcctb.org
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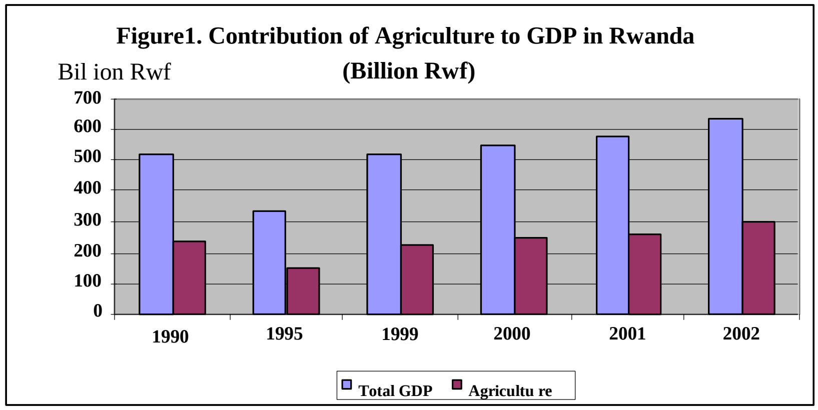
Annex II. Socioeconomic Context



Over 90% of households in Rwanda live in rural areas and make their living from agriculture. The agricultural sector contributes to more than 50% of the gross domestic product (GDP), employs as much as 90% of the labor force, and provides more than 95% of the export earnings. The agricultural sector, comprised of an average of 1.4 million households, has always been and remains the guarantor of food security and the driving force of the growth of other sectors of the national economy.

Yet, to date food production in Rwanda fails to keep pace with population growth and widespread poverty threatens the livelihoods of the rural population because 97.5% of those identified as falling below the poverty line live in the rural areas.[12] It is estimated today that more than half of the population lives on less than US $1 a day, at least 60% of the population live below the poverty line, and between 10% and 12% of the population suffer from food insecurity every year. The prevalence of malnutrition in infants was approximately 24% in Rwanda in 2000. Owing to civil wars, female and minor-headed households, which now account for over 34% of the country's population, are the most vulnerable groups among the poor.

It is a fact that the incidence of food insecurity and poverty is highest when a high proportion of the rural population obtains its income solely from subsistence farming, without adequate access to modern agricultural technologies and markets. Agriculture in Rwanda has gone through three phases in the last four decades: (1) a 20-year period (1960-1980) characterized by high growth, (2) a period of stagnation followed by a serious repression (1980-1994), and (3) a period of reconstruction and economic recovery (after 1994). Today, the low productivity of agriculture is a result of the following factors:

1. **Effects of civil wars:** Civil wars caused a long period of economic decline and severely eroded the economic and human capital base. The loss of the social, capital, and community solidarity that help to cope with poverty has increased social and economic vulnerability. Massive displacement and resettlement of the population during civil wars accelerated deforestation and environmental degradation. The wars also resulted in substantial loss of human capital (farmers and agribusinesses), decimation of livestock, and destruction of agricultural research infrastructures.
2. **Low levels of investment in the agricultural sector**: In the national budget, funds allocated to the sector are less than 3% each year. In 2003, the budget allocated to the agricultural sector amounted to 2.9% of the total government budget in 2003,

12 IFAD. 2003. *Smallholder Cash and Export Crop Development Project*. Report No 1375.

representing only 0.5% of GDP. In addition, the agricultural sector attracts only 2%-4% of bank loans.

3. **Subsistence farming:** Farming is still predominantly subsistence, with an average farm size of 0.8 ha, which continues to decline as a result of population pressure and intensive erosion. Most farmers in Rwanda have limited participation in the market economy; 30% to 50% of the rural population in a given year may not produce a marketable surplus. Agricultural intensification has been mainly limited to high value cash crops such as coffee and tea.
4. **Population pressure:** Rwanda has 9 million people living on a land area of 26,368 per km^2, making it one of the most densely populated countries in Africa with a population density of 341 per km^2. At current annual population growth rate of 2.9%, the country is facing extreme challenges to achieve food security and reduce poverty.
5. **Declining soil fertility and low use of modern inputs:** Steep slopes are common throughout the region and farming often takes place on slopes. Heavy seasonal rains, the removal of vegetation and the neglect of the infrastructure for physical and biological soil conservation accelerate soil erosion.[13] Population pressure has pushed farmers onto marginal fragile lands. The use of fragile lands on steep slopes is expanding and fallow periods are growing shorter. According to recent estimates, half of the country's farmland suffers from moderate to severe erosion.[14] Soil nutrient depletion is among the highest in SSA. The problem is compounded by the rapid decline in fallow fields, the loss of manure due to reduced livestock inventories and population growth. It is estimated that only 4% of households use improved seeds. The use of inorganic fertilizers, 4 kg/ha, is well below the continent's average of 8 kg/ha.

Map 1. Rwanda

13 Daniel C. Clay and Laurence A. Lewis. 1996. Land Use. Soil Loss and Sustainable Agriculture in Rwanda. Michigan State University, Department of Sociology, East Lansing, MI.
14 Daniel Clay et al. 1995. Promoting Food Security in Rwanda Through Sustainable Agricultural Productivity: Meeting the Challenges of Population Pressure, Land Degradation, and Poverty. MSU Policy Synthesis Number 6.

Annex III. Agricultural Policy in Rwanda—Recent Developments and New Initiatives

Since 1995, the Government of Rwanda (GOR) has implemented, through a series of consultations, a broad program of economic reforms to achieve peace and poverty reduction. The reforms have focused on the exchange and trade regime, the privatization of some state enterprises, the reform of public administration, budget and financial management, and private sector development. The country's long-term development strategy, spelled out in its Vision 2020, emphasizes national reconciliation, good governance, and economic transformation as critical elements to achieve the Millennium Development Goals.[15] Vision 2020 targets include a GDP per capita of US $900, from the US $230 in 2000, which implies a sustained 7%-8 % annual growth rate of GDP; a reduction in the incidence of poverty from 60% to 25%; an increase in life expectancy to 65 years from the current 49 years; and an increase in literacy from 48% to 90%.

Within the framework of the country's Vision 2020, the GOR launched its National Poverty Reduction Program in 2000 and completed a full PRSP in June 2002. The PRSP identifies the following as the basic building blocks for economic growth and poverty reduction: (a) rural development and agricultural transformation, (b) human development, (c) economic infrastructure, (d) good governance, (e) private sector development, and (f) institutional capacity building.[16] The PRSP singles out rural development and agricultural transformation as the principal source of growth and an imperative for poverty reduction and the private sector as the main engine of growth. The transformation of agriculture and the rural economy were outlined as necessary to kick-start the transformation of the overall economy.[17] An 8% growth rate target for the sector was established for the agricultural sector to achieve the country's vision.

To achieve this target, the GOR sought to bring innovations—the dynamics of change leading towards modernization—within the agricultural sector and in a sustainable manner. The first step was the formulation in 2003 and official endorsement in October 2004 of the National Agriculture Policy (NAP). Rwanda's NAP was developed in line with its Vision 2020 and the PRSP. The NAP focuses on empowering rural households to fight poverty by participating in planning and management of their development process so as to transform agriculture from subsistence into a viable and profitable market-oriented business and "professionalize" the sector. The overall objective of the NAP is to achieve agricultural transformation through intensification in input use, diversification and specialization in agricultural production, entrepreneurship, and environmental and natural resources protection. The NAP identifies as sources of agricultural growth, crops with export potential and those related to internal market development, essentially the cereal commodity chains (rice, maize), milk, meat, and vegetable crops.[18]

15 International Fund For Agricultural Development (IFAD). Rwanda: Project for Support to Operationalize the Strategic Plan for Agricultural Transformation Appraisal Report–Working Paper 3: Institutional Support to Agriculture Sector.

16 World Bank. 2002. *Country Assistance Strategy for the Republic of Rwanda*. Report No. 24501-RW.

17 IFAD. 2003. *Smallholder Cash and Export Crop Development Project,* Report No 1375.

18 MINAGRI Rwanda. Politique Nationale Agricole.

On the basis of the policy orientations provided by NAP, the Ministry of Agriculture and Animal resources (MOA) elaborated in early 2005 a Strategic Plan for Agricultural Transformation in Rwanda (SPAT) in line with the country's 2020 vision and Poverty Reduction Strategic Plan. This exercise was exceptional because for the very first time in Rwanda history, an agricultural strategy was elaborated using broad consultations and a participative planning approach in 106 country districts with all partners (from administration, producers, support services, and civil society to the private sector). SPAT defined four programs and 10 strategic axes to stimulate and provide incentives for agricultural intensification. The four programs are:

1. Intensification and development of sustainable production systems.
2. "Professionalization" of agriculture by promoting and strengthening the capacity of farmers' organizations.
3. Promotion of commodity chains and development of agribusiness to commercialize agriculture by integrating production into a market economy.
4. Institutional Development by strengthening of agricultural research and extension.

The 10 strategic axes are: (1) diversification and intensification of crop, animal, and aquatic production; (2) diversification of sources of incomes and rural employments; (3) link of production with market and integration of agricultural economy within the national and regional economy; (4) sustainable management of natural resources, particularly of water and soils; (5) organization, mobilization, and strengthening of capacities of producers and professional organizations; (6) strengthening of service providers' capacities, privatization and private sector promotion; (7) creation of a conducive institutional framework for producers and agricultural transformation; (8) creation of a conducive environment, favorable to productive investments and to entrepreneurship and employment development in agribusiness; (9) redefining the role of MINAGRI and the restructuring of its actions towards the sector program approach within the decentralization framework; and (10) promotion of gender approach and reduction of vulnerability of underprivileged groups.

An action plan was elaborated for the implementation of the SPAT. Two phases were distinguished. The first year (2005) was considered as a pilot phase. The second phase, which covers 3 years (2005-2008), corresponds to intensive implementation of priority programs according to defined priorities. Necessary funds for the 4 SPAT programs for a 4-year period (initially set for the years 2005-2008) were estimated at $167 million (45%, 12%, 38%, and 5% for Programs 1-4, respectively). The chief responsibility for implementing the SPAT program falls on MINAGRI, which is to collaborate and coordinate these program activities with public, private, and research institutions, civil society; farmer associations; and development partners. A Rural Development Cluster (RDC), which is chaired by the Minister of Agriculture, was established to improve the efficiency of aid in the sector and to better align development partners behind the sector's strategies for mutual accountability. The cluster is an important forum used by the government and stakeholders to align interventions and sector planning with defined priority areas.

At the same time, in 2000, a National Decentralization policy and a strategy for its implementation were adopted, to transfer power, authority, functions, responsibilities, and the requisite resources from central government to local governments or administrative divisions.[19] In 2001, through the decentralization process, MINAGRI's role became one of policy and strategy formulation for the SPAT's operational programs, with local authorities/districts at the decentralized levels becoming responsible for planning and coordination, follow-up, evaluation and reporting. This redefinition of roles, which sought to improve MINAGRI's capacity and performance, resulted in a reduction of up to 90% of its staff at the province, district, and sector levels. MINAGRI is now composed of six units:

1. Public Relations and Internal Resources Management Unit (25 staff members).
2. Agricultural Production and Crop Protection Unit (seven staff members).
3. Animal Resources Unit (seven staff members).
4. Rural Engineering and Soil Conservation Unit (eight staff members).
5. Multi-disciplinary Planning and Programs Coordination Unit (eight staff members).
6. Extension and Partners Support Unit (five staff members).

In February 2005, three semi-autonomous bodies under MINAGRI were also restructured (RADA, RARDA, and RAQCCA) and today, MINAGRI is composed of the following technical agencies:

1. Rwanda Agricultural Development Authority (RADA): this institution has four units (Crop Production and Early Warning System; Agricultural Technology and Farm Management; Soil and Water Management; and National Seed Services) and the mandate to conduct all promotional activities related to crop production including: agricultural inputs, agronomic techniques, soil conservation, water protection, and post-harvest activities.
2. Rwanda Animal Resources Development Authority (RARDA): conducts activities for the promotion of the entire sector of animal resources development.
3. Rwanda Agency for Quality Control and Certification of Agriculture (RAQCCA): ensures quality control in both the agricultural and animal resources sectors.
4. OCIR-THE: oversees the production, processing, and marketing of tea.
5. OCIR-CAFÉ: supports coffee production (e.g., training and provision of farm inputs).
6. Agricultural Research Institute (ISAR): promotes the scientific and technical development of agriculture and animal resources in Rwanda.

19 Bingen J., and L. Munyankusi. 2002. Farmer Associations, Decentralization and Development in Rwanda: Challenges Ahead. MSU Agricultural Policy Synthesis Number 3E.

Annex IV. An Assessment of the Fertilizer Market in Rwanda

Fertilizer Consumption

Fertilizer use in Rwanda continues to be extremely low. Estimated consumption of 5,000 tons in the early 1980s (about 4 kg/ha) has remained nearly stagnant until 2002, when a dramatic increase to 15,299 tons was observed. This was largely due to the government's policy of removing all taxes on fertilizer imports and to the World Bank-funded ARMD project, which provided a line of credit at a subsidized interest rate of 9% (as compared to 16% market rate of interest) to importers. More information on the World Bank project is provided in Section C of the report on access to credit. These measures resulted in reduced cost of fertilizer, which in turn led to greater use by farmers. It was estimated that in the year 2005, only 5% of farmers used fertilizers in Rwanda. The main crops fertilized are commercial ones, including tea, potato, rice, wheat, and maize. The main types of fertilizers used are NPK 17-17-17 on potato, maize, fruits, and vegetables; NPK 25-5-5 on tea; NPK 20-10-10 on coffee; urea on maize, rice, and wheat; and DAP on maize, rice, and wheat.

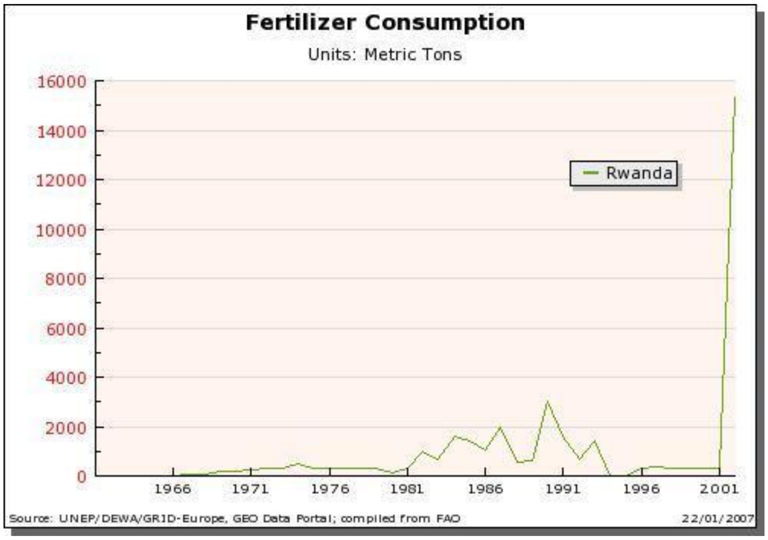


Figure IV-1. Fertilizer Consumption in Rwanda (tons)

Demand for Fertilizers

In general, there are three types of demand for fertilizer: agronomic potential; agro-economic potential; and effective demand. *Agronomic potential* is calculated with the assumption that all the farmers will apply the recommended quantity of fertilizer to the entire cultivated area. The maximum annual agronomic potential for fertilizer in Rwanda was worked out by Kaystare (__________), using FAO data in 1995, as 271,915 tons or 232 kg/ha, for a total cultivated area of 1,169,200 ha. A wide range of crops was projected to be grown by farmers, including banana, all beans and peas, soybeans, groundnuts, maize, sorghum, wheat, rice, Irish potato, tea, coffee, and sugarcane. The assessment team's calculations, considering only beans, barley, potato, tea, and coffee, revealed a much lower agronomic potential of 65,025 tons based on consumption of 55 kg/ha. *Agro-economic potential* is determined by assuming that all land is cultivated using financially optimal fertilizer doses. In this exercise, fertilizer doses are determined by the point where the marginal returns to an additional kilogram of fertilizer are equal to the marginal cost of the fertilizer used (profit maximizing point). Only a 16% area was estimated to have the economic potential (based on prices of inputs and crop produce in year 2000), amounting to an estimated demand of 22,798 tons per year in Rwanda. *Effective demand estimates* takes into consideration the prevailing constraints. Kelly et al (________________), estimated effective demand for fertilizers in Rwanda as 6,765 tons. Taking into consideration various demand estimates, projected economic growth, food security and rural development targets, GOR/MINAGRI fixed a target of additional consumption of 5,000 tons per year starting in 2006 to reach 38,614 tons per year by 2011. The targets are based on consumption of 8,406 tons in year 2005. The above targets are based on the assumption that all the constraints in fertilizer consumption will be removed. Annual demand projections are shown in Table IV-1.

Table IV-1. Fertilizer Consumption Targets Fixed by MINAGRI

Year	Projected Consumption	Growth
		(%)
2005	8,406	-
2006	13,406	59.5
2007	18,406	37.2
2008	23,406	27.2
2009	28,406	21.3
2010	33,406	17.6
2011	38,406	15.0

Source: Strategy for Rapid and Sustainable Fertilizer Growth in Rwanda, GOR, April 2006.

Fertilizer Imports

All fertilizer requirements in Rwanda are met through imports because the country has no local production of fertilizers. Prior to liberalization, the importation of fertilizer was assured by parastatals through Kenya and Uganda. In recent years, particularly after the liberalization policy announced by GOR in 1998, the import of fertilizer has shifted to the private sector. In 1998 the GOR banned direct imports by tea and coffee parastatals, removed taxes, and encouraged private sector enterprises to import fertilizer for sale to all categories of customers. In May of 2000, the custom duty and ISHA was replaced by VAT. In January 2001, a World Bank-funded project, the Agricultural and Rural Market Development (ARMD) project, was initiated to support private sector participation in fertilizer import and marketing (see Box 2 in next section). As a result, fertilizer imports considerably increased in 2002 (see Table IV-2). However, complaints about high prices and poor quality of fertilizer by farmers led to the government's intervention in the sector. In 2006, the GOR, unsatisfied with the performance of the private sector, decided to engage in the procurement and distribution of fertilizer to improve its availability and affordability in rural areas. At the end of year 2006, GOR/MINAGRI arranged for the import of 28,604 tons of fertilizer for the years 2006/07 and 2007/08.

Table IV-2. Estimates of Fertilizer Imports, Rwanda (1995-2006)

Year	Import	Year	Import
	(tons)		(tons)
1995	1,344	2001	7258
1996	1,173	2002	17,455
1997	2,938	2003	5,636
1998	4,780	2004	4,611
1999	2,731	2005	7,534
2000	6,537	2006	9,039

Source:________________

Fertilizer is generally procured, in small consignments of 2,000-2,500 tons from fertilizer traders in Uganda, Kenya, Mauritius, South Africa, Dubai, Jordan, and China. As much as 95% of total fertilizers imported in recent years is from Dubai, South Africa, and Mauritius. The distance from the nearest seaports to Rwanda is in the range of 1,500-2,000 km. Table IV-3 shows distance, number of countries crossed, and transportation costs. From Mombassa, fertilizer is shipped to Kampala (Uganda), covering a distance of 1,000 km by rail, and transshipped into trucks for delivery in Kigali, covering 500 km. A route, which has recently become more important, is the shipment through Dar es Salaam port in Tanzania. The mode of transport from seaports in Tanzania, Kenya, and Uganda to Kigali and Bujumbura is mostly by truck. Trucks are not allowed to carry loads of more than 25 tons because of the condition of the roads. Delays in transit are a common feature of road movement. The truck drivers are required to make some unauthorized expenses at inter-country checkpoints and other barriers. The security concerns were a serious issue in the past, but the situation has improved to a great extent in recent years.

Table IV-3. Road Distance and Estimated Freight From Nearest Ports

From	To	Distance (km)	Countries Crossed (#)	Transportation Cost ($/ton)
Mombassa	Kampala (Uganda)	1,200	1	160
Mombassa	Kigali (Rwanda)	1,800	2	240
Mombassa	Bujumbura (Burundi)	2,200	3	320
Mombassa	Goma (DRC)	2,200	3	320
Mombassa	Bukavu (DRC)	2,700	3	360
Dar es Salaam	Kampala (Uganda)	1,700	1	100
Dar es Salaam	Kigali (Rwanda)	1,500	1	212
Dar es Salaam	Bujumbura (Burundi)	1,500	1	212
Dar es Salaam	Goma (DRC)	2,200	2	272
Dar es Salaam	Bukavu (DRC)	2,350	2	309

Source:___________________________.

The freight rates (Table IV-4) are very high and a major component of fertilizer marketing costs. Rwanda has only one port of entry in Kigali, where custom authorities—MAGERWA, Magasins Generaux du Rwanda—are located and imported goods must be cleared. Quality inspection is done by the Rwanda Bureau of Standards (RBS). All applicable duties/taxes, levies, and quality inspection fees must be paid before goods are released to the consignee. Customs maintain five warehouses in Kigali. All goods are required to be cleared within 15 days. Importers generally stock fertilizers in local warehouses and sell from Kigali. A direct delivery scheme is in existence, but rarely used, whereby an importer can request for clearance at a designated field warehouse.

Table IV-4. Breakdown of Fertilizer Importation Cost–Imported by a Private Importer From Regional Market (2006).

	Cost Item	Private Importer	% of Total Cost
		(US $/ton)	
1	f.o.b. (Black Sea)	207	
	Sea freight	49	NA
	Discharge, bags,	48	
	bagging		
	c.i.f.—Mumbasa/Dar es Salam	304	54
2	Transportation Mombassa/Dar es Salaam to Kigali (road)	190	34
	Total landed cost—Kigali	494	88
3	Hidden costs (10%)		0
4	Deposit Magerwa	24.38	4
5	Parking fee— Magerwa	1.6	0
6	Customs fee at agency	4	1
7	Bank charges (credoc operations)	5.26	1
8	Insurance (transportation) fee	1.8	0
9	Unloading expenses	2.9	1
10	Warehouse-rent (2 months)	20	4
11	Staff cost	6	1
	Total	560	100

The Price of Fertilizer

Figure IV-2 shows the trends in the average retail price of NPK, DAP, and urea for 2000 to 2006. Between 2000 and 2003, the average price of fertilizer varied between 200 and 280 FRW/kg. In the year 2005, a dramatic increase in the price of all fertilizers was observed. The price of NPK came close to 900 FRW/kg. This was due to sudden shortage of NPK in national markets in November, 2005. As shown in Table IV-5, the price of NPK reached an all-time high, ranging between 1,700 of 5,500 FRW/kg in Gikongoro and Ruhengeri, respectively. In 2006, prices dropped and stabilized around 400 FRW/kg.

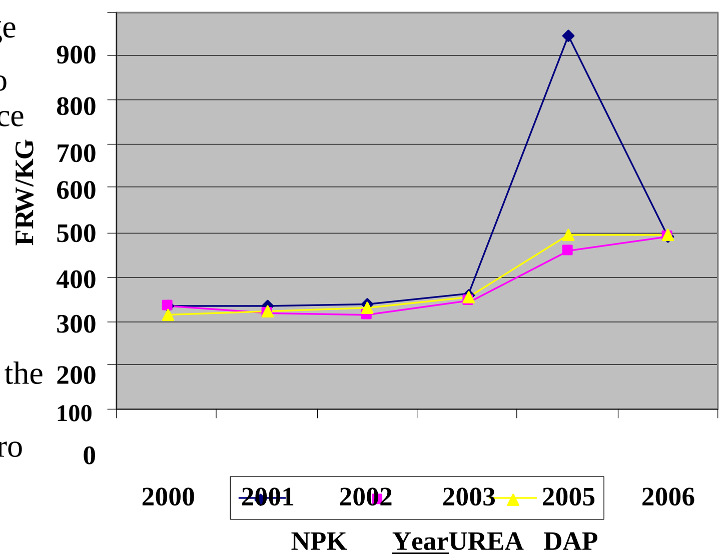


Figure IV-2. Evolution of Average Fertilizer Prices (FRW/kg) in Rwanda.

Table IV-5. Price of NPK by Region, November 2005

Region	Price of NPK/kg, November 2005
Butare	2,000
Byumba	3,400
Cyangugu	2,400
Gikongoro	1,700
Gisenyi	4,500
Gitarama	3,500
Kibungo	2,000
Kibuye	2,200
Kigali Rural	2,800
Kigali Ville	4,500
Ruhengeri	5,500
Umutara	2,700

Source: MINAGRI Division of Statistics.

Structure of Inputs Supply Chain

The input supply chain consists of (1) importers, (2) wholesalers, and (3) retail dealers. A brief description of structure and marketing strategy of operators at three levels of the marketing chain is summarized below.

1. Fertilizer Importers

As of November/December 2006, there were three types of fertilizer importers operating in Rwanda: (a) importers supplying primarily to tea and coffee parastatals against confirmed orders; (b) importers buying in small lots from neighboring countries to satisfy the local demand; and (c) GOR/MINAGRI importing in large quantities for distribution to all categories of customers. The major fertilizer importers are located in Kigali for the most part. They place orders in small consignments, ranging from 150 to 500 tons. The imports by OCIR-Thé and OCIR-Café are comparatively of large volumes, 5,000 tons and 400 tons in the year 2000, respectively. In addition to Kigali, few importers/traders are located at Mugasomwa (Gikongoro Prefecture) in south Rwanda. It is believed that some fertilizer supplies are illegally procured from Burundi because these traders are able to save on warehousing fees incurred at MAGERWA. The relatively low value of the Burundian franc compared with the RWF is another attraction to these traders. The total volume of such illegal border trade, however, is said to be small. A few importers cum dealers are located in Ruhengeri, in the North. In addition to procurement from the Kigali market, they directly import small quantities of fertilizers from informal traders based in neighboring port cities in Kenya, Uganda, DRC, and Tanzania. The exporters/traders visit Rwanda markets and book orders for fertilizer on cash and carry basis. The shipments are generally of small quantities and of less than $5,000 value, thus avoiding inspections and fees. The informal exporters/traders provide access to all types of fertilizer products, including fertilizers bagged at port towns. During field visits, it was observed that in some cases, the name and address of the manufacturer, nutrient content and net/gross weight are not printed on fertilizer bags, or if printed are not legible, making the quality of contents doubtful. A list of importers cum wholesale dealers is produced in Table IV-6.

Table IV-6. List of Importers and Wholesale Dealers

	Name	Location and Address
1	Africhem	Lake Hena Avenue, Kigali
2	Nahu	Industrial Park, Kigali
3	Kajali Electronic	Nyabugogo Avenue, Kigali
4	Genela	Nyabugogo Avenue, Kigali
5	Salugea	Nyabugogo Avenue, Kigali
6	Mafold	Nyabugogo Avenue, Kigali
7	Pamente	Nyabugogo Avenue, Kigali
8	Julia Shop	Beside Union Trade Center Building, Kigali
9	Africhem	Lake Ihena Avenue, Kigali
10	Agrophar	Lake Ihena Avenue, Kigali
11	Agrovet	Lake Ihena Avenue, Kigali
12	Mgarambe Prosper	Nyabugogo Avenue, Kigali
13	MIG Ltd.	Ulrugurula Boulevard, Kigali
14	Nkubiri Alfred	Kubaho Plaza Building, 2nd Floor, Kigali
15	Sokwa-The	Near OCIR-Coffee , Kigali
16	OCIR–Tea	Kigali
17	OCIR–Coffee	Kigali
18	Nbabojimano J. Bosco	
19	Koyjuko Bonaventure	
20	Karangwa Joseph	
21	Rwanda Flora SARL	
22	Uzabakiriho John	Ruhengeri Northern Province
23	ETs Hareba	Ruhengeri Northern Province
24	Fac I (Forum des Associations de Commerçants d'Intrants)	Ruhengeri Northern Province
25	Gasore	Ruhengeri Northern Province
26	Britwajiki André	Ruzzizzi
27	MINAGRI/GO (began in 2006)	Kigali

2. Wholesale Cum Retail Dealers

The second link in the input supply chain consists of wholesale cum retail dealers. Due to a relatively small volume of business, the functions of wholesale and retail sale are combined by most business enterprises. Fertilizer is procured from importers in small lots and sold to retailers and/or to farmers from the shops generally located in bigger towns. Fertilizer is generally sold alongside other inputs like pesticides, veterinary/animal health products, and seeds from the same outlet. The operators in these categories include the following:

Tea and Coffee Parastatals—Procurement is made through the National Tender Board and fertilizer is distributed to tea and coffee growers on credit. The recovery rate is said to be very low sometimes in the range of 40%-50%. In the year 2000, OCIR-Thé imported 5,000 tons of fertilizer of which 4,000 tons were NPK 25-5-5 and 20-10-10, and 20-5-5. OCIR-Thé is well organized and caters to about 10,000 tea growers. OCIR-Café, another parastatal, has a similar marketing strategy but serves a relatively smaller segment of the fertilizer market in the range of 400-600 tons of fertilizers annually. OCIR-Café has a large clientele with a requirement of about 1,500-2,000 tons of fertilizer. Due to financial and other constraints, it has not been able to buy larger volumes of fertilizers. Leakages, or farmers' selling back the fertilizer to retailers, are common. There is, however, no definite data or verifiable information on the actual quantity of fertilizer that changes hands in this process. It is estimated that the two parastatals have the potential to consume approximately 15,000-20,000 tons of fertilizers per year. The demand estimates are based on the area under plantation and the recommended rate of fertilizer application. Some of the constraints mentioned by the parastatals are (a) difficulty in getting timely supply of 25-5-5, (b) difficult access to cheaper finance, (c) poor rate of recovery from growers, (d) divestment of fertilizers meant for tea to other crops, and (e) unstable tea/coffee prices in world market. According to the policy announcement made in 2001, OCIR-Thé was to be privatized. The process of privatization has yet not been completed.

a. **Agro-Processing Companies**—As of November 2006, a modern wheat flour mill, two maize flour mills, and four rice mills were operating in the country. Establishment of another wheat mill is under consideration by a foreign-based investor. To secure an adequate supply of raw material (wheat, maize, and paddy), the millers consider it necessary to facilitate the timely supply of seeds and fertilizers to farmers, who work more or less as outgrowers, in the catchment's area. Together with tea and coffee enterprises, the agro-processing companies are likely to become the largest fertilizer users and distributing agencies and thereby the most important link in the input supplies chain.
b. **Cooperatives and Producer Associations**—Cooperatives and producer associations are the most important channels in the distribution of fertilizer and other inputs to farmers. Cooperative unions usually procure fertilizer from private suppliers and supply it to their members on cash/credit. However, the recent importation and sale of fertilizer by MINAGRI is likely to strengthen the linkages between cooperatives and the government, weaning away the cooperatives from the private sector. As of October 2006, nine cooperative unions were in the business of input distribution (list given in Table IV-7). Six cooperative unions are registered and three more are likely to be registered soon. On an average, a cooperative union deals in 125-150 tons of fertilizer per year.

3. Retail Dealers

A retail dealer refers to a sales outlet from where a farmer can buy fertilizer in small quantity as and when required. It is interesting to note that in Rwanda, retail sale of fertilizers is mostly in small bags of 1 kg, which are prepared by breaking 50-kg bags and packing them manually in polythene packs that are stitched with a stapler or tied with a thread. This often results in some loss of nitrogen and many adulterations with foreign material and short weight also occurs at this stage. Product name, weight, or contents are not printed on such packs. Farmers identify the product by visual inspection. As of December 2006, fertilizer retail functions were assumed by retail dealers (individual private dealers); wholesale cum retail dealers; cooperative unions; and MINAGRI (started retail sale in November 2006). Wholesale and retail functions are generally merged due to low volume of sales. The retail shops are mostly located in major agricultural towns. The retailers stock a wide range of products like seeds (mainly vegetable seeds), fertilizers, CPPs, animal health/veterinary products, and small hand tools, etc. The retailers were not found displaying the dealer boards or technical point-of-purchase literature. The number of retail dealers could not be obtained because records have not been kept. There may be 50-100 retail dealers in Rwanda. A list of retailers for selected locations is shown in Table IV-8.

Table IV-7. List of Registered Co-Op Unions

	Name	Location and Address
1	Coopérative de développement rizicole de Bugarama (CODERIBU) : ± 6,000 members	Western Province, Ruzizi District, Bugarama Sector
2	Union Cooperative Rizicole de Butare (UCORIBU) : ± 17,000 members	Southern Province, Crisagara District, Commodity rice
3	Coopérative de Cultivateurs du riz de Rwamagaria (COCURIWA), 5,785 members	Eastern Province, Rwamagama District
4	CODERVAM	Eastern Province, Nyagatare District, Commodity rice
5	Cooperative Abahujumugawls	Eastern Province, Bugesera District, Commodity rice
6	Cooperative de Kibaya Cyunce Zi	Eastern Province, Ngowe District, Commodity rice
7		Three co-op unions are likely to be registered in a short time
8		
9		

Table IV-8. List of Retailers

	Name	Location and Address
1	Intagri	Lake Hera Avenue, Kigali
2	Agrotech	Lake Hera Avenue, Kigali
3	Agrovet	Lake Hera Avenue, Kigali
4	Intravet	Lake Hera Avenue, Kigali
5	Technisen	Nyabugogo (around Nyabugogo international parking)
6	ADA	Nyabugogo (around Nyabugogo international parking)
7	ADER	Nyabugogo (around Nyabugogo international parking)
8	BAGVET	Nyabugogo (around Nyabugogo international parking)
9	ETs Jaloza Rpse	Ruhengeri
10	Golpigprp	
11	Unicoopag	Nyamagabe Ruhengeri
12	Ste Rita	Nyamagabe Town
13	Three retailers in Gasarenda	Near the wheat mill Gasarenda
14-20	Bugaranio Sector	Ruzizi District 7 retailers
21-29	Rice Cooperatives	Nine retailers
30-39	Irish Potato Cooperatives	Nine retailers

Annex V. An Assessment of the Seed Market in Rwanda

Institutions in the Seed Sector

The seed industry in Rwanda is still dominated by the public sector although there is a desire to privatize it. The public sector is solely responsible for variety development and seed certification and control. It is also very dominant in seed production and processing. With the previous efforts at privatization, some aspects of certified seed production are handled by the private sector, which is predominantly comprised of farmer organizations. Following are the key institutions and the roles they play:

1. **ISAR**—The Institute for Scientific and Agronomic Research is responsible for variety development and the production of breeder seed.
2. **The Seed Development Unit** (SDU)—Located within the Rwanda Agricultural Development Authority (RADA) in MINAGRI, the SDU (Figure V-1) is responsible for the production of basic and certified seed, processing, and marketing as well as quality control. It also supervises the production of quality declared seed (QDS). The SDU is home to the new seed project, AFSR, which has assumed all the seed activities.
3. **AFSR**—The purpose of the AFSR project (see Box 1) is to remove the major constraints that impede the development of the seed commodity chain and contribute substantially to making certified seeds more accessible to farmers. It aims at contributing to the improvement of production conditions for a great number of farmers and in the fight against poverty. AFSR will provide technical support and training to farmers and contract seed growers. It will link them to the bank (BRD) and negotiate credit facilities. It will strengthen the seed quality control services and assist MINAGRI in developing the seed policy and the 5-year seed plan. Finally, the project is working with ISAR to develop a plant genetic resources (PGR) program. The project is expected to fully privatize the seed sub-sector.
4. *Private Sector*: A number of individual farmers, farmer associations and cooperatives are involved in seed production, for both certified (CS) and quality declared (QDS) seed. Others are involved in seed marketing.

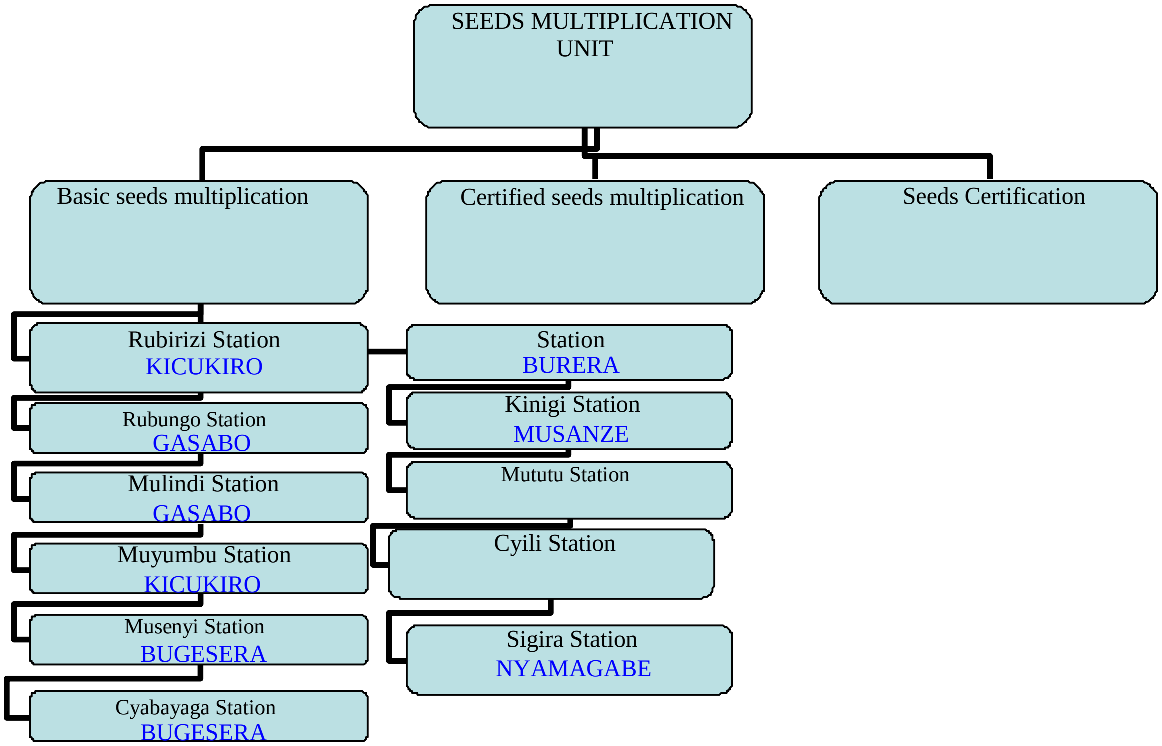


Figure V-1. Seed Unit Organization Chart

Box 1. The Belgian Technical Cooperation and GOR's Support to the Rwandan Seed Commodity Chain (AFSR) Project[20]

On June 3rd, 2005, the AFSR project was launched through direct bilateral cooperation between Belgium and Rwanda with a budget of 6.5 million EUROS. The National Seed Service (NSS) is called upon to play the central role in this project. The project seeks to remove the major constraints hindering seed commodity chain development. The objective of the AFSR project is the increased and sustained production of quality seeds, suited to the local agro-biological and climatic conditions, produced in adequate quantities and accessible to farmers. The specific objectives of the project are to: (i) strengthen the institutional and organizational framework of the seed commodity chain (associations, traders, farmers, transporters); (ii) strengthen private sector seed production contributing to improving food security; and (iii) ensure seed quality throughout the sector.

The first project objective is one of paramount importance given the significant gaps within the critical functions (stakeholders' consultation and sharing of information; regulations and arbitration) of the seed commodity chain. This underscores the fact that the stability of supplies and availability and accessibility of seeds are not entirely satisfied by the seed commodity, resulting in the problem of seed insecurity remaining virtually chronic. The project identified the lack of organization in the seed commodity chain as the central problem of the sector. A study on effective demand for seed and the profitability of seed use found that it was profitable for potato, maize, and rice. The key project activities include:

(a) **Create a favorable environment for a better organization of seed production and marketing activities and actors** by drafting annual seed action plans and modalities for their implementation (NGOs will be involved in this activity). This is to be done through the establishment of a support unit within the National Seed Service (SNS), the identification of key actors in the sector, the organization of a workshop and brainstorming sessions and the conduct of studies on the sector. The first study is to identify Rwandan seed sub-sector operators while the second one is to focus on effective demand and economic profitability of seed production.

(b) **Establish an information system for the seed sector**—Support the registration of private seed producers and certified seeds, establish an information system, conceptualize and disseminate a letter of information on the seed sector to various stakeholders.

(c) **Create a favorable environment for the transfer of seed production and marketing activities to the private sector**—This would be done through training programs targeted to strengthen private operators' technical and business skills and supporting activities to improve their access to production and marketing infrastructure (multiplication fields, agricultural equipments).

(d) **Establish financing mechanisms adapted to seed sector**—The project will establish within the SNS a revolving fund to support the production of basic and certified seeds.

(e) **Organize the production of breeder seeds within ISAR**—This will be done by providing ISAR with a revolving fund for breeder seed production and strengthening their capacity (physical infrastructure; laboratory equipments; breeder seed production equipment).

(f) **Implement a policy for the promotion of commercial seed quality**—This is to be done by the NSS through the publication of procedural manuals for the control of multiplication fields, the follow-up of operators after harvest and the control of laboratories. This activity will also include the training of staff to strengthen and operationalize the regional units for seed quality promotion.

20 AFSR. 2001.

Research and Variety Development

The production of improved seeds has been a public sector function since 1962 when MINAGRI's research unit started developing varieties. Some research work had started even earlier and an improved maize variety was released in 1951 at Rubona. The approach was, and still remains largely, to use on-farm trials so that farmers select the best varieties and informally disseminate them to other farmers. This method is only suitable for small-scale seed diffusion either for some niche crop or for a new crop being introduced in an area. It is not suitable for a nationwide seed industry. It is also technically acceptable for self-pollinated and vegetatively propagated crops although you would still have problems with transmission of seed-borne diseases.

The Institut des Sciences Agronomiques du Rwanda (ISAR) has, among its many activities, the mandate to develop, release, and maintain high-yielding varieties, strains, and hybrids of various field crops and to secure adequate foundation seed for recommended cultivars. Research scientists are responsible for running programs to maintain genetic stocks, develop high-yielding varieties and hybrids and breed for disease, insect resistance, and tolerance to environmental stresses. Many of the old varieties have since degenerated or been lost during the civil war and genocide of the early 1990s and ISAR has tried to develop new replacements. ISAR collaborates with IARCs like CIAT, CIMMYT, IITA, as well as regional research networks like the Association for Strengthening Agricultural Research in East and Central Africa.

Lately, for dissemination, the seed is first produced on station and then given to identified farmer associations and NGOs in target areas that are able to multiply seeds. Those farmers, farmer associations, and NGOs identified are first trained and then given seed for multiplication and further dissemination. The seed grower decides whether he/she wants to grow CS or QDS and then registers with the Seed Inspection Services of SDU. There is no formal variety release procedure and hence no national varieties' register. The Ministry of Agriculture, through the AFSR project, is in the process of compiling a list of varieties in use by farmers in Rwanda. But according to ISAR records, several improved varieties are in production as follows:

- Maize—Five open-pollinated varieties with a yield potential of 3.5-7.0 tons/ha. Some of these varieties are QPM types with enhanced protein content.
- Beans—Six bush varieties with yield potential of 1.5 to 2.5 tons/ha and resistance to several of the major diseases; and seven climbers with yield potential of 3.0 to 4.5 tons/ha and better disease resistance than the bush types. Some of the new varieties are bio-fortified with iron and zinc to enhance their nutritional value.
- Potatoes—Fifteen varieties with potential yields ranging from 18 to 48 tons/ha.
- Bananas—Fifteen improved FHIA and IITA hybrids with single/multiple pest and disease resistance originating from IITA-ESARC Uganda were introduced in late 1999 and planted for multi-location evaluation on station at two sites. Agricultural Technology Development and Transfer yield multiplication process is still going on as a preparation for forthcoming on-farm evaluation [www.isar.gov.rw].
- Sorghum—Seven varieties were in production prior to 1994, most of which have either been lost or degenerated. Since then, five new varieties have been released; one of them is an early maturing white grain type for highland areas. These are early maturing, tolerant to diseases and pests, and have a yield potential of 3.0-5.0 tons/ha.
- Rice—Before 2004, the rice research program at ISAR developed and disseminated 12 rice varieties in the main rice-growing areas in the country. These varieties are still being

cultivated. Further work resulted in the release of four more varieties by January 2004. These are semi-dwarf varieties with yield potential of 6.0-9.8 tons/ha

- Wheat—By 1987, seven varieties had been released. Over 17 more varieties have since been released and other introductions are being evaluated. In addition, six varieties of triticale have been released.
- Cassava—Between 1962 and 1987, nine varieties were released. Many of these have degenerated. Six new varieties were released after 1994; recently, four more varieties with resistance to African Cassava Mosaic Virus (ACMV) have been released.
- Sweet Potato—Four varieties, white, yellow, and orange flesh types with potential yields of 20-30 tons/ha. They are early maturing, rich in vitamin A, and adapted to growing conditions in various parts of Rwanda.

In addition to these examples, improved varieties of coffee, tea, fruit trees, and horticultural crops have been released to farmers. Thus variety development, though an on-going activity, has already gone a long way in making improved varieties available to farmers.

Seed Production, Demand and Supply

Since 1964, the production of improved seeds has been done by a number of seed projects predominantly funded through the Belgian Technical Cooperation. These include the Services de Selection des Semences (SSS), the Support to Rwanda Seed Sector Project (ASSR), and the current Support to the Seed Commodity Chain in Rwanda [AFSR]. Several other projects also had a seed component like the IFAD project, the World Bank funded RSSP, and so on. However, sustainability after each project has been elusive and use of improved seeds by farmers remains less than 3%.

Initially, during 1962-1980, improved varieties developed by research were simply sent out to farmers through on-farm trials. Between 1980 and 1998, the Seed Unit started formal seed multiplication as well as quality control by checking on germination, purity, and seed health. However, further multiplication of the seed by farmers was not certified. From 1998 to 2005, individual farmers and farmer associations were contracted by ASSR to buy the seed, process, and sell as certified seed. Many other growers, however, continued to produce and sell quality declared seed (QDS) Table V-9 shows recent trends in seed production (Source: AFSR Reports).

Table V-9. Recent Trends in Seed Production

Crops	2001		2002		2003		2004	
	Area	Production	Area	Production	Area	Production	Area	Production
	(ha)	(tons)	(ha)	(tons)	(ha)	(tons)	(ha)	(tons)
Cereals								
Maize	180.3	395	84.2	160	216.7	315.27		254
Wheat	48	63	24.04	43	54.44	86.88		52
Sorghum	30	35	24	6	7.8	5.5		24
Rice	17.5	24.5	6.92	21.7	2.7	9.1		19
Sub-total	275.8	517.5	139.16	230.7	281.64	416.75		349
Legumes								
Beans	173.2	147	179.7	129.5	139.41	159.22		108
Soybean	51.1	78	135.5	103	82.9	87.33		20
Peas	42.5	14	17.3	21	16.8	17		6
Groundnut	7.57	12.5	6.45	6	3.9	6.47		0
Sub-total	274.37	251.5	338.95	259.5	243.01	270.02		134
Tubers								
Potato	90.8	970	77.71	930	77.11	1240.94		751
Cassava	0	0	0	0	7.3		33	2,100,000
Sub-total	90.8	970	77.71	930	84.41	1240.94		

Source: AFSR Reports.

Both the actual and the effective demand for seed have not been known but a recent study commissioned by AFSR has established that there is actually great effective demand for potato seeds (124,000 tons), followed by beans (9,220 tons), maize (1,140 tons), wheat (1,100 tons) and very little for soya (940 tons), sorghum (686 tons), and rice (219 tons) (AFSR Strategy Paper). Table 10 summarizes the findings of the study on national seed requirements undertaken in 2005 by "S2000."

Table V-10 Estimated National Seed Requirements for the Year 2007 Showing the Total Potential, the Theoretical Renewal and the Effective Demand (Source: AFSR Reports)

Crop	Total Potential Seed Required 2007	Seed Required Based on Renewal Rates	Effective Seed Demand
	(tons)		
Sorghum	5,078	1,268	686
Maize	3,574	1,788	1,144
Wheat	2,953	738	1,093
Rice	1,121	280	219
Beans	30,736	7,684	9,220
Soya	2,696	674	944
Potato	354,419	177,210	124,047
Cassava[a]	1,735,493,100	867,746,550	754,939,499

a. For cassava, the unit of measure is the number of cuttings.

A comparison of Tables V-9 and V-10 shows that current seed production levels fall far short of meeting demand. Looking at a few key crops, for example, shows that production as a percentage of demand is approximately 0.8% for potato, 35% for maize, 14% rice, 05% wheat, and for beans, 0.6%. This is, of course, supplemented with QDS, while for crops like rice, wheat and beans, farmers do save their own seed. It can thus be seen that much is still to be done if seed supply is to meet demand. Similarly, the production of BrS by ISAR is not sufficient to meet the requirements for CS and QDS production. All the seed for vegetables, fodder crops, and some for field crops is imported and, though there is no restriction on imports, market imperfections limit availability.

Seed Marketing

There are agri-input stockists in Kigali and other major towns. Hardly any of them had stocks of improved seeds of field crops, and a few had QDS. Some of the stockists visited were vague about sources of seed and did not seem enthusiastic about selling it. Most had vegetable seeds. There is a need to control the marketing of QDS to avoid the risk of fake and adulterated seed on the market. It is not prudent to allow QDS to be openly marketed in shops, but it should be restricted to within the cooperatives or farmer associations where it is produced. Many cooperatives and farmer associations sell seeds, most of which they produce themselves. This is regarded as a service to members rather than as a business. Many complained of a shortage of BrS.

The price of seed is subsidized to enable farmers to afford it. All BrS has been bought from ISAR at 700 FRW/kg. It has now been raised to 1,000 FRW and a revolving fund is to be created. The retail price for BS and CS as of June 2006 is shown in Table V-11. These prices are pan-territorial and are not based on actual production and marketing costs, which would probably work out much higher. It is not clear whether price control will be maintained after liberalization although, obviously, that would be counterproductive. There is no fixed price for QDS, while maize seed from Uganda retails at 1,200 FRW and 1,500 FRW/kg for OPVs and hybrids, respectively.

Table V-11. Prices of Basic and Commercial Seed for Some Crops, in FRW/kg.

Crop Species	Basic Seed	Certified Seed	Crop Species	Basic Seed	Certified Seed
Maize	250	225	Climbing Beans	300	275
Wheat	250	225	Bush Beans	300	275
Sorghum	250	255	Soybean	300	275
Rice	250	225	Peas	250	225
Groundnut	650	-	Potato	125	100
Cassava	5 FRW/stick	-			

Source: SDU data.

Seed Legislation and Quality Control

A seed statute exists and it has been harmonized with those of the EAC block. Seed inspection and certification are done in accordance with the law. But there are still gaps like the absence of variety release and registration procedures. It is said these will be incorporated in the new policy. There is also need to enact PVP legislation in order to be at par with the other countries in the region and to encourage private sector investment in the seed industry. The national seed services in SDU, responsible for quality control and certification, are understaffed with only four inspectors. This number will not suffice as the industry liberalizes.

Annex VI. An Assessment of Access to Agri-Input Financing in Rwanda

Differential access to credit for the agricultural sector plays an important role in explaining observed differences in agri-input use and consequently in productivity across farms in African countries. As a result, it is strongly argued that rural development must originate with addressing constraints limiting credit access to farmers and agri-input traders. The availability of financial services at competitive prices and the access of farmers and agri-input traders to such services are essential to increase agricultural productivity in Rwanda. As part of the agricultural input markets assessment, issues of access to credit were examined to determine how well public and private lenders serve farmers and agri-input traders' financial needs. The approach adopted consisted of understanding the financial needs of agri-input traders and farmers, identifying the constraints and initiatives that seek to address them and define potential intervention areas for the CATALIST project.

The approach used is summarized in the diagram below:

Understand the Financial Needs of Agri-Input Traders and Farmers

↓

Identify the Access to Credit Constraints

↓

Identify Initiatives that Seek to Address the Identified Constraints

↓

Define Potential Intervention Areas for the CATALIST project

The assessment revealed that:

1. Despite being the largest contributor to the economy, agriculture holds the smallest share of bank loans.
2. Rwanda's banking sectors are small and inefficient.
3. The main sources of financing for agri-input traders are commercial banks.
4. The main sources of credit for farmers and farmers' associations are informal credit mechanisms and national development banks.
5. Multiple constraints impede the availability and access of financing in agri-input markets in Rwanda.
6. Several public sector initiatives seek to increase the volume of loans to the agricultural sector.

Despite Being the Largest Contributor to the Economy, Agriculture Holds the Smallest Share of Bank Loans—Although agriculture is the largest contributor to Rwanda's economy, it holds the smallest share of bank loans (5%).[21] The reluctance of banks to provide loans to agriculture lies in the intrinsic nature of the agricultural sector. First, financial contracts between lending institutions and agricultural entities are characterized by

21 Republic of Rwanda MINECOFIN. April 2005. Annual Economic Report.

uncertainty from both sides about expected repayment because agricultural output is subject to the vagaries of the weather. Second, information asymmetries, the possibility that farmers and agri-input traders will not act in the best interest of the bank, make the assessment of viable projects difficult. Third, the costs involved in the enforcement of contracts decrease agricultural entities' incentives to repay loans and deter lending institutions from providing loans. Fourth, it is very costly for financial institutions to acquire and process information about the credit worthiness of agricultural enterprises and the probability of their investments being successful. The result is that only few loans are provided to the agricultural sector.

This high-risk/low-credit situation is exacerbated by the fact that the banking sector in Rwanda operates in an environment characterized by macroeconomic instability, weak legal systems and dearth of credit information. Inflation rates are high (8%) and unstable, which does not provide incentives for savings.[22] Legal systems are rigid with lengthy statutorily based processes, which create uncertainty with respect to the predictability, speed, and fair enforcement of contracts.[23] No credit registries are available to give reliable access to clients' credit history. Without sharing of information, the costs and time of obtaining credit information remains high. The non-conducive environments within which lending institutions operate translate into a small and weak banking sector, ineffective financial systems, and small supply of agricultural credit.

Rwanda's Banking Sectors are Small and Inefficient—Rwanda's banking sector is relatively shallow and dominated by a small banking and microfinance sector despite the vast opportunities offered by the government through its market liberalization policies. In Rwanda, banking services are provided by:

- Six commercial banks--Bank of Commerce, Development and Industry (BCDI), Bank of Kigali, Commercial Bank of Rwanda (BCR), FINA Bank, and Compagnie Generale des Banques (COGEBANQUE).
- Banque Rwandaise de Development (BRD), a state-owned development bank.
- Rwandan Union of Popular Banks (UBPR) or Peoples Bank, a credit cooperative network.
- Microfinance Institutions (MFIs).

All banks are subject to supervision and regulation by the National Bank of Rwanda (BNR), under the Banking Law of 1999, and annual inspections of all commercial banks were started in 2004. The National Bank imposes foreign exchange controls and administers the import licensing system. In July 2002 BNR issued the instruction No. 06/2002 for the regulation of Microfinance activities with the purpose of defining the legal status and obligations of all MFIs.[24]

22 World Bank. 2006. Country Brief: Rwanda; Burundi.
23 IMF. 2005. Burundi: Poverty Reduction Strategy Paper-Preparation Status Report. IMF Country Report No. 05/325. International Monetary Fund. February 2006. Rwanda: Poverty Reduction Strategy Paper—Annual Progress Report. IMF Country Report No. 06/61.
24 National Bank of Rwanda. 2002. Instruction N°06/2002 of The National Bank Of Rwanda On Microfinance Activities. Le Banquier. Juin 2006. Magazine d'Information de la Banque Nationale du Rwanda. Numero 10/2006.

The Main Sources of Financing for Agri-Input Traders are Commercial Banks— Agri-input procurement is capital intensive. Access to finance for agri-input traders is extremely constrained in Burundi. A small number of agri-input importers, wholesalers, and retailers are able to access short-term loans (6 to 8 months) from commercial banks (Table VI-1). Very few agri-input importers obtain letters of credit from commercial banks, such as the Burundi Bank for Trade and Investments (BBCI) and the Commercial Bank of Burundi (BANCOBU). Collateral requirements for such loans can amount to 200% of the value of the loan. Average interest rates are 20% and the length of the loan is 1 year (Table A4 in the Appendix). Retailers and dealers rely on their own funds for the purchase of inputs, which limits their ability to extend credit to farmers.

Agri-input importers have several modes of financing that are available for input procurement: suppliers' credit, bank loans, credit lines, and letters of credit. Under the suppliers' credit scheme, a foreign manufacturer makes the inputs available to the importer on credit. Importers are required to provide 16% of the value of the loan as down payment and repay the loan as they sell their input stocks. Very few importers benefit from suppliers' credit. The majority of agri-input importers, wholesalers, and retailers turn to commercial banks, especially the Bank of Kigali and the BCDI, for loans, credit lines, and letters of credit. Although microfinance facilities are widely available in the regions, the size of their loans is inadequate. To obtain letters of credit, traders are required to provide 100% of the loan value as collateral and pay a bank fee of 3% of the value of the loan. Interest rates are 14% to 18%; other bank fees can amount to 3% of the value of the loan.[25] The banks make a provision for letters of credit once they are constituted and block an equivalent amount of cash from the customers' accounts. Letters of credit and blocked cash constituted in foreign currencies are translated at prevailing exchange rates. Importers bear the exchange rate risk. As a result, input traders have limited access to finance for investing in the input business. The majority relies on their business funds to procure inputs, which limits the size of their orders. This also limits the importers' ability to extend credit to wholesalers and retailers.

25 Banque Commerciale du Rwanda. 2005. Annual Report.
Banque Rwandaise de Développement. 2005. Annual Report.
Banque de Kigali. 2005. Annual Report.

Table VI-1. Sources of Credit for Agri-Input Traders and Farmers.

Primary Agricultural Clients	Lending Institutions	Loan Size	Collateral Requirement	Processing Fee	Bank Charges	Interest Rate	Length of the Loan	Loan Recovery Rate
Agri-Input Importers	BK, BCDI	$200,000	100% in form of mortgage	3%	3%	17%	6 months to 2 years	
	Suppliers' Credit		16%	0	0	0%	variable	
Agri-Input Wholesalers, Dealers, and Retailers	BK, BCDI	$110,000	100% in form of mortgage	3%	3%	14%-18%	6 months to 2 years	
Farmers' Organizations	Members of ROPARWA	$500 to $500,000	100% in form of solidarity group caution, cows, coffee plantations	1%	$20	11%-36%	3-12 months	85%
	BRD, UBPR, Vision Finance	$20 to $200,000	70% minimum in form of solidarity group cautions, plantations, mortgage	1.25%	$21	8%-15%	2-9 months	88%
	Trader Credit	$9 to $3600 0%		0%	0	25%	1 month	72%
	Buyer Credit	in kind	contract	0%	0	0	cropping season	100%
Farmers	Farmers' Organizations	in kind	membership	0%	0	2.50%	cropping season	70%

The Main Sources of Credit for Farmers and Farmers' Associations are Informal Credit Mechanisms and National Development Banks—Farmers in Rwanda have greater access to agri-input credit through informal credit mechanisms, national development banks, and microfinance institutions than with private banks (Table VI-__). They obtain loans for the purchase of agri-inputs mainly through three informal credit channels:

1. **Trader credit**—Agri-input traders provide in-kind advances to mostly commercial farmers for the acquisition of seed, fertilizer, and CPPs. To reduce the risk of default, many traders give loans to registered cooperatives. Concerning credit to individual farmers, it is always preceded by a visit to their fields by traders as a mechanism to establish the creditworthiness of the farmer. Traders don't charge any interest rate on loans that are repaid within 7 days. After that time, the average interest rate is 25% for 1 month. The loan recovery rate is 72%. The loan size ranges between 5,000 ($9)[26] and 2 million FRW ($3,600) for individual farmers and cooperatives, respectively.
2. **Buyer credit**—Contract farming and outgrower schemes. Wheat and maize milling companies provide seed and fertilizer on credits (always in kind) to wheat and maize producers based on a product purchase agreement. Repayment of the initial credit is deducted at harvest time when the farmer sells the product. This enables farmers to acquire quality seeds and fertilizers and help milling companies secure produce of sufficient quality and quantity for their operations. There is no explicit interest rate charge to these farmers. The existence of one or very few buyers minimizes the risk of default because farmers have very few alternative sources of credit for the next year.
3. **Credit from farmers' organizations**—Farmers' associations/cooperatives, such as UNICOOPAGI (Union of Agricultural Cooperatives of Gikongoro), CPRB (Rice Production Cooperative of Bugarama), and UCORIBU (Union of Rice Cooperatives of Butare) provide credit to their members based either on repayment at harvest or on agreed purchase. About 75% of associations/cooperatives' lending is in kind, primarily seeds, fertilizer, and CPPs. Most rice and potato organizations offer inputs for production on credit to their members. This credit mechanism is linked with both input supply (lending in kind) and output (tied to the sale of produce). Repayment can be made in cash or in kind at harvest time when the farmer sells its output. Farmers' organizations, such as COIMU, UCORIBU, and CECMA, usually charge a 2.5% interest rate on the loan to account for transportation and storage fees. The loan recovery rate is around 70% for farmers and 90% for cattle breeders. A 2% penalty fee is added to default loans and members must repay the entire amount the following season. The recovery rate after two seasons is nearly 100%.

Apart from these informal credit mechanisms, individual farmers have no access to credit from formal lending institutions, even with public institutions such as national development banks because they are unable to meet the collateral requirements and properly complete loan application forms. In contrast, a few farmers' organizations are able to obtain third-party loans for the purchase of fertilizer, seed, and CPPs primarily from public lending institutions such as the Rwanda Bank of Development (BRD) and microfinance institutions. Microfinance is an important part of the agri-input financing, led by the Union des Banques Populaires du Rwanda

26 Exchange rate is $1 = 550 Rwanda Francs (FRW) = 1000 Burundi Francs (FBU)

(UBPR) or Peoples Bank and Vision Finance (sponsored by World Vision). Most of the industry is at its infancy stage though it is growing rapidly.

BRD remains undoubtedly the most important bank in agricultural financing. As of September 2006, 22% of the BRD loans went to the agricultural sector. In 2005, BRD provided 200 million FRW worth of short-term loans to farmers' cooperatives for the purchase for agricultural inputs at an 8%-9% interest rate. The approach adopted by BRD is to work through proximity organizations and units such as farmers' associations as intermediaries. BRD provides funds to the intermediary with clear conditions to ensure that the individual farmers (e.g., members of the association) become the ultimate beneficiaries of the credits. The same intermediary will also ensure repayments from the individual farmers. BRD is also increasingly involved in the promotion of micro-finance in order to increase the number of small farmers' access to credit.[27] In 2002 an independent microfinance unit, Fund for the Strengthening and Development of Microfinance (FOREDEM), was created to promote but not implement microfinance; 100% of FOREDEM's funds are allocated to the agricultural sector. BRD mobilizes funds from donors and the GOR to support microfinance operations. STABEX funds (600,000 Euros), provided by the EU, are used to promote coffee, tea, and other export crops. In addition, BRD also uses MINAGRI (409 million RWF) funds from the export promotion program, the Kigali Ngali project (0.5 million Euros) fund for refinancing of MFIs active in the project areas, and the project PDCRE (1.26 million SDR) fund for the promotion of coffee, tea, and other cash exports.

The second largest bank that provides financing to the agricultural sector is the UBPR or Peoples Bank. Peoples Bank is a Credit and Saving Cooperative that serves as a micro-lender and micro-bank for nearly two-thirds of all depositors in the country. The bank has control over 97% of the microfinance sector in Rwanda. In 2005, the Peoples Bank approved loans for agricultural activities that amounted to 6 billion RWF, representing 16% of total approved loans.[28] The importance of the Peoples Bank for agricultural credit is reflected in the number of people receiving credits, which amounted to 16,281 clients in 2005. The bank, however, doesn't offer any credit to agri-input importers, but it provides third-party loans to farmers' cooperatives for the purchase of agri-inputs. Such loans are directly negotiated with input suppliers. The bank provides the value of the loan to input suppliers, who deliver the inputs to the cooperatives or associations. UBPR also loans to individual farmers, who hold 43% of accounts but only 28% of the volume of deposits. Members whose primary occupation is agriculture or animal husbandry represent 30% of all the debtors of the system. These rural farmers detain 18% of the outstanding volume of loans in the whole system.

In Rwanda, farmers organizations can also obtain loans to purchase inputs with the World Vision's sponsored MFI called Vision Finance. Vision Finance applies the community banking system (i.e., credit associations and solidarity groups) to serve farmers and farmer associations. Community banks are self-sustaining financial institutions owned and managed by a community for the purpose of providing credit and other financial services to its members largely on the basis of their mutual group responsibility. All the members guarantee each other and bear the responsibility for timely loan repayment. The credit associations and solidarity groups are self-

27 BRD. 2005. Annual Report.

28 Peoples Bank of Rwanda. 2006. Annual Report.

formed, self-managed, and registered by local authorities. To qualify for loans, they should be involved in income-generating activities, have substantial experience in the business for which the loan is requested, have the capacity to provide 20% of the value of the loan as collateral and complete all registration requirements. Loan sizes range from FRW 20,000 ($36) to FRW 150,000 ($272) with a repayment period of 5-8 months.

Multiple Constraints Impede the Availability and Access of Financing in Agri-Input Markets in Rwanda—Several constraints impede agri-input traders and farmers' access to credit. *First*, farmers and agri-input traders have little access to information concerning official savings/loans institutions and consequently have a very limited idea of the nature of financing facilities. In fact, banks have a considerable communication problem with the rural environment in general, and with actors involved in agriculture in particular. *Second*, the agricultural sector is often considered insolvent and is seen as a high-risk sector for finance institutions because most farmers are subsistence farmers. The majority of commercial bank loans are short-term credits related to trade. *Third*, banks and financial institutions are reluctant to grant loans to farmers because they are usually small loans and are not profitable enough to offer appropriate financial services to this segment. *Fourth*, heavy institutional constraints such as administrative procedures and the necessity for guarantees (land ownership title, mortgage) discourage borrowing for investment in the input business. The strict collateral requirements are due to poor loan recovery (due to the high rate of default in the country) and the lack of mechanisms for contract enforcement in rural areas. Importers and dealers find the collateral and other lending terms unattractive given the seasonality of agriculture, the relatively low returns from the inputs business and the high level of risk. Small dealers are reluctant to mortgage their only property—a house—to borrow funds. Furthermore, when a credit request is introduced, banks require technical and financial feasibility study documents for those projects to be set up. These documents must clearly indicate the following points (1) information on the applicant (identification, experience); (2) overall cost of project implementation; (3) amount of own contribution; (4) amount of credit applied for; (5) period of repayment and desirable grace period. With the problems of illiteracy and the lack of management knowledge, the majority of farmers and agri-input traders are discouraged from accessing these financial services. *Fifth*, agri-input traders and farmers cite, as the most limiting constraints, banks' high processing fees and charges, the short length of the loans, and loan repayment periods. In addition, loan repayment begins from the time the loan is issued, assuming that farmers are involved in off-farm activities as alternative sources of income. Finally, financial institutions remain largely concentrated in Kigali. For instance, the largest institution which provides financing to agriculture, the BRD, is located in Kigali with no branches in rural areas. Therefore, farmers and traders from remote areas have to walk or drive for many hours not only to open an account or ask for a loan, but also to make a deposit, require information, or have a request. To add to the cost of time and transport, one must also add the opportunity cost of their absence with respect to daily tasks. Long distances and transportation costs are a major obstacle to access funds from the national development banks and commercial banks located in Kigali.

Difficulties in accessing loans encountered by farmers and agri-input traders reduce the scope of their initiatives; this limits their economic and social development, with the result that they are kept in a state of dependency relative to donors' programs and interventions and daily insecurity. The existing several initiatives and projects from donors and the GOR, enumerated in the next section, that seek to increase the volume of loans to the agricultural sector, are highly hampered by bureaucratic bottlenecks and a rigid loan review system that make them inaccessible to many agri-input traders and farmers. For instance, to access the Agricultural Guarantee Fund in Rwanda, potential beneficiaries submit loan application documents to their bank, which analyzes them, measures risk, and commits to grant a loan on the condition that it is guaranteed by the Central Bank. The participating financial institutions send the clients' application documents along with a technical evaluation to the Central Bank, which decides whether to assume the financial risk of the loan. Very few loan applications make it through this process. The majority of the loans approved under the AGF scheme are geared toward cash-crop markets. Examples of such projects include building coffee washing stations, tea factories, palm oil production and processing, production and export of hot peppers, procurement of agricultural inputs, and maize factories. As a result, this facility is not being fully utilized.

Farmers' associations that obtain loans from MFIs, such as Vision Finance, seldom qualify for the AGF because they are unable to prepare loan application documents that meet the quality required by the Central Bank. Although microfinance facilities are widely available in the regions, the size of the loan ($50 to $500) given by these institutions is too small to help input business development. As a result, input dealers have limited access to finance for investing in the input business. The majority use their own cash from savings or other business ventures to finance part or all of their input purchases. This limits the size of their orders and increases transportation costs resulting from frequent trips to the bank's location. It also reduces the funds available to invest in market development activities such as extending credit to farmers and providing services such as technical support and delivery.

Several Public Sector Initiatives Seek to Increase the Volume of Loans to the Agricultural Sector in Rwanda—Despite these challenges, the volume of loans to the agricultural sector is on the rise in Rwanda. The sector has witnessed an increase of 300% in loans since 2000, when the share of agricultural loans amounted to a mere 1.35%. This considerable increase can largely be attributed to special funds mobilized by the Government of Rwanda (GOR), managed by the National Bank of Rwanda (BNR), and operated by participating financial institutions (PFI) such as commercial banks, the Rwanda Development Bank (BRD), and the Union of Popular Banks of Rwanda (UBPR).[29] One such special fund is the Common Development Fund (CDF), which was established in 2002 as a government tool for decentralized financing and implementation of development projects and programs at the district level. Its main objectives include financing of development projects (agriculture, infrastructure, water projects), which represented about 40% of the total approved funds in 2005. In 2003, two additional programs, the High Labor-Intensive Local Development Program (PDL-HIMO)[30] and the "UBUDEHE".[31] Program, were placed

29 Le Banquier. Juin 2006. Magazine d'Information de la Banque Nationale du Rwanda. Numero 10/2006.

30 PDL-HIMO is a multi-sector program applying the high labor intensity approach, to provide employment and incomes to a large number of people among the poor and construct important productive infrastructures in both rural and urban areas.

31 UBUDEHE is a program based on the philosophy of self-organization at the "cellule" level. The community at the cellule defines its top developmental priorities and identifies the beneficiaries targeting the poorest and the most vulnerable in the community. The pilot program was conducted in 2002 and 2003 in Butare Province with 1 million Euro funding from the EU, whereby every cellule received US $1,000 and could decide itself which priority project to fund. The EU program earmarked in 2004 a sum of 10 million Euro for the UBUDEHE program.

under the overall supervision of the CDF. CDF benefits from 10% of the total government internal revenue annually. This amounted to 7.5 billion RWF in 2005.

In addition to the CDF, a variety of international donors, including the World Bank, IFAD, BADEA, the Netherlands, and USAID have been active in improving the availability and access to finance. Details of the projects implemented by these donors are listed in Table VI-2. As of December 2006, the mechanisms used to increase access to agricultural credit are Lines of Credit (LOC) and Credit Guarantee Funds. These included: the Rural Investment Facility (RIF); the Preferential Refinancing Facility (PRF) for agricultural exports; the Export Promotion Fund (PDCRE); the guarantee fund from the project PADEBL; USAID agribusiness development fund; STABEX special export promotion program for coffee, tea, and horticulture; and the Agricultural Guarantee Fund.[32]

Table VI-2. Public Sector Initiatives.

Project	Financing Agency	Begin-End	Type	Amount in RWF (billion)	Percentage
PDMAR	World Bank	2000-2003	Loan	2.75	4.0
	World Bank	2001-2006	Loan	26.13	38.5
RSSP—RIF/PRF	Rwanda	2001-2006	Counterpart	0.59	0.9
	ADB	2001-2006	Loan	5.85	8.6
PADEBL	Rwanda	2001-2006	Counterpart	1.31	1.9
	IFAD	2003-2009	Loan	8.46	12.5
PDCRE	BADEA	2003-2009	Loan	3.78	5.6
	Rwanda	2003-2009	Counterpart	0.91	1.3
STABEX	EU	2002-2007	Grant	12.46	18.3
AGF	Netherlands			2.760	4.1
	Rwanda			0.100	0.1
ADF	USAID			2.805 ($5.1 million)	4.1
Total 1				67.905	100.0

1. **The Rural Investment Facility** (RIF)—This is a FRW 1.760-billion project that provides financial incentives through investment cost subsidy to qualified private sector operators, including farmer groups, willing to invest in activities with substantial economic or environmental externalities. For instance, investment by private entrepreneurs in value-adding activities in the processing sector would generate collective benefits in terms of providing incentives for the intensification of crop and livestock production activities. The RIF finances sub-projects in the following activity areas: (ia) the operation of farmer-owned Commercial Enterprises and Technical Support Entities (CETSE); (b) processing, storage, and trading of crop, livestock, and forestry products; (c) transport infrastructure construction and maintenance activities; (d) acquisition of appropriate (adapted) means of rural transport

32 World Bank Rwanda. 2001. Rural Sector Support Project. Africa Regional Office. Project ID RWPE64965. Document de projet. International Fund For Agricultural Development (IFAD). Rwanda: Project for Support to Operational of the Strategic Plan for Agricultural Transformation Appraisal Report – Working Paper 3: Institutional Support to Agriculture Sector. Le Banquier. Juin 2006. Magazine d'Information de la Banque Nationale du Rwanda. Numero 10/2006.

(AMT) by farmers to be tested under pilot activities; (e) investment by private operators in the construction and/or maintenance of AMTs and transport infrastructure; (f) investment by private operators in agricultural services delivery activities; and (g) selected pilot off-farm productive activities. A total of 220 projects were financed with an equivalent of US $3,073,001, representing only 40.97% of the total amount available. The financed activities include the areas of cattle (39.54%), industrial crops (coffee, tea, and pyrethrum) (28.63%), processing (13.72%), and food crops (4.14%).

2. **The Preferential Refinancing Facility** (PRF)—This is a fund constituted of reimbursements of consolidated debt of the GOR from the BNR. This fund covers medium- and long-term loans for agricultural export and agro-industrial promotion activities. This facility was established in June 2003 to finance agricultural processing and export activities. It is financed through the government-consolidated debt owed to BNR. By July 2004, a total of 15 projects, including nine cooperatives of pyrethrum farmers had been refinanced for a total amount of 1,024,612,000 RWF.
3. **PDCRE Export Promotion Fund—**This IFAD fund is earmarked by the GOR to refinance export and processing activities in the provinces of Gikongoro, Kibuye, Kigali Ngali, and Kibungo. BNR refinances 100% of all long-term loans and short-term loans for SMEs and 75% of all short-term loans for tea and coffee producers.[33]
4. **The Credit Guarantee Fund of PADEBL** (Dairy Breeding Cattle Support Project)—This fund of 300 million FRW is provided by the ADB and managed by the Central Bank to guarantee loans provided by participating financial institutions to dairy cattle projects. In case of default, private banks are reimbursed 50% of the principal and interest over a maximum period of 3 years.
5. **USAID Agribusiness Development Fund**—In 2006, USAID has struck a $5.1 million agribusiness deal with the Bank of Kigali and the Rwanda Commercial Bank to share risk and overcome the credit problem that is hindering the growth of the rural sector. The money is to be disbursed over a 3-year period (2006-2009) through these two banks to encourage Rwandan private banks to lend money to rural agribusinesses. However, this initiative is especially geared toward cash crops because the loans are expected to be allocated to the coffee industry. Other products that could benefit from this scheme include tea, pyrethrum, chili peppers, passion fruit, and essential oils. In case of default, the program will support 40% of the loan.
6. **The Agricultural Guarantee Fund—**This was established by the GOR within the framework of the National Poverty Reduction Program.[34] The Fund has a sum of FRW 2.869 billion, of which 60% is provided by the Netherlands Cooperation and 40% by the GOR. The fund will serve as a palliative measure for insufficiency of collateral; it will guarantee 30% to 50% of loans to the agricultural sector from 2005 to 2008. This mechanism aims at helping agricultural entities to overcome the constraint of collateral requirements. Its main goal is to reduce the risk a lending bank may encounter in providing agricultural loans. The fund is managed by the Central Bank. Partner institutions include the Bank of Kigali, BCR, FINA Bank, BRD, COGES Bank, UBPR, and several MFIs. All agricultural activities, from

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33 International Fund For Agricultural Development (IFAD). Rwanda: Project for Support to Operational of the Strategic Plan for Agricultural Transformation Appraisal Report – Working Paper 3: Institutional Support to Agriculture Sector.

34 Le Banquier. Juin 2006. Magazine d'Information de la Banque Nationale du Rwanda. Numero 10/2006.

production, processing and distribution, including the marketing of agri-inputs qualify for this program.

7. **PDMAR Inputs Facility**—In 2000 the World Bank's Agricultural and Rural Market Development Project implemented a 3-year program aimed at: facilitating access to credit for modern farm inputs; providing technical advisory services to farmers on the use of modern farm inputs; encouraging the emergence of a sustainable modern input import and distribution system; and encouraging investments by private traders in marketing services in rural areas.[35] The project established three mechanisms towards the achievement of these objectives: a Line of Credit to mobilize the private sector in the import and distribution of inputs to farmers; an Input Credit Insurance Facility (ICIF) to provide incentives to private traders to sell fertilizers on credit; and a Small Farmer Input Credit Facility-revolving fund (SFICF) to ensure broad credit access to farmer groups. To date, none of these facilities are operating, because the project ended in 2003. The project resulted in an increase in the number of importers of agricultural inputs from 5 to over 30. However, the facilities were not fully utilized because (a) the information about their existence wasn't properly disseminated to project stakeholders and beneficiaries, (b) banks were still lending at high interest rates, and (c) the rigid lending procedures discouraged the participation of several trader and farmer associations.

35 World Bank Rwanda. 2001. Rural Sector Support Project. Africa Regional Office. Project ID RWPE64965. Document de projet.

Annex VII. World Market for Fertilizers[36]

World Fertilizer Consumption

Although Africa contains 13% of the world's arable land and more than 12% of the world's population, its fertilizer consumption is the lowest in the world.[37] In 2002, Africa accounted for only 3% (or 4 million tons) of world fertilizer consumption, compared to 9% (or 13 million tons) and 54% (or 77 million tons) in Latin America and Asia and the Pacific, respectively (Table VII-1). Almost 70% of Africa's fertilizer consumption is concentrated in North Africa. Sub-Saharan Africa, excluding South Africa, accounts for a mere 1% of world consumption (or 1.38 million tons). Even with measures of fertilizer use intensity (kg/ha), which account for differences in the cultivated area between countries, the picture remains gloomy. African countries consume an average of 22 kg/ha of arable land in contrast to 89 kg/ha in Latin America and the Caribbean, and to 148 kg/ha in Asia and the Pacific. Sub-Sahara African countries, excluding South Africa, consume only 9 kg/ha. In terms of fertilizer nutrient consumption (million nutrient tons of N, P_2O_5, and K_2O), nitrogen fertilizer is the main nutrient used on crops in Africa, representing 64% of total fertilizer consumed, followed by phosphate (24%) and potassium (12%) (IFDC, 2005).

Table VII-1. Fertilizer Consumption in the Global Context—2002

Regions	Total Fertilizer Consumption	Share in World Total	Average Fertilizer Application Rates
	(million tons)	(%)	(kg/ha)
Africa	4	3	22
North Africa	3	2	76
Sub-Saharan Africa (SSA)[a]	1	1	9
Asia + Pacific	77	54	148
Latin America + the Caribbean	13	9	89
Global totals	142		101

a. Excludes South Africa.
Source: Geo Data Portal

World Fertilizer Supplies

As of 2002/03, Asia produced 65% of world fertilizer supplies, followed by North America (30%), and the former Soviet Union (22%). Currently, Africa accounts for 6% of world fertilizer production. Although Nigeria has large oil and gas reserves and Africa contains the largest phosphate rock reserves in the world, SSA imports more than 90% of the fertilizers it uses (IFDC, 2005). SSA imported almost 1.4 million tons of fertilizer in 2002/03 (Figure VII-1). Africa relies completely on imports for potash fertilizer, and the continent's nutrient production is largely dominated by nitrogen fertilizer (3 million tons, or 3% of the world's supply). N fertilizer production is concentrated in 11 countries in Africa: Algeria, Egypt, Libya, Morocco, Mauritius, Nigeria, Senegal, South Africa, Tunisia, Zambia, and Zimbabwe (IFDC, 2005). Egypt is by far the largest producer of N in Africa. However, N production declined in SSA from 407,000 tons in 1992/93 to only 110,000 tons in 2002/03. Phosphate (P_2O) is produced in six

36 Excerpts from: Oumou Camara and Ed Heinemann. 2006. Overview of the Fertilizer Situation in Africa. Background paper prepared for the African Fertilizer Summit, 9-13[th] June 2006, Abuja, Nigeria.
37 Metric ton plant nutrient

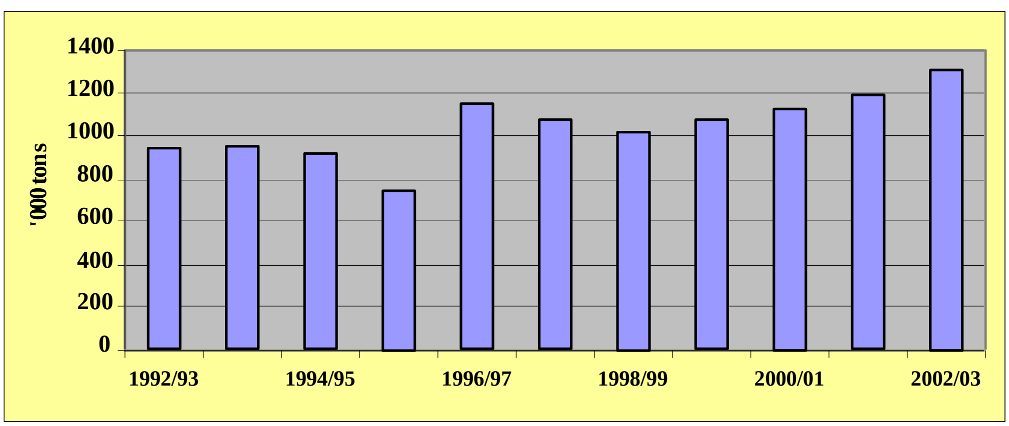
SSA countries (Burkina Faso, Cote d'Ivoire, Nigeria, Senegal, South Africa, and Zimbabwe) and four North African countries (Algeria, Egypt, Morocco, and Tunisia) (IFDC, 2005). The three biggest producers of phosphate are Morocco, South Africa, and Tunisia. Cote d'Ivoire ceased producing phosphate in 1994/95; Nigeria and Burkina Faso followed in 1999/00 and 2001/02, respectively. Production plants closed in these countries against a backdrop of fluctuating world market prices because they failed to achieve the consistently high operating rate that is critical for making a profit.

Table VII-2. Global Fertilizer Production (million tons)—1992/93 and 2002/03.

Area	1992/93				2002/03			
	N	P_2O_5	K_2O	Total	N	P_2O_5	K_2O	Total
	(million tons of nutrients)							
North America	17	11	8	36	13	8	9	30
Latin America	3	2	0	5	3	2	1	6
Western Europe	9	3	6	18	7	1	5	13
Eastern Europe	4	1	0	5	3	1	0	4
Fr. Soviet Union	10	5	7	22	10	3	8	21
Africa	2	2	0	4	3	3	0	6
Asia	34	10	2	46	47	15	4	66
Oceania	0	1	0	1	0	1	0	1
World	**79**	**35**	**23**	**137**	**86**	**34**	**27**	**147**

Source: IFDC (2005).

Figure VII-1. Net Imports of Fertilizer in SSA ('000 tons)—1992/93 to 2002/03.



Source: IFDC (2005)

Typical Profit Margins at the Different Stages of the Value Chain

Table VII-3 presents the price structure for imported urea in the United States compared with Angola, Malawi, Nigeria, and Zambia in 2003. The ratio of the farm-gate price to c.i.f. ranges from 1.42 for the United States to 2.04 and 2.56 for Nigeria and Angola, respectively. Domestic marketing costs are extremely high. In many African countries, these costs account for more than

50% of the farm-gate price of fertilizer (Kelly et al., 2003). Inland transportation costs alone account for 15%, 19%, and 21% of the farm-gate price in Nigeria, Malawi and Zambia, respectively. Dealer costs and margins range from $16.01/ton in Nigeria to $220/ton in Angola, and reflect the risk created by an uncertain policy environment (Kelly et al., 2003). High margins in these countries result from frequent and unpredictable government interventions in the market.

Table VII-3. Comparison of Urea Procurement and Distribution and Marketing Costs, 2003 (US $/ton)

Country	**United States**[a]			**Nigeria**[b]			**Malawi**[c]			**Zambia**[d]			**Angola**[e]		
Cost Items and Margins		**Cum.**	**Margin**		**Cum.**	**Margin**		**Cum.**	**Margin**		**Cum.**	**Margin**		**Cum.**	**Margin**
f.o.b. cost	135.00		%	135.00		%	145.00		%	145.00		%	226.00		%
Ocean freight	25.00	160.00		30.00	165.00		25.00	170.00		25.00	170.00		95.00	321.00	
Insurance	0.08	160.08		0.10	165.10		0.10	170.10		0.10	170.10		2.00	323.00	
c.i.f. cost and percent of retail price		**160.08**	**70.64%**		**165.10**	**49.12%**		**170.10**	**52.94%**		**170.10**	**51.03%**		**323.00**	**39.00**
LC cost	0.80	160.88		1.65	166.75		1.70	171.80		1.70	171.80		3.23	326.23	
Port costs and transfer inland	4.00	164.88		21.70	188.45		7.82	179.62		17.50	189.30		98.00	424.23	
Duties	0.00	164.88		12.04	200.49		1.63	181.25		1.63	190.93		48.00	472.23	
Losses	1.65	166.53		3.77	204.26		1.80	183.05		1.89	192.83		0.00	472.23	
Bags and bagging	0.00	166.53		15.69	219.95		0.00	183.05		0.00	192.83		0.00	472.23	
Free on barge/truck		**166.53**	**2.85%**		**219.95**	**16.32%**		**183.05**	**4.03%**		**192.83**	**6.82%**		**472.23**	**18.02**
Barge/truck transport	10.00	176.53	4.41%	50.00	269.95	14.87%	60.00	243.05	18.67%	72.00	264.83	21.60%	5.00	477.23	0.60
Barge/truck unloading	4.00	180.53		0.50	270.45		0.50	243.55		0.50	265.33		0.50	477.73	
Storage and truck loading	10.00	190.53		1.00	271.45		7.29	250.84		1.50	266.83		3.00	480.73	
Interest	2.22	192.75		16.97	288.41		12.54	263.38		13.00	279.83		30.05	510.78	
Wholesale cost		192.75			288.41			263.38			279.83			510.78	
Importer margin	3.86	196.61	2.00%	31.73	320.14	11.00%	39.51	302.89	15.00%	28.84	308.67	10.31%	97.50	608.28	19.09
Wholesale price		**196.61**	**86.76%**		**320.14**	**95.24%**		**302.89**	**94.26%**		**308.67**	**92.59%**		**608.28**	**73.44**
Dealer costs and margin	30.00	226.61	15.26%	16.01	336.15	5.00%	18.44	321.33	6.09%	24.69	333.36	8.00%	220.00	828.28	36.17
Farmer price	**226.61**			**336.15**			**321.33**			**333.36**			**828.28**		
Ratio of wholesale price		**1.20**			**1.75**			**1.55**			**1.65**			**1.58**	

Country	United States[a]			Nigeria[b]			Malawi[c]			Zambia[d]			Angola[e]		
Cost Items and Margins		**Cum.**	**Margin**		**Cum.**	**Margin**		**Cum.**	**Margin**		**Cum.**	**Margin**		**Cum.**	**Margin**
to c.i.f.															
Ratio of retail price to c.i.f.		**1.42**			**2.04**			**1.89**			**1.96**			**2.56**	

Sources : Gregory and Bumb (2006)

Notes:

a. United States: Bulk urea imported, transferred to barge, and delivered to a Midwest location.
b. Nigeria: Bulk urea imported to Lagos, bagged at port, and delivered to retail outlets in Federal Capital Territory (Abuja).
c. Malawi: Bagged urea imported through Beira Port, Mozambique, and trucked to Lilongwe, Malawi.
d. Zambia: Bagged urea from Mid-East port imported through Beira Port, Mozambique, and railed to Lusaka.
e. Angola: Bagged 12-24-12 from Portugal by 20-ft container to Luanda and delivered to Huambo by truck.
f. All urea f.o.b. prices are standardized for comparative purposes with a $10/ton difference in bulk and bagged prices.
g. The c.i.f. cost used for land-locked countries (Malawi and Zambia) is based at the first port of entry. The actual c.i.f. is approximately equal to the wholesale cost.
h. The Angola data are for NPK 12-24-12 and therefore are not comparable with data for urea for other countries in the table.

Price Evolution in the Fertilizer Industry

In the past few months, the price of urea and other fertilizers has increased sharply (FiguresVII-2 and VII-3), raising questions concerning the factors that may be causing such changes. In general, the price of fertilizer is determined by its supply and demand, which is a function of the production costs (fixed costs, operating costs, and costs of raw materials), food crop prices and macroeconomic uncertainty related to the allocation of foreign exchange resources required for fertilizer imports. Changes in the price of natural gas are likely to affect the price of urea because anhydrous ammonia is a raw material in urea production and is mostly produced from natural gas and other raw materials. In addition, changes either in the production capacity or the number of firms in the market (through opening or closing of fertilizer production plants) can shift the supply curve for these fertilizers, leading to shifts in their prices. Furthermore, changes in the prices of food and feed crops, such as corn, wheat, and millet, are thought to have a direct impact on the price of urea because they provide incentives to farmers to increase or decrease production based on their use of productivity-enhancing inputs. Finally, fertilizer prices in the short run are also affected by purchases by large buyers, such as China, India, Brazil, and recently Iran.

Examinations of the evolution of world fertilizer prices indicate that fluctuations in the price of urea and other fertilizers can be largely attributed to changes in the price of corn and natural gas. On average, a ton of ammonia requires 30 million Btu of natural gas. As a result, when natural gas prices increase, ammonia prices also increase and vice-versa. For example, during the mid- to late 1980s, when natural gas prices decreased, ammonia prices also decreased. The reverse happened during the early 1990s. Likewise, during 1998-2005, increasing natural gas prices were associated with rising ammonia prices. Additionally, changes in corn prices have also impacted ammonia prices because ammonia and urea are key inputs in corn production. For example, during 1997-1999, a decrease in corn prices resulted in a decrease in ammonia prices. During 2001-2005, ammonia prices increased by 40% while corn prices increased by 34%. Recent changes that have had a direct impact on the price of urea and other fertilizers include rapid growth in the demand for corn due to the ethanol boom. About 63 ethanol bio-refineries and eight expansion projects are set to begin in the next 18 months and will add nearly 5.4 billion gallons of new capacity. According to recent predictions, over 20 million more acres will be devoted to corn to meet future ethanol demand. These developments have translated into higher corn prices ($4.20/bushel), providing farmers with sufficient incentives to increase corn production through greater use of fertilizer and greater acreage allocated to corn.

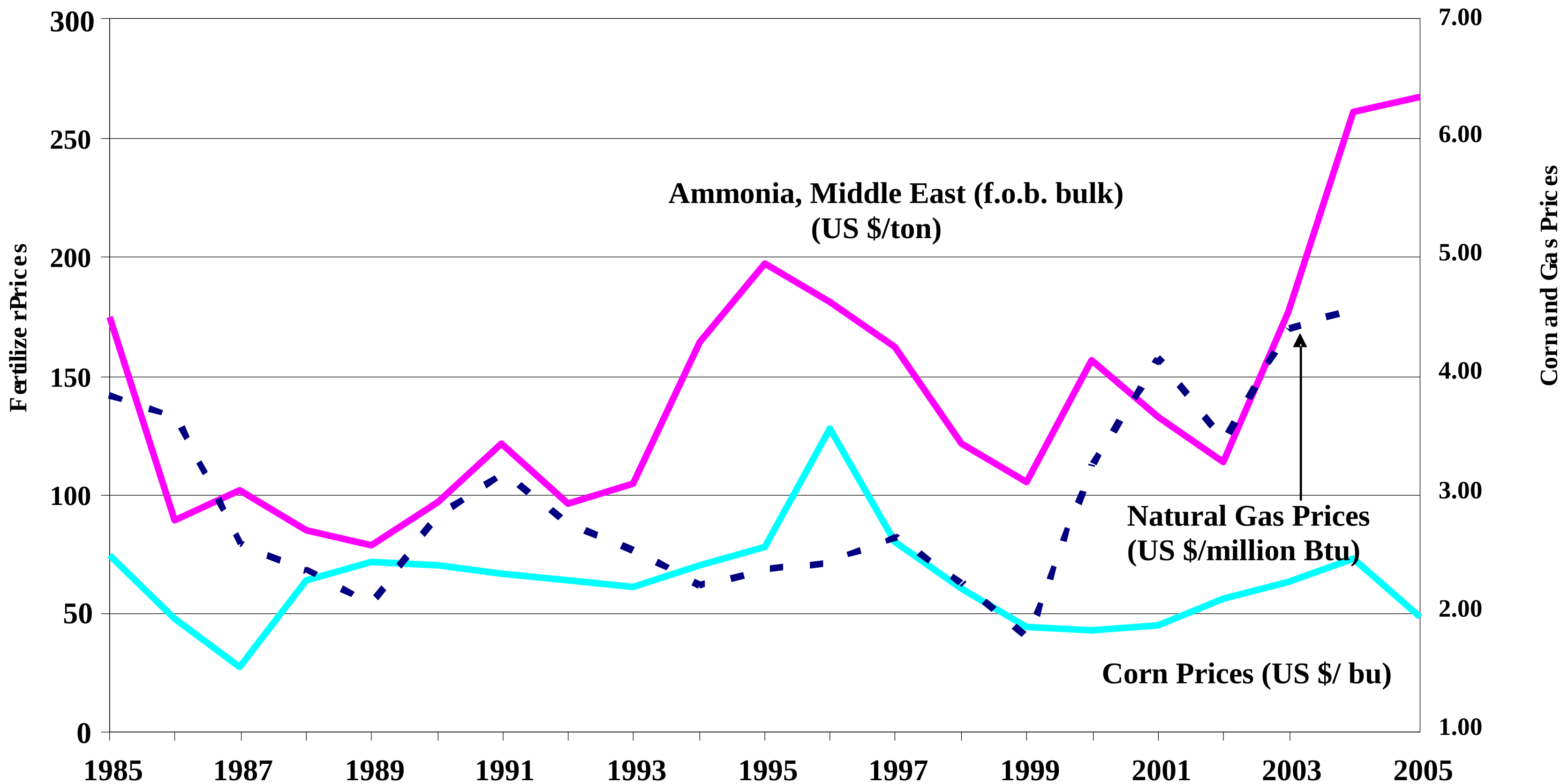


Figure VII-2. Ammonia Prices[a], European Union Natural Gas Prices[b], and Corn Prices Received by U.S. Farmers[c] Yearly Averages, 1985–2005

a. Source: *Green Markets*; 1994 data derived from *FMB.* b. Source: *BP Statistical Review of World Energy.* c. Source: Derived from USDA data.

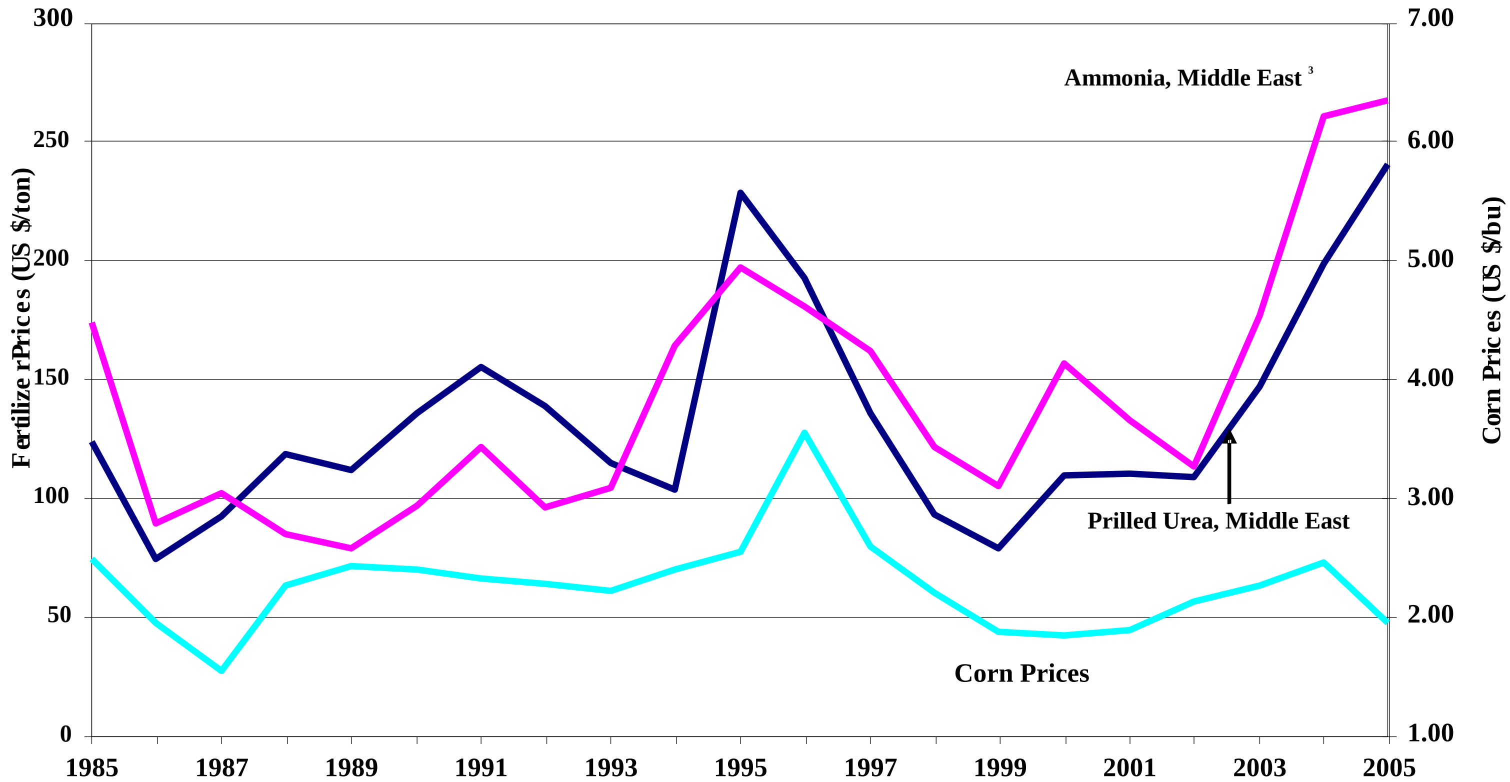


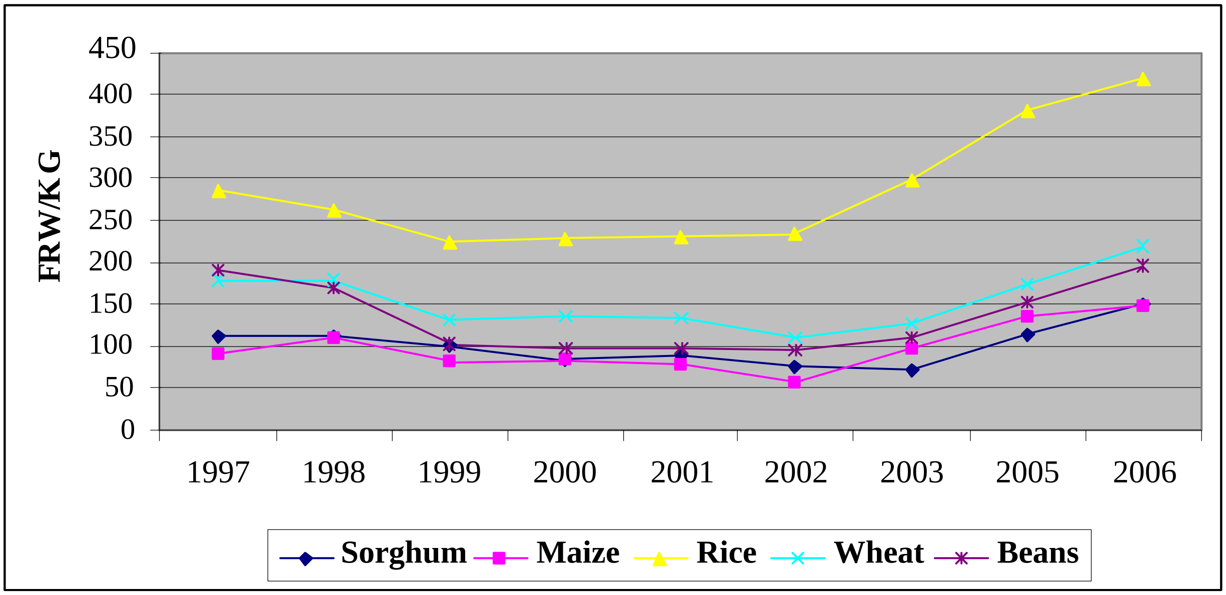
Figure VII-3. Ammonia, Urea, Prices[a] (f,o.b. bulk), and Corn Prices Received by U.S. Farmers[b] Yearly Averages, 1985–2005

a. Source: *Green Markets*; 1994 data derived from *FMB*. b. Source: Derived from USDA data. c. 1994 data derived from *FMB.*

Annex VIII. Retail Prices of Inputs, 2006

Location	Input	Retail Price
Kigali	Fertilizer: Agroleaf	5000 FRW/kg
	Fertilizer: Urea	350 FRW/kg
	Fertilizer: NPK	350 FRW/kg
	Fertilizer: DAP	375 FRW/kg
	Fertilizer: Potassium	300 FRW/kg
	Fertilizer: Lime	40 FRW/kg
	Fertilizer: Urea (MINAGRI)	316 FRW/kg
	Fertilizer: NPK (MINAGRI)	320 FRW/kg
	Fertilizer: DAP (MINAGRI)	334 FRW/kg
	CPP: Dimicozete	1500 FRW/kg
	CPP: Insecticides	5500 FRW/liter
	CPP: Acterite	1500 FRW/kg
Gikongoro	Fertilizer: Urea	380 FRW/kg
	Fertilizer: NPK	380 FRW/kg
	Fertilizer: DAP	400 FRW/kg
	Fertilizer: Lime	45 FRW/kg
	Fertilizer: Manure	5 FRW/kg
	Seed: Wheat	250 FRW/kg
	Seed: Maize	350 FRW/kg
	Seed: Peas	400 FRW/kg
Butare	Fertilizer: Urea	380 FRW/kg
	Fertilizer: NPK	380 FRW/kg
	Fertilizer: DAP	400 FRW/kg
	CPP: Dimethoate	4500 FRW/liter
	CPP: Cypermethrin (20%)	8500 FRW/liter
	CPP: Karate	3800 FRW/liter
	CPP: Zursban, liquid	4000 FRW/liter
	CPP: Zursban, granules	800 FRW/kg
	CPP: Sumithioy	2500 FRW/liter
	CPP: Zeltametlivin	8000 FRW/ liter
Ruhengeri	Urea	320 FRW/kg
	NPK	320 FRW/kg
	DAP	320 FRW/kg
	Lime	45 FRW/kg

Annex IX. Evolution of Crop Prices (FRW/kg), 1997-2006



Source: MINAGRI Division of Statistics.