nsa National Seed Association of India

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Seed Times

The National Seed Association of India Magazine



Promoting a Strong Seed Sector in Sub-Saharan africa

TASAI - A review of formal seed systems in Africa

SITA - Supporting Indian Trade and Investment for Africa

An Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Burkina Faso, Ethiopia, Ghana, Nigeria and Tanzania. AGRA: Nairobi, Kenya

In conversation with Dr. R.R. Hanchinal - Chair person, PPV&FRA

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ABOUT NSAI

National Seed Association of India (NSAI) is the apex organization representing the Indian seed industry. The vision of NSAI is to create a dynamic, innovative and internationally competitive, research based industry producing high performance, high quality seeds and planting materials which benefit farmers and significantly contribute to the sustainable growth of Indian Agriculture.

The mission of NSAI is to encourage investment in state of the art R&D to bring to the Indian farmer superior genetics and technologies, which are high performing and adapted to a wide range of agro-climatic zones. It actively contributes to the seed industry policy development, with the concerned governments, to ensure that policies and regulations create an enabling environment, including public acceptance, so that the industry is globally competitive.

NSAI promotes harmonization and adoption of best commercial practices in production, processing, quality control and distribution of seeds.

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Abbreviations and Acronyms

AATIF	Africa Agriculture and Trade Investment Fund
ACT	Agriculture Council of Tanzania
AD	Agro-dealer
ADPs	Agricultural Development Projects
AECF	Africa Enterprise Challenge Fund
AFD	Agence Francaise de Developpement
AFEX	African Exchange Holdings
AGRA	Alliance for a Green Revolution in Africa
AgGDP	Agricultural Gross Domestic Product
AISE	Agricultural Input Supply Enterprise
AITF	Agricultural Input Trust Fund
ASA	Agriculture Seed Agency
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ASDP	Agriculture Sector Development Program
ASDS	Agriculture Sector Development Strategy
ATA	Agricultural Transformation Agency
ATP	Agribusiness and Trade Promotion
AU	African Union
BMGF	Bill and Melinda Gates Foundation
CAADP	Comprehensive Africa Agriculture Development Program
CBDF	Cassava Bread Development Fund
CET	Common External Tariff Regime
CIPAM	Compagnie Industrielle de Production Agricole et Marchande
CMTDC	Cassava Market and Trade Development Corporation
COCIMA	Cooperative de Commercialisation d'Intrants et de Maeriels Agricoles
COMESA	Common Market for Eastern and Southern Africa
CPF	Confederation Paysanne du Faso
CPI	Consumer Price Index
CRB	Credit Reference Bureaus
CRDB	Cooperative Rural Development Bank
CRI	Crop Research Institute of CSIR
CSIR	Council for Scientific and Industrial Research
CTA	Cassava Transformation Agenda
DALDO	District Agricultural and Livestock Development Office
DGPER	Direction Generale de la Promotion de l'Economie Rurale
DGPV	Direction Generale des Productions Vegetables
DUS	Distinctness, uniformity and stability
EAC	East African Community
ECOWAS	Economic Community of West African States
ECX	Ethiopian Commodity Exchange
EDAIF	Export Development and Agricultural Investment Fund
EIAR	Ethiopian Seed Enterprise
EPA	Environmental Protection Agency
ESRF	Economic and Social Research Foundation
ETA	Ethiopian Transprot Authority
E-ATP	Extended Agribusiness and Trade Promotion
FAO	Food and Agriculture Organization of the United Nations
FAS	Foreign Agricultural Services of USDA
FDI	Foreign Direct Investment
FEPAB	Federation des Professionals Agricoles du Burkina
FMARD	Federal Ministry of Agriculture and Rural Development
FSDT	Financial Sector Deepening Trust
GDP	Gross Domestic Product
Iagri	Innovative Agricultural Research initiative
IFDC	International Fertilizer Development Center
IFPRI	International Food Policy Research Institute
INERA	Institut de L'Environment et de Recherches Agricoles
ISFM	Integrated Soil Fertility Management
ISTA	International Seed Testing Authority
LBCs	Licensed buying companies
LGA	Local Government Agency
MAFAP	Monitoring African Food and Agricultural Policies
MAFC	Ministry of Agriculture, Food Security and Cooperatives
MARD	Ministry of Agriculture and Rural Development
MASA	Minitere de L'Agriculture et al Securite Alimentaire
MIRA	Micro Reforms for African Agribusiness
MoFA	Ministry of Food and Agriculture
MRA-MA	MRA Management Associates
NACCIMA	Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture
NACOB	Narcotics Control Board
NARS	National Agricultural Research System
NASC	National Agricultural Seed Council
NCRP	National Foundation Seed Multiplication
NEPAD	New Partnership for Africa's Development
NFSM	National Foundation Seed Multiplication
NPK	Nitrogen, phosphorous, potassium compound fertilizer
NPS	National Panel Survey
OECD	Organization for Economic Co-operation and Development
OPV	Open-Pollinated varieties
PAN	Policy Action Node
PASS	Program for Africa's Seed Systems (of AGRA)
PCR	Public Credit Registry
PNSR	Programme National du Secteur Rural
PPP	Public Private Partnership
SACCO's	Savings and Credit Societies
SADC	Southern African Development Community
SARI	Savanna Agricultural Research Institute
SCADD	Strategie de Croissance Acceleree et de Developpement Durable
SEEDPAG	Seed Producers Association of Ghana
SME	Small and Medium –sized Enterprises
SP/CPSA	Secretariat Peremanent de la Coordination des Politiques Sectorielles Agricoles
SSA	Sub-Saharan Africa
TAGMART	Tanzania Agricultural Market Development Trust
TAHA	Tanzania Horticulture Association
TASP	Tanzania Agro-dealer Strengthening Program
TFDA	Tanzania Food and Drugs Authority
TFRA	Tanzania Fertilizer Regulatory Authority
TOSCI	Tanzania Official Seed Certification Institute
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
UNIDO	United Nations Industrial Development Organization
UNPS-B	Union Nationale des Producteurs Semenciers du Burkina
UPOV	International Union for the Protection of New Varieties of Plants
USAID	United States Agency for International Development
WAAIF	West African Agricultural Investment Fund
WB	World Bank



Message from the desk of President

Agriculture plays a dominant role in most of the developing countries by its contribution to gross domestic product (GDP) as well as a source of employment to millions of people. Seeds of improved hybrids and varieties complemented by improved agronomic practices and other agricultural inputs deliver the much needed increased productivity and improved nutritional quality for meeting the ever-increasing requirements of the consumers and the markets. Seed as a primary input to Agriculture alone contributes 25%-30% of productivity gains in terms of delivering superior genetics and traits to the farmers.

From a food grain deficit country a few decades back, today India is a foodgrain surplus country. This has become possible due to evolution of a research driven seed industry both in public and private sector, a vibrant farming community and an enabling Government policy framework which led to gains in agriculture and allied sectors.

African continent and Indian sub-continent have been natural partners in view of their origins, agro-climates, socio-economic conditions and natural diversity.

Agriculturally Africa has huge potential that is largely unharnessed. It has one of the richest endowments of natural resources in the world. However, in view of the growing need for nutritional security and to move towards market-driven agriculture, today the challenge for Africa lays in opportunity to produce more per hectare. The stress should be on good policies and an enabling environment that attracts much needed investment in agriculture sector. The primary focus would be transforming comparative advantage of the respective country into an enduring competitive advantage. This can be achieved, by a balance of right policies and implementation of institutional mechanisms and processes to stimulate productivity gains which in turn would spur economic growth.

Knowledge sharing between Indian and African counterparts can increase competiveness and hence give impetus to trade and economic development of the region. Indian companies can assist regional players to raise productivity and income and thus break the yield plateaus. To achieve the same there is a need to further strengthen the ongoing structural transformation of seed sector in Africa. This will help in development of a a system that adds value , that builds capacities to address core issues of relating to productivity improvement and nutritional security. Further this will help in developing a strongly research driven and standards based seed industry. This will also help in transition from subsistence to commercial farming and shall empower farmers and rural entrepreneurs in making agriculture a profitable enterprise.

This edition of Seed Times is on the issue “SEED AFRICA”. The contents lay stress on understanding the Seed sector of African Countries. It would prove quite helpful for developing clear knowledge on the Seed Sector segments like applicable laws, status of Seed quality testing and the various strengths and weakness of the sector in Africa.

-M. Prabhakar Rao



Message
from the desk of
Executive Director

Seed is the most critical and vital input of agriculture. Over the years Indian Seed Industry has emerged as a dynamic industry with good quality of seed as its foundation. Indian Seed Industries commitment to farming community is unrelenting and with constant innovation in the sector the basic aim is to make best quality seeds available for farmers. India has a very vibrant private sector underpinned by strong public private sector infrastructure. Constant innovation in the seed sector has led to greater yield and better price of crops for the farmers.

With strong research to back it up Indian Seed Industry is now more ready than ever to expand its current trade opportunities and reach out to African Counterparts. India and Africa have similar agro ecological conditions. Indian companies can share experience from India's own Green Revolution to African countries.

Increased cooperation in agriculture with African nations would lead to exchange of raw material, technology and market. With Indian and African Seed Industries as partners in progress it can be envisaged the greater good it would do to the farming communities of both.

The possibilities are unlimited, in the year 2013-2014, India's total export of agricultural commodities to South Africa was of the order of US $ 310.35 million. During the same period, the agricultural import from South Africa was of the order of US $ 13.33 million. India's main items of import were fresh oranges, pears and grapefruit.

The need of the hour is convergence in the vision and policies so as to eliminate the evils of poverty and malnutrition. Given the vast natural resources in Africa prudent alignment of actions would ensure reaching the last mile.

This edition of Seed times presents before you an in depth analysis of a selected African Seed Industry. We appreciate the cooperation and consent of all organisations and authors for allowing us to come out with their articles and reports.

Happy reading!

-Dr. Kalyan Goswami

Business Opportunities in Agri / Seed Segment in Africa



-Venkatram Vasantavada,
COO- Asia & Africa,
ADVANTA SEEDS (A UPL Group Company)

In the past decade Africa has been the second fastest growing region in the world. Over the last few years more than a third of African economies have grown at least 6% per annum.

Africa's population growth rate has been the fastest across continents in the past 3 decades. Africa's population is expected to hit 2.4 billion by 2050. With growing population and associated increase in food demand, the prospects for agriculture and agribusiness are bright.

"Africa has the potential to feed not just the continent's citizens,

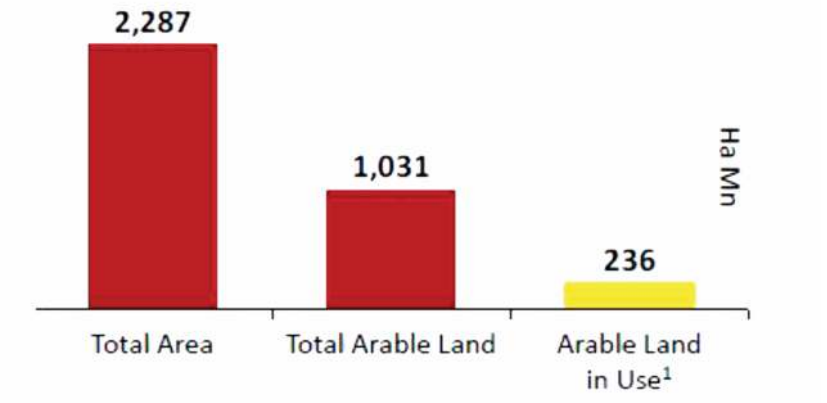
but also help create a secure global food system"

– Dr. Kofi Annan (Ex-Chair, AGRA)

Agriculture remains to be the most important sector for Africa's economic growth:

Agriculture utilizes 65% of Africa's labour force contributing 32% of Africa's GDP. Agriculture is thus crucial for economic development agenda of African governments. Importance being given to agriculture in Africa can also be noted from the fact that Comprehensive Africa Agriculture Development Programme (CAADP) in 2003 has set a goal to allocate at least 10% of national budgets to agriculture, to reach rural growth rates of 6% annually by 2015, integrate and invigorate regional and national agricultural markets, significantly increase agricultural exports, transform Africa into a "strategic player" in global agricultural science and technology, practice sound environmental and land management techniques, and reduce rural poverty.

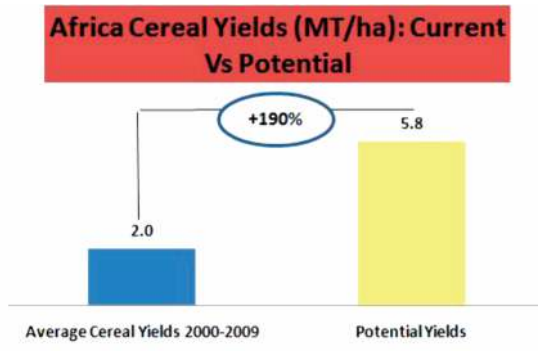
Africa's Agricultural Potential: Land Area (Ha Mn)



The constraint of Agricultural Productivity:

However there is a limitation of Research & Technology penetration in the region. The low levels of hybridization in crops like Sorghum (estimated to be less than 1% of the total acreage) which is the 2nd largest crop in the region, indicated the very low levels of crop productivity vis-a-vis the global productivity levels.

Yield Gaps:



Given the production requirements & productivity impact of inputs, crop protection, and post-harvest treatment, we expect demand for agriculture technologies to increase exponentially in the next few years. Increasing Investment in Africa is creating an attractive enabling environment for agriculture and agri-businesses.

Some of the Input Technologies that can be Drivers of Growth apart from Farm Mechanization are –

- Improved Hybrid Seed Varieties
- Crop Protection
- Post-Harvest Grain Management
- Post-Harvest Products and Storage Facilities
- Limitations and availability of institutional credit
- Last mile distribution channels
- Market linkages

Involvement of evolved players of seed industry can boost up the productivity and yield levels and help improve the agricultural and food supply scenario at a faster rate.

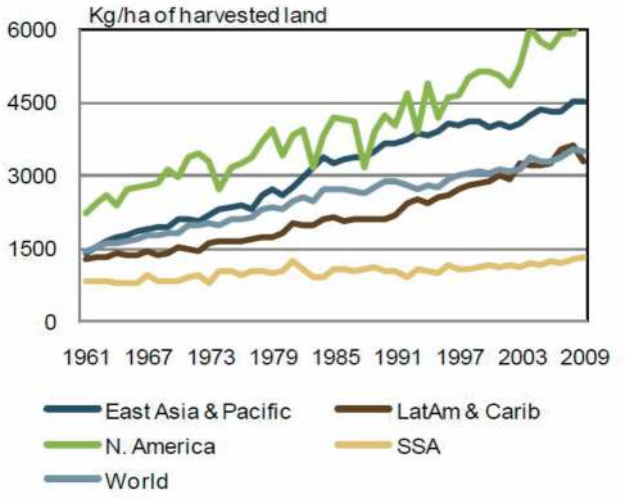
Seed is the most important factor affecting yield levels resulting in low productivity. While Public Sector institutions in Africa are working towards offering improved varieties and hybrids of various crops, there is significant scope for Indian companies to invest in developing and commercializing hybrids of key crops (viz. Corn, Sorghum, Rice and Oil Seeds).

Some of the areas where Indian seed industry players can create an impact by creating successful business models are –

- **Offering improved genetics / products**:

  Yield levels in key crops in Africa are way below global average yield levels. Crops in Africa also suffer from various biotic and abiotic stresses like drought, diseases, weeds etc. All these factors lead to yield loss and ultimately low farm profitability.

Cereal Yields Gaps in Sub-Saharan Africa:



Source: IFPRI, Standard Bank Research

Seed Industry players with investments in Research and Development can offer better hybrids offering significant yield advantage and other agronomic advantages over the existing varieties.

Advanta is one of the companies that have commercialized a Sorghum hybrid PAC 501 after Government trials in various African nations. The hybrid is giving 1.5 – 2 times yield than the local verities increasing farm profitability of small and marginal farmers in Africa. Apart from higher yield, the hybrid also gives other advantages against biotic and abiotic stresses. Experiences from some of the farmers from Niger, another major Sorghum producing country in Africa, are also similar. Hama Seybou from Kolo Kurta in Niger says – "I appreciate hybrid sorghum PAC 501 because of its yield. They can also resist disease and drought."

- **Technology Transfer Models in Africa:**
  Similarities in farming systems and land holding patterns in India and Africa can help Indian partners replicate their processes of effective Technology transfer and capacity building in Africa. African policy makers are not only looking at India as investors or suppliers of technology, but also as sources of models to be followed whether in large-scale commercial farming or in mass mobilisation to boost smallholder productivity through tested and proven models of technology transfers in India

- **Skill development in Africa:**

  Skill sets required to adapt improved technologies in agriculture are lacking at the moment with African farmers. Most commonly used seeds in Africa are varieties grown with low inputs. Hybrid seeds have different agronomic requirements which need a complete shift in the way crops are cultivated and hence the farmers need to be trained on the scientific cultivation of crops which can lead to improvement in yield levels. Deploying skills of growing and adapting technologies like hybrid seed cultivation can not only lead the African farmers to produce more, but will also inculcate entrepreneurship making the farmers sellers of grains instead of being subsistence farmers.

  With the help of an NGO – IFDC, Advanta has taken up a similar initiative around skill development of small and marginal farmers in Ethiopia where in 912 participants covering farmers and local Government officials were trained on scientific cultivation of Hybrid Sorghum. While the farmers gained by acquiring skills of growing hybrid sorghum, the company with the help of IFDC is developing a business of selling hybrid Sorghum seeds in Ethiopia. Similar projects are being taken up by Advanta in other African nations like Niger, Kenya, DRC and Zambia.

- **Supply Chain Opportunities in Seed Industry:**

  Limitations in local infrastructure make it imperative to develop local supply chains for hybrids seeds supply in African nations. For cost effective supply, it is necessary to produce hybrid seeds in the respective nations if the agronomic conditions support local production. Indian seed industry players can play a major role in this by imparting appropriate skills of seed production to the local African farmers. There is also significant scope for Indian companies for investing in processing capacities for seeds.

Profile of farmers in India and Africa is quite similar in terms of land holdings with small and marginal farmers comprising a major proportion of farming community. African farmers face similar issues of biotic and abiotic stresses in agriculture as their Indian counterparts due to similarities in agro-climatic conditions. Indian companies who have developed solutions to these constraints in the form of products and technologies can replicate their success in Africa more effectively. More importantly Indian companies have proven expertise in technology transfer systems which can enable them to reach out to the large number of small and marginal farmers in Africa very effectively in promoting value added products and technologies.

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TASAI

THE AFRICAN SEED ACCESS INDEX

A review of formal seed systems in Africa - The African Seed Access Index



By Edward Mabaya and Amanda Ward

Agriculture and Seed Systems in Africa:

Agriculture is the mainstay of a majority of economies in Sub-Saharan Africa as it contributes to 70 percent of employment, 33 percent of gross domestic product (GDP), and 40 percent of export earnings (World Bank, 2014). Agriculture's central economic role makes its development and growth a key component for overall economic growth and the eradication of food insecurity. Yet, African agriculture is still characterized by low productivity attributed to the range and intensity of biophysical constraints to plant growth, large agro-ecological variation, the absence of policies that encourage crop improvement, very low and declining soil fertility, and the underdeveloped state of seed sectors in most countries.

The seed systems in Sub-Saharan Africa are dominated by informal supply systems with farm-saved seeds; accounting for approximately 80 percent of planted seeds, compared to a worldwide average of 35 percent. This informal seed supply system is characterized by on-farm production of self-pollinated non-hybrid crops and a distribution system limited to barter trade and sales in local markets.

Improved seeds could be a part of the solution to agriculture development in Africa. Improved seeds deliver state of the art technology to farmers including higher yields, disease and pest resistance, climate change adaptation, improved nutrition, longer shelf life, etc. Additionally, improved seeds do not require much technical expertise to utilize and are highly compatible with other agricultural technologies and farming techniques. However, improving smallholder farmers' access to new high-yielding varieties and hybrid crops requires an efficient and competitive seed value chain.

Introducing TASAI

In most African countries, the deregulation of seed markets in the early 1990s, ended *de jure* state-owned monopolies in seed production, marketing, and distribution. In the last decade, significant investments have been made in liberalizing seed sectors in most African countries, resulting in increased participation of private seed enterprises (both multinationals and emerging domestic companies). These initiatives include seed systems development (AGRA-PASS), regional harmonization of seed laws (ECAPAPA), capacity building (Seed Enterprise Management Institute, Seeds of Development Program), and financing (African Seed Investment Fund, Root Capital).

However, a full transition towards a vibrant, private sector led seed system has been slow due to weak enabling environments. Enabling business environments are the "set of policies, institutions, support services and other conditions that collectively improve or create a general business setting where businesses activities can start, develop and thrive." Like any other industry, the seed sector in sub-Sahara African countries requires an enabling environment to thrive.

The central objective of The African Seed Access Index (TASAI) is to encourage African governments and development agencies to create and maintain enabling environments that will accelerate the development of competitive seed systems serving smallholder farmers. It is this enabling environment that TASAI seeks to measure, track, and compare across African countries. TASAI's goal is to maintain a simple, transparent, accurate and up-to-date index that keeps a running scorecard on seed sector development in Africa, particularly as governments and development agencies are placing bigger bets on agriculture to be the engine that pulls Africans out of poverty.

TASAI Methods

TASAI is built on in-depth country studies that are conducted by local consultants. Most in-country consulting teams consist of leading academics paired with seed industry professionals. This combination ensures both rigor in the research methods and access to the right information sources and data. For each country, TASAI focuses on the top four grain crops that are important to smallholder farmers. These crops are then tracked across 16 indicators within five categories that assess national performance in (a) research and development, (b) industry competitiveness, (c) service to smallholder farmers, (d) seed policy and regulations and (e) institutional support. The table below (Figure 1) shows the classification of TASAI's 16 indicators and how each indicator impacts seed access by smallholder farmers.

A. RESEARCH AND DEVELOPMENT	Impact on seed Access
Number of active breeders	+
Number varieties released in the last 3 years	+
Availability of foundation seed	+
B. INDUSTRY COMPETITIVENESS	
Number of active crop seed companies	+
Time it takes to import seed from neighboring countries	-
Market share of top 1, 2, 3, 4 companies	-
Market share of current or past government parastatal	-
C. SERVICE TO SMALLHOLDER FARMERS	
Concentration of rural agro-dealer network	+
Availability of seed in small packages	+
D. SEED POLICY AND REGULATIONS	
Length of variety release process	-
Quality of seed policy framework	+
Quality of regulatory and enforcement system	+
Adequacy of seed inspectors	+
Efforts to stamp out fake seed	+
E. INSTITUTIONAL SUPPORT	
Availability of extension services for smallholder farms	+
Quality of national seed trade association	+

Figure 1: TASAI Indicators

Preliminary Findings

TASAI has recently released reports on four pilot countries—Kenya, Uganda, South Africa, and Zimbabwe. These reports have revealed uneven—though in many places promising—progress towards competitive seed sectors that can supply famers with a wider menu of seed options. For example, Kenya gets relatively good marks for its seed policies but scores poorly on efforts to purge fake seeds from the market, a problem that is unfortunately growing in many countries. South Africa is highly rated for having a competitive seed sector and for quickly delivering new varieties from breeders to farmers. It takes an average of 12 months to release a new variety in South Africa, compared to three years in Kenya and Uganda, and almost two years in Zimbabwe. However, while South Africa stands out for having developed a large, mature and diverse commercial seed sector, it scores poorly compared to the other countries when it comes to making seeds available to farmers in small packages (less than five KGs). Kenyan seed companies, on the other hand, "outshine all other countries" in this category.

When it comes to the sheer number of crop varieties

COUNTRY PROFILE			KENYA	SOUTH AFRICA	UGANDA	ZIMBABWE
Focus crop 1			Maize	Maize	Maize	Maize
Focus crop 2			Sorghum	Soybean	Beans	Cotton
Focus crop 3			Beans	Sunflower	Millet	Soybean
Focus crop 4			Cowpeas	Wheat	Sorghum	Sorghum
Population (Million)			43	51	36	13
Size (KM^2)			569,250	1,214,470	197,100	390,760
Arable land (Million Ha) (% of size)			4.89	14.8	5.3	3.58
2014 Ease of Doing Business rank (Rank out of 189)			136	43	150	171
Stage of seed sector development			Growth	Mature	Growth	Decline
A. RESEARCH AND DEVELOPMENT						
1	Number of active breeders	Total	68	53	11	40
		Score	--	43.3	36.3	79.1
2	Varieties released in last 3 years	Total	60	310	19	35
		3 year average	20	103	6.3	11.7
3	Availability of foundation seed	Score	61.3	91.3	42.8	99.3
B. INDUSTRY COMPETITIVENESS						
4	Number of active crop seed companies for focus crop only	Total	17	37	14	20
5	Time it takes to import/export seed from neighboring countries (days)	Import seed	26	38	48	12
		Export seed	12	--	18	12
		Score	58.9	68.7	55	68
6	Market share of top 4 companies, Herfindahl-Hirschman Index	Crop 1	6,450	2,489	1,509	2,734
		Crop 2	1,989	3,625	950	10,000
		Crop 3	3,223	2,473	1,350	5,393
		Crop 4	3,240	4,816	1,050	3,027
7	Market share of government parastatal	% mkt share	62.4	0	0	2.5
C. SERVICE TO SMALLHOLDER FARMERS						
8	Concentration of rural agro-dealer network	Score	--	55	49	70.2
9	Availability of seed in small packages	% volume sold	94.4	2.5	29.1	7.8
		Score	--	30.8	50	63.4
D. SEED POLICY AND REGULATIONS						
10	Length of variety release process	Time (months)	37	12	37	22
		Score	32.7	81.0	55.8	92.2
11	Quality of seed policy framework	Score	65.2	82.7	47	65.5
12	Quality of seed law / regulations	Score	60.9	70	44.2	87.3
	Quality of enforcement systems	Score	53.1	70	41.4	83
13	Adequacy of seed inspectors	Total inspectors	60	148	4	68
		Score	63.8	--	43.5	82.3
14	Efforts to stamp out fake seed	Reported cases in 3 yrs	36	17	--	41
		Score	38.5	60	40.6	66.9
E. INSTITUTIONAL SUPPORT						
15	Availability of extension services for smallholder farmers	Ratio to farmers	1:1000	1:3313	1:3140	1:300
		Score	--	35.2	45	63.6
16	Quality of national seed trade association	Score	53.4	91.5	60.6	43.2

KEY					
Score	80 to 100	60 to 79.99	40 to 59.99	20 to 39.99	0 to 19.99
Grade	A	B	C	D	F
Color Code					
Interpretation	Excellent	Good	Fair	Poor	Extremely poor
H-4 Index	<1000	1000-1999	2000-2999	3000-3999	>4000

Figure 2: Formal Seed Sector Scorecard for the Four Pilot Countries

released, the data offers a clear indication that South Africa's seed sector is, in most respects, far more advanced than others in the region. South Africa and Uganda both get high marks for the quality of the national seed trade association—a critical link between the governments and private sector companies—while in Zimbabwe and Kenya, companies rate their association as only fair, indicating a potential need to intensify advocacy and support efforts. Kenya was additionally rated as poor in a key measure of industry competiveness since government-controlled companies still account for a large market share of seed sales, which can discourage new start-ups and small firms from entering the market. But South Africa, Uganda, and Zimbabwe were all rated as excellent in this category as their governments have largely gotten out of the seed business. Overall, Uganda's seed sector is noted to be growing, but potentially burdened with weak seed policies and regulations. And Zimbabwe's once vital seed sector is showing signs of decline. See Figure 2 below for a detailed scorecard of the formal seed sector in the four pilot countries. The country briefs that follow this article summarize the major findings on the seed sector in Kenya, South Africa, Uganda and Zimbabwe.

TASAI and the Indian Seed Sector

The agricultural industry in India like in many African countries, is dominated by smallholder farmers. Smallholder farmers constitute approximately 78 percent of India's farmers, but own only 33 percent of total cultivated land. However, despite the small amount of land utilized by these farmers, they still contribute a large percentage of the national grain production; around 41 percent. India's seed sector has taken the lead in working to develop the opportunities for smallholder farmer and help to increase their yields. India, over the years, has made great strides towards liberalizing their seed industry. Since the government's push for policy and regulatory reforms in the 1980s and 1990s the seed industry within India has increased in competiveness as the government minimized their direct involvement in the seed sector. Furthermore, the New Seed Development Policy helped to spur private investment and increased research and development to make the agriculture and specifically the seed sector for India increasingly "farmer-centric."

The growth of India's seed sector has already been felt in the seed industry of many African countries. Many African seed companies import vegetable seeds from Indian based companies. Further, many African seed companies have acquired seed processing equipment as well as chemical from Indai. Past and current aid programs have helped to strengthen the connection between India's agricultural sector and African farmers. Examples of some of these projects have included the partnership between USAID Feed and Future and India's Syngenta Seed company as well as NSAI through the "India-Africa Seed Bridge." Additionally, technological transfer has been strengthened through partnerships between the Indian Council of Agricultural Research (ICAR), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Platform for IndiaAfrica Partnership in Agriculture (PIAPA) and AGRA/PASS (Alliance for a Green Revolution in Africa / Programme for Africa's Seed Systems) among others (Future Agricultures, 2014).

TASAI, while developed to monitor the seed sector in African countries, can be adapted for use in India. TASAI's strength comes from its ability for deep analysis of the seed sector. Its use of a combination of secondary and primary data collection allows for extensive engagement with change agents in the industry; which enables TASAI to capture qualitative indicators, as well as suggested remedies that are otherwise difficult to measure. Furthermore, TASAI is adaptable and can add certain country-specific indicators. In the case of a federated state such as India, TASAI can be used to analyze the seed sector at both state and national levels.

For more information about TASAI, please visit the project website at http://tasai.org

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KENYA BRIEF
March, 2015



TASAI
THE AFRICAN SEED ACCESS INDEX

INTRODUCTION

A competitive seed sector is key to ensuring timely availability of high quality seeds of improved, appropriate varieties at affordable prices to smallholder farmers in Kenya. This country brief summarizes the key findings of a major study conducted in 2013 and 2014 to appraise the structure and economic performance of Kenya's seed sector (REMPAI, 2014). With a focus on four grain crops that are important to food security—maize, sorghum, beans and cowpea—the study evaluates the enabling environment for a vibrant formal seed sector and covers 16 indicators that are divided into the following categories: research and development, industry competitiveness, service to smallholder farmers, seed policy and regulations, and institutional support. To give perspective, this brief compares the performance of Kenya's seeds against three other countries, namely South Africa, Uganda and Zimbabwe, where similar studies were conducted under a new initiative called The African Seed Access Index (TASAI). TASAI seeks to encourage public policy makers and development agencies to create and maintain enabling environments that will accelerate the development of competitive seed systems serving smallholder farmers. For details on research methods, visit www.tasai.org.

OVERVIEW

Like most other African countries, the seed industry in Kenya consists of two systems: the informal sector and the formal sector. This policy brief focuses almost exclusively on the formal seed sector.

The informal sector broadly refers to the system where farmers produce, obtain, maintain, develop and distribute seed resources, from one growing season to the next (FAO, 1998). Because of limited exposure, low availability of most varieties, inability to purchase seeds, limited access to agro-dealers, or other reasons, most smallholder farmers in Kenya still rely at least in part on informal seed systems. In cases where the farmer is unable to retain part of the harvest, or where a farmer decides to plant a different variety, seed is generally acquired from the local community, including markets as well as farmers' social networks. This is true particularly for non-maize crops. Standards in the informal seed systems are not monitored or controlled by government policies and regulations; rather they are guided by indigenous knowledge and standards and by social structures.

The formal sector focuses on breeding and evaluating improved varieties, and producing and selling seed of these

ROLE	KEY PLAYERS
Research and breeding	KALRO; universities; MNCs; local seed companies
Variety release & regulation	KEPHIS
Breeder and foundation seed production	KARI; Universities; MNCs; local seed companies
Seed production	KALRO, local seed companies; MNCs; community organizations
Processing and packaging	KALRO Seed Unit, local seed companies; MNCs
Education, training, extension	Seed companies, extension agents, NGOs, rural agro-dealers
Distribution and sales	Private sector seed merchants; Kenya Seed Company, KALRO Seed Unit and other parastatals, rural agro-dealers; NGOs

Table 1: Role of key players in Kenyan formal seed sector

Key Acronyms: AFSTA - African Seed Trade Association; **CBO** - Community Based Organization; **KALRO** - Kenya Agriculture and Livestock Research Organization; **KEPHIS** - Kenya Plant Health Inspectorate Service; **MNC** - Multinational Corporation; **NGO** - Non Governmental Organization; **STAK** - Seed Trade Association of Kenya

varieties that is certified by the Kenya Plant Health Inspectorate Service (KEPHIS), the government entity responsible for regulating seed in Kenya. As shown in Table 1, Kenya's formal seed sector comprises many institutions

including government (e.g., KALRO, KEPHIS, public universities, and county extension agents), parastatals (e.g., Kenya Seed Company, Simlaw, KALRO Seed Unit), private sector (MNCs and local seed companies), and development agents (NGOs and CBOs). Associations such as Plant Breeders Association of Kenya and the Seed Trade Association of Kenya (STAK), when active, also play an important role in information sharing and advancement of members' interests.

RESEARCH AND DEVELOPMENT

Number of active breeders

For the focus crops (maize, sorghum, beans and millet), Kenya has only 40 public and 28 private active breeders serving over 6 million farming households who rely on agricultural activities for their livelihoods (KNBS, 2013). Of the 68 breeders, 25 specialize on maize, 10 on sorghum, 22 on beans and 11 on cowpeas. Further, discussions with seed sector stakeholders highlighted acute scarcity of breeders outside of the four focus crops, and revealed that as a result, several scientists are engaged in the breeding of more than one crop, often in areas outside their core specialization. The limited breeding capacity limits the number of crop varieties available, thus reducing competition in the seed market. This is especially true given that most of the available varieties may be patented and licensed to only one seed company. Kenya's wider agro-ecological diversity also translates to more work for breeders.

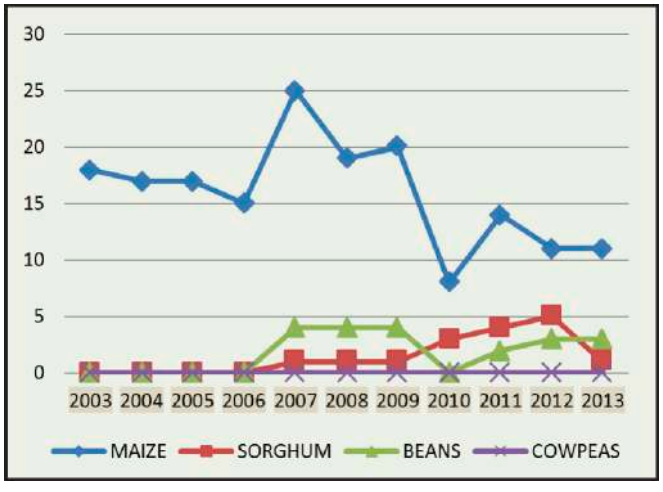


Figure 1: Number of varieties released in Kenya (three year moving average)

Varieties released in the last 3 years

In the three years from 2011 through 2013, the following number of varieties of the four focus crops were released: maize 35, common and climbing beans 10, sorghum 15, cowpeas 0. As seen in the figure below, the latest three-year moving average of maize varieties released is about 12. Although there is no clear trend, the releases for all seed varieties picked up somewhat between 2008 and 2011 (see Figure 1 below). Kenya outperforms Uganda and Zimbabwe on number of varieties released, but lags far behind South Africa.

Availability of foundation seed

Seed companies scored their satisfaction with the availability of foundation seed at 61.3% on average. (All scores reported in this brief are based on based on industry self-reporting of satisfaction.) While this is rated as "good," it is important to take a closer look at the numbers. Of key concern is that minimum scores for this indicator were 40% or lower for all four crops. The rating varies widely according to the crop and seed producing companies. Some companies have their own teams of breeders, as well as relevant facilities and germplasm to produce their own foundation seed. This is particularly true for multinational companies, which largely import their parent seed. By contrast, most small- and medium-sized companies rely on public research institutions for their foundation seed. Satisfaction with availability of foundation seed drops significantly when only the local, KALRO-reliant, companies are considered. The study also finds that seed companies with a historical link to government have better access to foundation seed.

INDUSTRY COMPETITIVENESS

Number of active seed companies

The number of registered seed companies in Kenya has grown from one (the Kenya Seed Company registered in 1956) to 116 since liberalization of the seed subsector in 1996. However, the number of active seed companies involved in the production and distribution of seed for the focus crops is only 17. The majority of the registered seed companies are actually seed merchants that are not involved in seed production or any breeding activities. They import seed, often for their own commercial agriculture activities, and do not distribute seed outside of their own commercial production enterprises. Maize seed is currently being produced by 16 companies (four being parastatals), sorghum by eight companies (three being parastatals), beans by eight companies (four being parastatals) and cowpea by six

companies (two being parastatals). All seed companies surveyed thought that there was still room for more seed companies.

Time it takes to import seed

The time it takes to import seed is rated by seed companies as fair at 58.9%. On average, it takes 26 days for imports and 12 days for exports. The difference in length of time for import versus export of seed reflects the more stringent import requirements for Kenya compared to its trading partners. While there is room for improvement on the seed import process, this indicator compares favorably against countries with more advanced seed sectors such as South Africa. To reduce threats arising from transmission of plant diseases and pests, Kenya has internationally acceptable phytosanitary procedures for seed import and export. Currently, Kenya imports maize and sorghum seed. It takes about 40 days to import seed from parent companies, mostly based in South Africa. In 2012, Kenya exported about 2,332 MT of seed. Most of Kenya's seed exports go to Burundi, DRC, Rwanda, Somalia, South Sudan, Tanzania and Uganda.

Market share of top seed companies

The market shares for companies producing maize, beans and cowpeas are represented on pie charts in Figure 2 below (note that each color denotes the same company across all crops). The Herfindahl-Hirschman Index (a way to quantify industry competitiveness) is also given in Table 2 (the index ranges from near zero for perfect competition to 10,000 for pure monopoly). Both indicators show an industry that is dominated by a few large players. The worst performance is in maize, where one company commands 80% market share (a government parastatal). The beans and cowpea markets are also characterized by low levels of competitiveness with nearly half of the market controlled by one company. Only the sorghum market can be considered to be reasonably competitive.

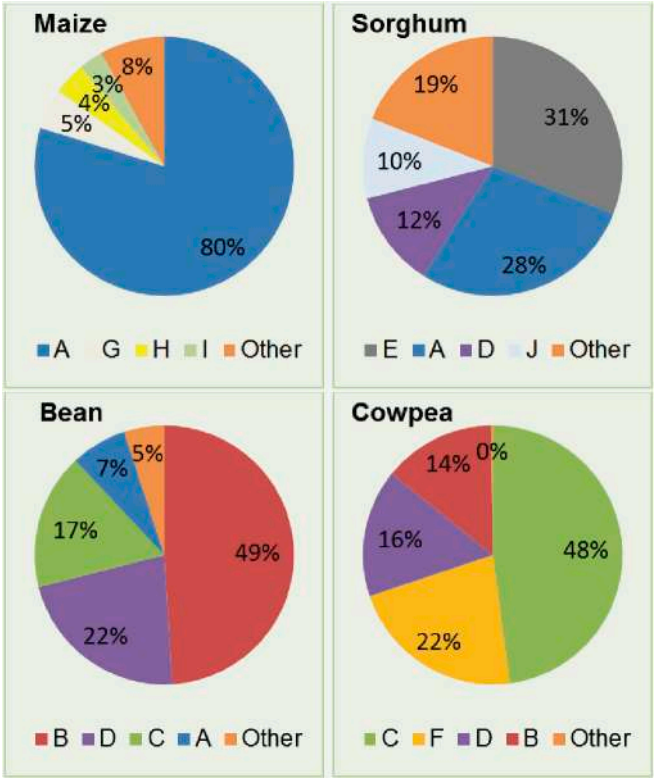


Figure 2: Seed volume market shares for staple crops

Market share of government parastatals

Compared to other countries in this study, Kenya has a very high seed market share that is still controlled by current or past government parastatals. For the four study crops, it was established that one government-connected seed company dominates the maize market, ranks second in sorghum and fourth in beans, where its subsidiary has the highest market share. It was also established that the same company collaborates with National Cereals and Produce Board (NCPB) in seed distribution, using the name and country-wide infrastructure (e.g., stores) of the latter. While there are no regulatory encumbrances to entry into the Kenyan seed sector, private sector participants have clearly stated that the dominance of state-supported players is discouraging to potential investors.

SERVICE TO SMALLHOLDER FARMERS

Concentration of rural agro-dealer network

The recently launched Seed Sector Platform KENYA(www.seedsectorplatformkenya.com) lists over 6,700 agro-dealer shops, many of which are licensed by KEPHIS. It is estimated that there are over 12,000 agricultural input stockists in total, but many of these are not licensed. It is common in Kenya to find small towns and markets having more than one agro-dealer, commonly referred to as agro-vets, given their involvement in both agricultural and veterinary inputs. Most of the agro-dealers sampled for this study sold seeds. Despite the relatively high number of agro-dealers in the country, farmers often travel 3 to 10 km to access agricultural inputs (AGRA, 2010).

Availability of seed in small packages

Kenyan seed companies outshine other countries in their ability to avail seed in small packages suitable for smallholder farmers. This indicator is rated as excellent, with 94.4% of the total volume of seed sold in Kenya sold in packages less than 5 kg. Small packages are an important incentive to promote the utilization of

certified seed among smallholder farmers. Most of the sales (about 74%) in the agro-dealer shops are in 2kg packages. Kenya's smallholder farmers account for over 75 percent of the total agricultural output and about 70 percent of marketed agricultural produce. They work land sizes of about 0.2-3.0ha. Given the seed rate for different crops, such smallholder farmers often demand small packages in order to minimize surpluses that may go to waste. Small packages also allow smallholder farmers to experiment with different varieties of the same crop.

SEED POLICY AND REGULATIONS

Length of variety release process

It takes an average of 37 months for a variety to go through the release process, which was rated "poor" by seed companies, with an average rating of 32.7%. The length of the release process depends on administrative as well as agro-climatic conditions in the trial area. Administrative constraints could arise from both the breeder and the regulator's actions. For instance, the breeder could delay submitting information required by the regulator or the National Variety Release Committee (NVRC) could fail to meet as required. Considering the combined effect of both the administrative and agro-climatic factors, the variety release period in Kenya ranges from 2 to 4 years for all crops. The average period, based on information from this survey, is 3 years. This measure is similar to Uganda but higher than the two-year average for Zimbabwe and one-year for South Africa.

Quality of seed policy framework

The seed industry scored the quality of Kenya's seed policy framework as "good" with a 65.2% rating. The Kenya National Seed Policy only came into force in August 2010, and given the relatively short period in which the policy has been in force, its effectiveness may not yet be clear to most stakeholders. For example, revised regulations have not yet been agreed upon or implemented. That said, the seed sector players see its enactment as an important and positive step, especially on matters of self-regulation, which would allow the private sector to play some regulatory roles, thus reducing the burden on KEPHIS. Of the four countries compared, Kenya's seed policy framework has the second highest score behind South Africa.

Quality of seed regulation and enforcement

The seed industry rates Kenya as good for regulations (60.9%) and fair for enforcement (53.1%). Seed producers indicated that most arrests are not successfully prosecuted due to weak investigations, coupled with corruption within the national police force. The Plant Varieties Act has been reviewed a number of times with the most recent amendment published in January 2013. One of the key elements introduced in the act is the leeway for the regulator to authorize some private persons to handle some of the functions initially confined to the regulator. This is intended to improve efficiency in the industry.

Adequacy of seed inspectors

Private seed companies put satisfaction with the availability of inspection services at an average of 63.8%. The main seed regulatory agency (KEPHIS) employs hundreds of staff, about 60 (15%) of whom are involved in seed inspections. To ensure effectiveness and efficiency in service delivery, KEPHIS has distributed inspectors to various sites, including all formal border points and international airports. Also, KEPHIS may, in consultation with the very active seed companies, set up a desk/office within their premises. Regarding KEPHIS as an institution, most of the seed producers were largely satisfied with the adequacy of services provided by KEPHIS, but very opposed to the high cost of KEPHIS certification labels in addition to other regulatory costs. However, an important gap exists in the inspection of agro-dealers by regulators. None of the regulators (KEPHIS, Horticulture Crops Development Authority (HCDA), Pet Control Products Board (PCPB), and Weights and Measures Department) inspected agro-dealers regularly. Limited inspection at retail level may result in stocking of expired seed, fake seed and illegal repackaging.

Efforts to stamp out fake seed

Government efforts to stamp out fake seed are rated by the industry as poor with a score of only 38.5%. In this study, fake seed is generally described as seed that has not been certified by the responsible regulatory institution(s) but is available in the market. According to various stakeholders, the main source of fake seed in Kenya is forged packaging of popular seed brands by unscrupulous traders. This mainly happens during periods of seed shortages when desperate farmers are likely to scramble for available seed without much scrutiny of the quality. Of the sampled agro-dealers, 23% had been directly affected by the fake seed problem. Maize is the crop most affected by the fake seed problem. It has been difficult for KEPHIS and other stakeholders to deal with the incidences of fake seed because detection of source is difficult. KEPHIS indicated receiving an average of 12 reports of fake seed per year.

INSTITUTIONAL SUPPORT

Availability of extension services

In Kenya, the ratio of public sector frontline extension workers to farmers is about 1:1000, compared to the desired level of 1:400. The drop in numbers and quality of public extension services has in recent years attracted entry of other extension service providers (ESPs). These other ESPs include NGOs, CBOs, FBOs and private companies that either sell their agricultural inputs or provide free extension services. However, supplementation by the private sector is limited and not able to reach all farmers in need. Private sector extension services favor commercial farmers and high-value crops while neglecting smallholder farmers and low-value crops such as maize and sorghum. Interviews with seed companies showed that they employ very few extension personnel.

Quality of national seed trade association

The services offered by the Seed Trade Association of Kenya (STAK) are, on average, rated as "fair" by its members with a score of 53.4%. Average scores in specific attributes were as follows: effectiveness in advocacy scored at 50.7%, managerial ability scored at 62.6%, democracy scored at 64.3% and capacity to mobilize resources scored at 54%. In all aspects, members are not very happy with STAK and there is certainly lots of room for improvement. Although STAK members account for only half of the registered seed merchants in the country, they sell over 90% of the certified seed. In addition, there is the continent-wide Africa Seed Trade Association (AFSTA) that also offers services to promote seed trade in Africa.

CONCLUSION

It has been nearly two decades since Kenya's seed sector has been liberalized. For a country with excellent private sector reputation in so many sectors (air travel, tourism, information and communication technologies, banking, flower production, horticulture for export, retailing, etc), privatization of the crop seed sector seems to be lagging behind. Compared to three other African countries, Kenya scored the highest in availability of seed in small packages. The country also performs relatively well on the quality of the seed policy and regulations, maize varieties released, and adequacy of seed inspectors. Overall, the government has set up good legislation but implementation lags behind. A key weakness in Kenya's seed sector is the strong dominance of government parastatals that stifles competition. While there are some challenges with Kenya's seed sector, given the country's strong performance in so many other private sector-led industries, there is great room for optimism. A level playing field, smart and efficient regulations, greater enforcement against fake seed and more, can improve the enabling environment for the seed industry that will ensure timely availability of high quality seeds of improved, appropriate varieties at affordable prices to smallholder farmers in Kenya.

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SOUTH AFRICA BRIEF March, 2015



TASAI
THE AFRICAN SEED ACCESS INDEX

INTRODUCTION

A competitive seed sector is key to ensuring timely availability of appropriate, high quality seeds at affordable prices to smallholder farmers in South Africa. This policy brief summarizes the key findings of a major study conducted in 2013 and 2014 by Dr. Van Der Walt and Professor John Derera to appraise the structure and economic performance of South Africa's seed sector. With a focus on four grain crops that are important to food security in South Africa—maize, soybean, sunflower and wheat—the report evaluates the enabling environment for a vibrant, private sector-led seed industry. The report covers 16 indicators that are divided into the following categories: research and development, industry competitiveness, service to smallholder farmers, seed, policy and regulations, and institutional support. To give perspective, the performance of South Africa's seed sector is compared against three other countries, namely Kenya, Uganda and Zimbabwe, where similar studies have been conducted under a new initiative called The African Seed Access Index (TASAI). TASAI seeks to encourage public policy makers and development agencies to create and maintain enabling environments that will accelerate the development of local, private sector-led seed systems serving smallholder farmers.

OVERVIEW

Unlike most other African countries, the seed industry in South Africa is fairly advanced and primarily serves the needs of commercial farmers. The seed industry has evolved over more than a century into a mature sector with some 107 seed companies that are members the South African National Seed Organization (SANSOR). Table 1 below shows the role of key players in South Africa's formal seed sector.

In 2012-2013 the formal seed trade exported some US$73 million worth of seeds and imported seeds with a value of US$89 million, accounting for half of formal seed business in Africa. The seed market for local and export sales of main crops totals R5.562 billion: R4.296 billion for agronomic seed, R892 million for vegetables, and R374 million for forage/pasture crops. Maize dominated the agronomic market with local and export sales of R3.600 billion, of which only R90 million is open pollinated varieties, the balance being hybrid conventional and genetically modified. Sunflower seed sales were worth R210 million, soybean R127 million, and wheat R115 million. As measure by volume, the seed market in South Africa is: local maize 41,939 MT and export 4,227 MT; soybeans 578 MT and 226 MT; sunflower 2151 MT and 612 MT; and wheat 14 837MT and 226 MT, respectively.

ROLE	KEY PLAYERS
Research and breeding	ARC; MNCs; Local seed companies; Universities
Variety registration & regulation	SANSOR
Breeders and foundation seed production	ARC; MNCs; Universities; Local seed companies
Seed production	SME Seed Companies; MNCs; ARC
Education, training, extension	Seed companies; NGOs; ARC; Government
Distribution and sales	Private sector seed merchants; Agricultural supply outlets; Cooperatives; Local government

Table 1: Role of key players in South African formal seed sector

Key Acronyms: AFSTA—Africa Seed Trade Association; **ARC**—Agriculture Research Council; **KZN**—KwaZulu-Natal; **MNC**—Multinational Corporation; **NGO**—Non-Governmental Organization; **OSTS**—Official Seed Testing Station; **SANSOR**—South African National Seed Organization; **SME**—Small and Medium Enterprise.

RESEARCH AND DEVELOPMENT

Number of active seed breeders

Unlike other African countries, plant breeding in South Africa is dominated by the private sector. Maize has the highest number of active breeders (27), of which 26 are in the private sector. Underlining the predominance of maize, the other three crops *combined* had only 26 active breeders (seven for soybean, 10 for sunflower and nine for wheat), only two of which are in the public sector. There are only two public breeders for maize and two for wheat, while there are no public breeders for soybean and sunflower. Three dominant MNCs (Monsanto, Pannar and Dupont-Pioneer) employ 80% of private sector maize breeders, 100% of soybean and 100% of sunflower breeders in the country. Most small- and medium-scale companies do not have plant breeders. The ratio of technical assistants to breeders is almost 1:1 for all the crops.

Although plant breeders at public universities are not included in the numbers above, they are nevertheless an important component of the seed sector research overall. There is at least one plant breeder at all public universities with an agriculture faculty, such as the University of KwaZulu-Natal (UKZN), the University of the Free State (UFS), the University of Limpopo, the University of Venda, and the University of Zululand. For example, UFS has eight plant breeders, and UKZN has six.

Varieties released in the last three years

As indicated by number of varieties released, South Africa has a robust research and development program for all key crops. As shown in Figure 1 below, the average number of varieties that were developed and released for each crop during 2010-2013 (three year rolling average) is 74 for maize, 12 for sunflower, nine for soybean, and nine for wheat.

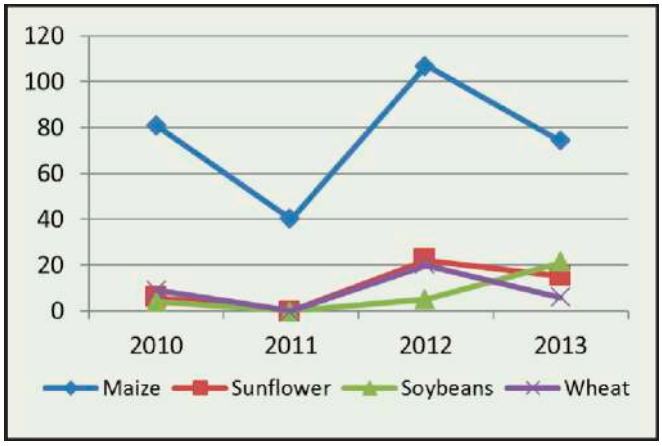


Figure 1: Number of varieties released (three year moving average)

Of the varieties released in the past three years, 162 maize varieties and 21 soybean varieties are genetically modified (GM). Maize dominates the national variety list with a total of 546 maize varieties on the official list, of which 308 varieties are protected by plant breeders' rights (PBR). On the soybean variety list, there are 35 non-GMO varieties, 19 with PBR protection, in comparison to 41 GM varieties, 38 with PBR. For sunflowers, there are 88 varieties on the official variety list; 79 are high-oil hybrids, 11 of which have PBR, two are high-oil OPVs, both with PBR, five are low-oil hybrids, of which two have PBR, and two are low-oil open pollinated varieties (OPVs), with no PBR. Note however that, due to greater involvement of multinationals, much of the basic breeding is done in home countries with more local assessments for adaptation done in South Africa.

Availability of foundation seed

Seed companies rated their access to foundation seed as excellent for maize and sunflower and good-to-very good for wheat and soybeans. The MNC and most of the large domestic seed companies produce and maintain their own foundation seed and do not depend on the government or public research institutions for foundation seed. Smaller companies get their foundation seed through partnerships or contract with more established companies.

INDUSTRY COMPETITIVENESS

Number of active seed companies

There are 72 registered seed companies that are full members of SANSOR. Thirty-seven (37) companies deal in the four focal crops: 17 sell maize seed, 11 soybeans, nine sunflowers and seven wheat. The other 35 companies work with other crops, including a large number (27) producing vegetable seeds, indicating more competition in the vegetable sector than in the field crops cluster. As the industry matures, the number of companies dealing in grain crops is likely to decline through mergers and acquisitions. For now it is fair to say that there is healthy competition in the production and distribution of improved seed in South Africa.

Time it takes to import seed

It takes an average of 25 days (range: 14-90) to import seed for all crops from South African Development Community (SADC) countries into South Africa. Compared to other countries in the region, it is easier to obtain an import permit. On average, the import process is rated as very good by the seed industry with an average score of 69%. With good planning, the seed can be imported and planted in the same season. The

relative ease of the import process is due to the fact that, to date, no GMO varieties are imported from other African countries and therefore importers are not required to comply with biosafety requirements. In contrast, exporting South African seed from to the rest of the world, including SADC countries, requires biosafety clearance in addition to an export permit, phytosanitary, and international seed quality documentation. The export process is consequently much longer.

Market share of top seed companies

The market share data indicate that there is significant concentration in South Africa's seed industry. The top three companies (all MNCs) account for at least 85% of the seed business for each of the four focus crops. However, there is an intense competition among these three companies resulting in a strong push for investment and delivery of high-quality products at competitive prices. Small companies only account for 2-15% of the seed market across the focus crops. As a sign of industry maturity, there is significant specialization by seed crop. Large seed companies, especially multinationals, tend to focus on major food crops, with significant economies of scale. Figure 2 shows the relative market share for each crop by different companies. The more evenly sliced the pie, the more competitive the market. Of the four focus crops, maize and sunflower are the most competitive (see Herfindahl-Hirschman Index scores in Table 2 for comparison). With only three active seed companies, wheat is the least competitive crop.

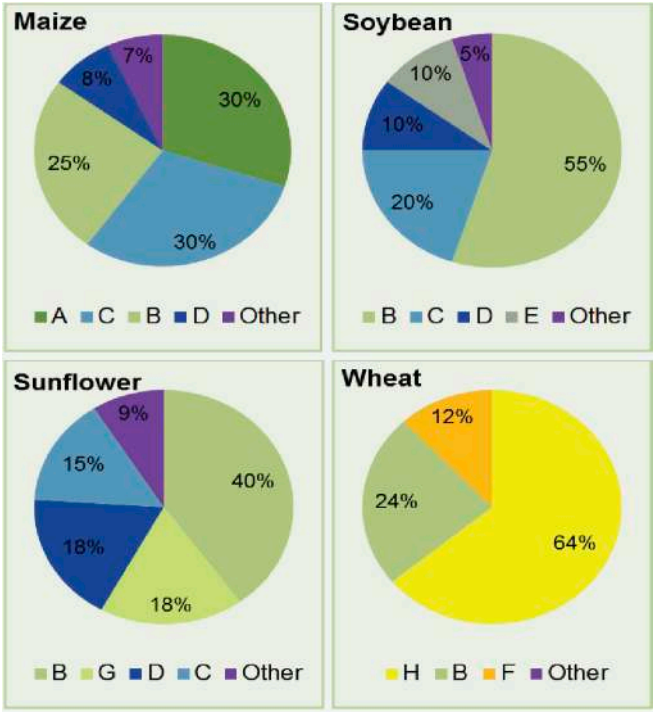


Figure 2: Seed volume market shares for staple crops

Market share of government parastatal

There are no parastatal companies operating a seed business in South Africa. The industry is fully liberalized and no government entities produce seeds.

SERVICE TO SMALLHOLDER FARMERS

Concentration of rural agro-dealer network

Because of its extensive and efficient road network and transport infrastructure, commercial farmers in South Africa have good access to agricultural inputs including seed. However, the agro-dealer network in rural areas is thin. Except for wheat, which is rated slightly below 50%, the industry survey indicated that seed distribution is generally fair with a satisfaction score of 55%. There is certainly a lot of room for improvement on this measure. Key informants and seed companies estimated that on average, seed is available within an 80km radius for most farmers. The seed is distributed through cooperatives and rural retail shops within the communities. Sales representatives from seed companies also assist farmers and cooperatives to transport seed especially when large quantities are purchased. To encourage adoption of improved seed by smallholder farmers, a better distribution system is needed in rural areas.

Availability of seed in small packages

Because commercial farmers constitute a very large share of the seed market, most seed in South Africa is sold in bulk orders. About 70% of the maize seed is sold by kernel count. For maize, the common package size is 60,000 or 80,000 kernels, while for sunflower the common size is 180,000 kernels. Only 10 % of maize seed is sold in packages that are 2kg or less and another 10% is sold in 5kg bags. Of the other three focus crops—soybean, sunflower and wheat—it is nearly impossible to get seed in packages that are less than 25kg. Most seed companies do not process small packs of seed especially for crops that are generally classified as non-smallholder crops in South Africa. Availability of seed in small packs was rated as extremely poor for soybean (25%), poor for sunflower (22%) and extremely poor for wheat (2%). It is however rated good for maize seed (74%). The bulk of maize seed that is packed in small packs is open-pollinated varieties, which are distributed in KwaZulu-Natal and Eastern Cape. While the lack of small seed packs could be overcome by breaking the bulk at

retail level, repackaging seed is illegal.

SEED POLICY AND REGULATIONS

Length of variety release process

It takes on average of 12 months to release varieties of the four focal crops and may take up to 36 months to release a pasture variety. Seed compani es rate their satisfaction with the variety release process as excellent (81%). Satisfaction levels for each of the focus crops are as follows: maize 79 %, soybeans 81%, sunflower 79% and wheat 82%. SANSOR is the contracted licensing agent in charge of the variety release process (in close collaboration with ARC), an initiative arising from the need to minimize the delay between registering a new variety and getting the seed to farmers. It is noteworthy that royalties collected peaked in 2007-08 when an amount of R4.25 million (US$525,000) was collected after having steadily grown since inception of licensing, then declining to the 2013 amount of R1.7 million (US$170,000) as result of fewer competitive varieties being released.

Quality of seed policy framework

Seed industry stakeholders in South Africa rate the quality of the seed policy framework as excellent with a satisfaction score of 83%. The high numbers show that stakeholders are satisfied with both the contents and implementation of the Plant Acts, the policies that govern the seed industry.

Quality of seed regulation and enforcement

South Africa's seed sector is regulated through four acts, namely the Plant Improvement Act no. 53 of 1976 (as amended), the Plant Breeders' Rights Act no. 15 of 1976 (as amended), the Agricultural Pests Act no. 36 of 1983 (as amended), and the GMO Act no. 15 of 1997 (as amended). There are various secondary acts that impact on seeds and varieties such as the Fertilizers, Farm Feeds, Agricultural Remedies, and Stock Remedies no. 36 of 1947 (as amended). At 70% satisfaction, the quality of the regulatory enforcement was rated as very good. Most of the acts that regulate the South African seed industry are in a state of amendments, some completed, some in process and some forthcoming.

Adequacy of seed inspectors

Seed inspection is mostly conducted by in-house or by contracted authorized seed inspectors certified by SANSOR. As such, seed companies are free to increase or decrease the number of seed inspectors based on need. However, some small- and medium-sized companies do not have their own in-house seed inspectors. In such cases, the availability of a seed inspectors is generally rated as poor. This is an area that needs improvement. Currently, SANSOR does not have seed inspectors on staff, although its experienced seed certification and technical managers, who originally came from government inspection services, regularly monitor seed during site visits with contracted private seed inspectors. During the 2012/13 growing season, 1,700 seed production fields of 35 species were registered for certification of which 301 were pre-basic, 500 for basic and 906 for certified seed. This covered 40,430 hectares and 3,374 certificated were issued for 50,900 metric tons of seed.

Efforts to stamp out fake seed

Fake seed is not a problem in South Africa. In 2012-13 there were six cases reported of fraudulent labeling and dishonesty with agricultural imports at border posts, three of which were investigated. This is down from 11 cases in 2011-2012 and 35 cases in 2008-2009. It is difficult to tell if any of these cases could be classified as fake seed. Respondents were generally satisfied with efforts to get rid of fake seed on the market. The highly formalized structure of the seed distribution system leaves little room for fake seed entry.

INSTITUTIONAL SUPPORT

Availability of extension services

In South Africa, approximately 2,155 government extension officers serve about 7,139,397 agricultural households. The concentration of extension officers and the quality of services offered varies widely by province. When it comes to extension services offered by private companies, the data indicate very few extension services available for the four focal crops, as opposed to vegetable seeds, for which more services are offered. Overall, satisfaction with the adequacy of extension support for smallholder farmers is at 35% (32% for private extension and 38% for government supported extension).

Quality of national seed trade association

South Africa has an organized and effective national seed trade association—the South African National Seed Organization (SANSOR). SANSOR is a registered not-for-profit association. The association has a total membership of 118 of which 72 are full members (seed companies), 21 are associate members (service providers), seven are affiliate members, nine are international company members, two are third party distributors, and seven are honorary members. SANSOR was rated excellent for all aspects such as activeness (92%), effectiveness in advocacy (92%), management ability (93%), democracy in election and decision-making (90%) and capacity to mobilize resources (90%). The overall rating of SANSOR is excellent at 92%, a score that is much higher than any of the other national seed traders associations.

SANSOR is the designated authority for conducting official seed certification on behalf of the Ministry of Agriculture, Forestry and Fisheries. It employs some 210 contracted seed inspectors and samplers for seed certification and is a regular participant in meetings or congresses of the International Seed Federation (ISF), International Seed Testing Association (ISTA), American Official Seed Certifying Authorities (AOSCA), African Seed Trade Association (AFSTA), Organization for Economic Collaboration Development (OECD), and other international organizations. Its organizational structure comprises three divisions: agronomy, horticulture, and pasture/forage. Its various specialist committees assist with SANSOR functions, which include seed testing, plant breeders' rights, phytosanitary issues, arbitration and licensing of public seed varieties.

CONCLUSION

The South African seed industry has had a long and successful evolution from its inception in the 1890s to a strong and well-established private sector-led industry today. Part of the key to its success has been the close interaction between private sector managers and government representatives. Its competitive environment ensures maintenance of seed quality, private seed testing laboratories expertise, and efficient management of seed certification schemes. The national seed traders association (SANSOR) is highly effective in representing the interests of its members. However, due to a highly commercialized agricultural sector, the seed sector has evolved to primarily serve the needs of large-scale commercial farmers. The industry performs poorly on measures that are specific to seed access for smallholder farmers such as availability of seed in small packages, presence of a rural-agro-dealer network, and the availability of extension services. There is still great scope for improving access to seed for smallholder farmers in rural areas.

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UGANDA POLICY BRIEF March, 2015



TASAI
THE AFRICAN SEED ACCESS INDEX

INTRODUCTION

A competitive seed sector is key to ensuring timely availability of appropriate, high quality seeds at affordable prices to smallholder farmers in Uganda. This policy brief summarizes the key findings of a major study conducted in 2013 and 2014 to appraise the structure and economic performance of Uganda's seed sector. The study was conducted by two local seed industry experts: Mr. Chris Ibyisintabyo and Mr. Emmanuel Mubangizi. With a focus on four grain crops that are important to food security in Uganda–maize, bean, millet and sorghum—the report evaluates the enabling environment for a competitive seed sector and covers 16 indicators that are divided into the following categories: research and development, industry competitiveness, service to smallholder farmers, seed, policy and regulations, and institutional support. To give perspective, in this brief, the performance of Uganda's seed sector is compared against three other countries, namely Kenya, South Africa and Zimbabwe, where similar studies were conducted under a new initiative called The African Seed Access Index (TASAI). TASAI seeks to encourage public policy makers and development agencies to create and maintain enabling environments that will accelerate the development of local private sector-led seed systems serving smallholder farmers. Details on research methods and other country briefs are available online at www.tasai.org.

OVERVIEW

Like most other African countries, the seed industry in Uganda consists of two systems: the informal sector and the formal sector. This policy brief focuses almost exclusively on the formal seed sector.

The informal sector broadly refers to the system where farmers produce, obtain, maintain, develop and distribute seed resources, from one growing season to the next (FAO, 1998). Because of limited exposure, inability to purchase seeds, limited access to agro-dealers, or other reasons, some smallholder farmers in Uganda still rely on informal seed systems. The steps in the informal seed system are not monitored or

ROLE	KEY PLAYERS
Research and breeding	NARO; NARS; MNCs
Variety registration & regulation	NVRC; NSCS
Breeders and foundation seed production	NARS; NARO; MNCs; Local seed companies
Seed production	Local seed companies; MNCs
Processing and packaging	Local seed companies; MNCs; agro-dealers
Education, training, extension	NGOs; NAADS; local government; ATAAS; rural agro-dealers
Distribution and sales	Seed companies; rural agro-dealers; farmer cooperatives; NGOs

Table 1: Role of key players in Uganda formal seed sector

Key Acronyms: ATAAS—Agricultural Technology and Agribusiness Advisory Services; **AFSTA**—Africa Seed Trade Association; **MNC**—Multinational Corporation; **NARO**—National Agricultural Research Organization; **NAADS**—National Agricultural Advisory Services; **NARS**—National Agricultural Research System; **NGO**—Non Governmental Organization; **NSCS**—National Seed Certification Services; **NVRC**—National Variety Release Committee; **UNADA**—Uganda National Agro-Input Dealers' Association; **USTA**—Uganda Seed Trade Association

The formal sector focuses on breeding, producing and selling seed that is certified by the National Variety Release Committee (NVRS). NVRS conduct official seed certification on behalf of the Ministry of Agriculture. As shown in Table 1, Uganda's formal seed sector is comprised of many different institutions including the government; (e.g., NARO, NARS, NVRC, NAADS, ATAAS, and NSCS); the private sector (e.g., Pannar Seed, Seedco, East Africa Seeds Ltd., FICA Seeds, etc.); member associations (e.g., UNADA and USTA); as well as NGOs, development agencies and farmer cooperatives.

RESEARCH AND DEVELOPMENT

Number of active breeders

The National Agricultural Research Organization (NARO) is the leading public organization responsible for research and development. Within NARO, the National Crop Resources Research Institute (NaCRRI) is responsible for breeding programs for maize, rice, common beans, soybean, sweet potatoes and cassava. For the four focus crops, there are 11 active breeders: six for maize (four public and two private), two for beans (both public), one for millet (public) and two for sorghum (both public). Maize breeding receives more attention compared to other crops due to its significant donor support. Training of breeders and investment into research and development are still beyond the means of most local seed companies in Uganda. The few breeders that have been trained work for international organizations such as International Centre for Improvement of Maize and Wheat (CIMMYT) and tertiary institutions outside Uganda.

Varieties released in the last three years

Of the four focus crops, only 12 maize varieties and seven bean varieties have been released in the three-year period from 2011 to 2013. (Figure 1 shows the number of varieties released each year.) However, many more varieties are in the pipeline: a new breeder is scheduled to release at least 10 varieties of finger millet in 2014, and National Crop Research Resources Institute (NaSARRI) is evaluating elite sorghum materials. In the case of maize, additional seed companies are planning to release their own varieties, adding to the existing varieties. Both sorghum and millet are only developed through public research and sustaining breeder and foundation seed production depends on the availability of funds from government and donors. The number of varieties released each year is expected to increase over the next couple of years due to high demand for new seed varieties and increasing donor support to research and development activities.

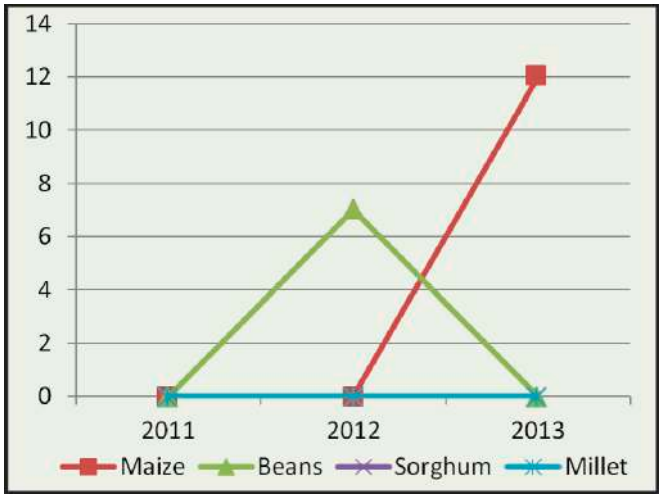


Figure 1: Number of varieties released

Most seed companies obtain their foundation seed from breeders at the NAROs. However, the TASAI survey found that some of the more established seed companies in Uganda (e.g., NASECO, FICA Seeds, East African Seeds Ltd. and Victoria Seeds) obtain breeder seed from the researchers and multiply it into foundation seed and then sell it to other seed companies.

Seed companies face various challenges while trying to access foundation seed, which include a total lack of foundation seed for certain varieties and inadequate volumes of breeder seed from breeders. The NARO and its constituent research institutes depend on funds released by government annually, and most of the time these funds are not adequate. There is also lack of coordinated planning and information sharing between breeders and seed companies. Seed companies often do not make good projections to enable proper planning by breeders, and this creates a shortfall in the production of breeder seed, subsequently affecting the production of foundation seed. The survey also found that sometimes breeders do not have adequate facilities to maintain their foundation seed farms, which can lead to low quality foundation seed. For all these reasons, the seed companies surveyed rated the overall availability of foundation seed for the focus crops as "fair" at 42%. However, the four crops vary in terms of availability of foundation seed: maize was rated "good" at 68%, while millet was rated the lowest—"extremely poor" at 18%.

INDUSTRY COMPETITIVENESS

Number of active seed companies

The first seed company in Uganda was registered in 1996 and since then the number of seed companies has grown to over 25 in 2013. Out of the 25 seed companies, 23 are members of the Uganda Seed Trade Association (USTA). An assessment of the seed companies indicated

that 14 (54%) are active in the focus crops. Despite the steady growth in the number of registered seed companies in the last 10 years, the number of active seed companies is still low. Despite efforts by local entrepreneurs to start seed enterprises in the country, almost half of them have experienced limited growth due to low financial base and low management skills in the seed business.

Time it takes to import seed

On average, importing seed takes longer than exporting it—48.3 days compared to 17.5 days. The main reason for the longer importation period was that most seed imports come from India, South Africa, and Australia—countries that are far and where the process involves lots of paperwork. In contrast, seed exportation takes less time because seed exports mainly go to neighboring countries like South Sudan, Rwanda and Tanzania, which are all under the East African Harmonized Seed Import Export Regulations. Both import and export processes were rated as "good" at 55% and 66%, respectively.

Market share of top seed companies

The market shares of the top seed companies for each crop are illustrated through pie charts in Figure 2. These estimates are based on volume (not value) of seed sales for the two cropping seasons in 2012. The seed maize market is the most competitive with the top four companies commanding an almost equal share of about

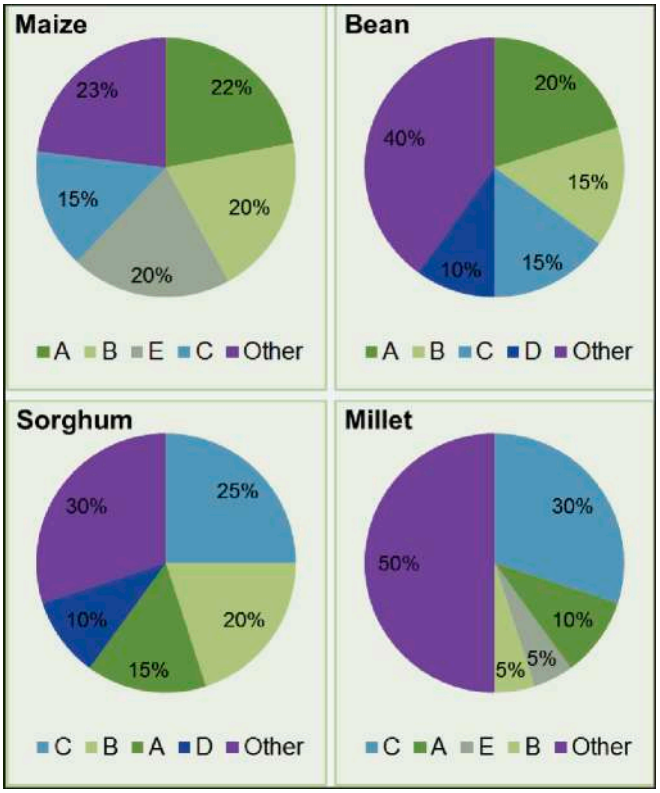


Figure 2: Seed volume market shares for focus crops

21% each. Millet is the least competitive crop with one company commanding a 50% share and the second largest company commanding 30% market share. As measured by the Herfindahl-Hirschman Index per crop, Uganda is the most competitive of all the four countries. However, unlike the other countries, the same four companies are the top four largest companies for all crops. As a result, when one looks at the overall seed market across crops, Uganda is not very competitive.

Market share of government parastatal

The seed industry has undergone a number of changes from being a purely public-led industry to a now fully private-led seed industry. The Uganda Seed Project (USP) transformed into a commercial entity and was converted into a limited liability company in 1999; Uganda Seeds Limited (USL). After liberalization, both local and multinational seed companies came into the market and significantly reduced the market share of USL. USL was later leased out to two private seed companies in 2005 and since then ceased all seed production and marketing.

SERVICE TO SMALLHOLDER FARMERS

Concentration of rural agro-dealer network

According to the agro input dealer census conducted in 2009 by UNADA and AT Uganda, there were 2,064 agro-dealers in the country (UNADA, 2009). About 37% of the agro-dealers identified in the census were in urban areas, while the other two-thirds were in the rural areas. In 2013, the estimated number of agro- dealers is about 2,600. Considering the number of farmers in the country, this number is small: the ratio of agro-dealer to farmer is about 1:3,400 or less. Access to seed in many rural areas of Uganda is still limited because of high transport costs affecting both farmers and agro-dealers. Agro-dealers usually lack adequate capital to purchase large volumes of seed to warrant hiring of transport to deliver seed to rural areas. The road network in many rural areas of the country is very poor, which makes access to rural areas more difficult, especially where communities are sparsely distributed. Seed companies rated the concentration of agro-dealers as "fair" at 49%.

Availability of seed in small packages

As measured by volume, the amount of seed available in packages smaller than 5 kg for each of the focus crops is as follows: maize 22%, beans 36%, millet 5% and sorghum 55%. The availability of seed in smaller packages is rated by the industry as "fair" at 50%. Seed companies can still improve access by smallholder farmers by selling more seed in packages smaller than

5kgs that can be afforded by the millions of smallholder farmers in rural areas. Although discussions with seed companies indicated that packing seed in smaller packages increases the cost of packaging, making the small packs available to the smallest subsistence farmers will go a long way to provide access to seeds while minimizing the chance of seeds being repackaged, which often leads to adulteration.

SEED POLICY AND REGULATIONS

Length of variety release process

The introduction of new field crops into Uganda from within or outside require confirmatory tests for Value for Cultivation and Use (VCU) and Distinctness, Uniformity and Stability (DUS). In addition to the long period of variety development, all new varieties undergo two seasons of testing before they can be registered and released as new varieties. Maize, beans, finger millet, sorghum and other field crops require two seasons of testing to determine value for cultivation and use (Seeds and Plant Act, 2006:12). Seed companies from outside Uganda find this process to be cumbersome and many prefer investing in countries without release processes. The cost and time to register new varieties are especially significant for new seed companies, which limits the flow of new varieties into the market. There are two specific costs for DUS and VCU, and the costs of testing per season run about USD150 per variety per site. The variety will have been tested in at least 6 sites and on farms with farmers in the suitable ecological zone for two seasons. (Source: Cereal Program, NaCRRI)

The average period it takes to release a new variety is three years for maize, 2.5 years for beans, and five years for sorghum. The industry satisfaction with the release processes for each of the focus crops was as follows: maize 60%, beans 55%, millet 50% and sorghum 59%.

Quality of seed policy framework

On average, the seed policy was rated as 47% and considered poor. This is mainly attributed to the fact that Uganda does not have a final policy document that guides the development of the seed sector in the country. The consultative processes have been very slow and not all stakeholders have been consulted for their input into the seed policy. It is likely that the current draft seed policy will be reviewed to broaden its scope when more stakeholders are involved.

Quality of seed regulation and enforcement

On average, the quality of the seed law and regulations were rated "fair" at 44%. While the Seed Act of 2006 is in place, enforcement of the law is poor. Many players in the seed value chain have not been educated on the Seed Act. The seed regulations have been in draft form since 2008 and the lack of NSCS personnel and low levels of accreditation have been raised during several stakeholder fora for likely future low levels of implementation. These regulations were cleared by the office of the solicitor general recently but are yet to be accented to by the Minister of Agriculture. In general, regulation and enforcement of the seed laws are weak due to a lack of capacity and poor training of officers responsible for seed certification at the Ministry of Agriculture. Currently, enforcement of seed laws is highly centralized at the exclusion of local enforcement officers and district agricultural officers.

Adequacy of seed inspectors

In Uganda, seed inspection services are provided by the National Seed Certification Services (NSCS). This section is understaffed with only four seed inspectors covering 25 seed companies and over 900 seed growers. The government recently recruited 30 more inspectors but they are involved in phytosanitary inspections and the inspection of agricultural chemical dealers. The four seed inspectors are based at the Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) headquarters and do not regularly visit the seed fields around the country. As a result, seed companies are not inspected properly by government inspectors contributing to poor quality seed on the market. Among the companies interviewed by the TASAI survey, the average score for availability of inspection services was 43.5%, with a wide range between 30% and 80%.

Efforts to stamp out fake seed

The costs of fake seed are many and include the cash losses to buyers, low productivity, crop loss and declining agricultural production. Fake seeds have become a national concern in Uganda. Addressing this challenge requires a common purpose, strategy, and resources by all stakeholders. The average score for the government efforts to stamp out fake seed was rated at barely "fair" at 40.6%. The low rating is attributed to a number of factors, including inadequate staff at the ministry level to monitor and apprehend those involved in dealing in fake seeds in the market. Corruption is also blamed for the high levels of fake seeds on the market.

INSTITUTIONAL SUPPORT

Availability of extension services

In Uganda there are 2,354 sub-county extension officers under the NAADS program, and each of the 112 districts in Uganda has at least a district NAADS coordinator, district production coordinator, a district agricultural officer and a district veterinary officer. This brings the

number overall to about 2,802 extension workers directly interacting with farmers. The ratio of extension workers to farmers is 1:3,140. This number excludes extension workers from the private sector, NGOs, donors, farmer organizations and cooperatives. Uganda's extension system has various challenges including inadequate funding to facilitate extension work, inadequate numbers of trained professionals, and low salaries.

Quality of national seed trade association

The Uganda Seed Trade Association (USTA) is a membership association formed in 1999 to coordinate and oversee the development of the seed industry and to enhance the availability of quality-assured seed for the entire farming community locally, regionally and internationally. With a total of 27 registered members, of which 23 are ordinary members (seed companies) and four associate members, USTA covers a total of more than 90% of the seed companies registered in Uganda. The average rating of USTA by seed companies was "good" at 60.6%. Score for USTA's competency in specific areas is as follows: activeness is rated at 58.8%, effectiveness in advocacy is rated at 56.9%, managerial ability is rated at 62.5%, democracy in elections and decision-making is rated at 80%, and capacity to mobilize resources is rated at 45%.

CONCLUSION

Uganda's seed sector is fully liberalized but is still in the early stages of growth. Per focus crop, Uganda is more competitive than all of the other three countries (South Africa, Zimbabwe and Kenya). Without a single company dominating the market, price competition is fierce, leading to lower prices for farmers. However, the seed sector still relies on a poorly performing public sector breeding program. The number of active breeders is very low and access to foundation seed is limited. With serious staff shortages, government department are unable to cope with the growing demands of the private sector. This has led to a weak seed policy and regulatory framework. A clear sign of this is the problem of fake seed, which continues to grow and could derail the industry if left unchecked. However, the private sector has a strong momentum and is pushing towards more self-regulation and self-reliance. There are strategies in place to address most of the key choke points along the seed value chain. In short, despite its challenges, Uganda's seed sector shows great promise for a vibrant, private sector-led seed system that will guarantee timely availability of appropriate, improved varieties to smallholder farmers at affordable prices.

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ZIMBABWE BRIEF March, 2015



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INTRODUCTION

A competitive seed sector is key to ensuring timely availability of appropriate, high quality seeds at affordable prices to smallholder farmers in Zimbabwe. This country brief summarizes the key findings of a major study conducted in 2013 and 2014 to appraise the structure and economic performance of Zimbabwe's seed sector by Dr. Claid Mujaju and Mr. Munyaradzi Jonga. With a focus on four grain crops that are important to food security—maize, cotton, soybean and sorghum—the report evaluates the enabling environment for a vibrant private sector-led seed industry. The report covers 16 indicators that are divided into the following categories: research and development, industry competitiveness, service to smallholder farmers, seed, policy and regulations, and institutional support. To give perspective, the performance of Zimbabwe's seed sector is compared against three other countries, namely Kenya, South Africa and Uganda, where similar studies were conducted under The African Seed Access Index (TASAI). TASAI seeks to encourage public policy makers and development agencies to create and maintain enabling environments that will accelerate the development of local private sector-led seed systems serving smallholder farmers.

OVERVIEW

As early as the 1960s, the government of Zimbabwe recognised the urgent need to enhance the provision of quality seeds to farmers. The Department of Research and Specialist Services (DR&SS), established in 1948, was mandated to initiate research on new varieties and start seed production in the country. Key institutions within DR&SS for seed sector development were the Crop Breeding Institute (CBI) for variety development and the Seed Services Institute (SSI) for seed certification and quality control as required under the Seed legislation (Seed Act, 1971; Seed Regulations, 1971; Seed Certification Scheme Notice 2000).

In the early 1980s, Seed Co. Ltd. was the sole producer of seed for seven crops (maize, sunflower, wheat, barley, soybeans, groundnuts and sorghum). Up until 1990, Zimbabwe's seed industry was dominated by

ROLE	KEY PLAYERS
Research and breeding	CRI; CBI; ZTS-SIRDC; MNCs; SME seed companies
Variety registration & regulation	Seed Services (National Certifying Authority)
Breeders and foundation seed production	CRI; CBI; ZTS-SIRDC; MNCs; SME seed companies
Seed production	SME Seed Companies; MNCs; contract farming companies
Processing and packaging	Seed companies; MNCs
Education, training, extension	Seed companies; government extension agents; NGOs
Distribution and sales	ZSTA; seed companies; rural agro-dealers; NGOs; Government

Table 1: Role of key players in Zimbabwe's formal seed sector

Key Acronyms: AFSTA - Africa Seed Trade Association; **CBI** – Crop Breeding Institute; **COMESA** - Common Market for Eastern and Southern Africa; **CRI** – Cotton Research Institute; **ISTA** - International Seed Testing Association; **MNC** – Multinational Corporation; **NGO** – Non Governmental Organization; **SME** – Small and Medium Enterprise; **UPOV** - International Union for the Protection of new Plant Varieties; **ZSTA** – Zimbabwe Seed Trade Association; **ZTS-SIRDC** – Zimbabwe Technological Services -Scientific Industrial Research & Development Center

three companies (Seed Co. Ltd., Pannar Seeds, and Pioneer). Since then, the number of seed companies has grown tremendously and currently there are 22 out of 38 companies selling the focus crops (maize, soybean, cotton and sorghum). These companies are registered with the National Certifying Authority (NCA). Variety registration, seed production and marketing activities are regulated by Seed Services (National Certifying Authority), under the Ministry of Agriculture. Complementing Seed Services is an association of seed companies known as the Zimbabwe Seed Trade Association (ZSTA) that also coordinates seed industry activities and sales. Through Seed Services and ZSTA, the Zimbabwe seed industry works and participates in various regional and international associations and technical bodies such as ISTA, AFSTA, SADC, COMESA, UPOV, ARIPO and OECD.

RESEARCH AND DEVELOPMENT

Number of active seed breeders

Four private institutions (Seed-Co, Pannar, Pioneer, and Quton) are leading breeding efforts for the focus crops. Currently, there are 21 active breeders for maize (two public and eight private), five for cotton (two public and three private), seven for soybean, (one public and six private) and seven for sorghum (one public and five private). About 80% of the active breeders are employed in the private sector. Including the above four, altogether 10 medium and large seed companies have breeding programs, while other seed companies depend on national breeding institutions or international organizations like CIMMYT and ICRISAT. Maize seed dominates breeding efforts, which reflects the importance of maize seed for the seed companies and Zimbabwean agriculture as a whole. The seed sector rates the number of maize breeders as excellent, with a 94% satisfaction rate. The adequacy of active breeders for each of the focus crops was rated as follows by industry representatives: maize is excellent at 94%, cotton is good at 66%, soybean is excellent at 80% and sorghum is good at 75%.

Varieties released in the last three years

As illustrated in Figure 1, the number of varieties released annually clearly demonstrates a strong bias for maize in breeding activities. For the three-year period from 2011 through 2013, the following varieties were released for each crop: maize 28, cotton one, soybean three, sorghum three. Thus, about 80 % of the total varieties released in the last three years were for maize, mainly from private sector breeders. The seed companies surveyed rated the adequacy of varieties as very good-to-excellent. One exception to this was cotton, which was rated at X, reflecting the fact that few

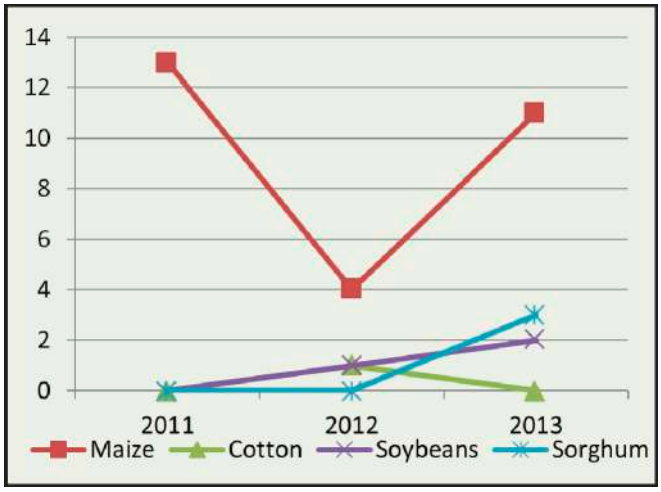


Figure 1: Number of varieties released

breeders and companies focus on cotton. Importantly, the performance of varieties released for all the focus crops were deemed excellent, as they are well adapted to Zimbabwe's agronomic conditions and are tolerant to most diseases.

Availability of foundation seed

Seed companies in Zimbabwe produce and maintain their own foundation seed. Availability of foundation seed is rated as excellent by seed companies with perfect scores for cotton, soybeans and sorghum. All but one company rated availability of perfect seed as perfect. The only company that gave this measure a less than perfect score of 70% was a government parastatal that is producing maize. This company gets its foundation seed from public research institutes.

INDUSTRY COMPETITIVENESS

Number of active seed companies

The number of new seed company registrations over the last decade showed that registrations were stagnant from years 2006 and 2010, when Zimbabwe's economy was in hyperinflation. Currently, there are 38 registered seed companies in Zimbabwe. Of the 20 that are involved in the focus crops, 15 and 11 are active in the production and supply of maize and sorghum seed, respectively. Only seven of the companies produce soybean seed, while only three produce cotton seed. Cotton has the lowest number of active seed companies. The underlying reason for this is that, for a long time, Quton had the sole right to multiply and market Cotton Research Institute varieties for domestic and international trade. Because of the exclusivity of cotton varieties, no other company could venture into the cotton seed business. The recent expiry of the exclusivity of cotton varieties by Quton has attracted two other companies (Cargill and Alliance Ginnerie) to

join the cotton seed business and is likely to result in a more competitive cotton seed market.

Time it takes to import seed

For the four focus crops, the import and export processes are similar. Only registered seed companies are allowed to import and export seed for sanitary and phytosanitary reasons. In 2013, Zimbabwe imported a total of 266mt of seed for the four focus crops, 178mt of which was maize, 80mt sorghum, 4mt cotton, and 4mt soybean. In the same year 391mt of seed for the focus crops were exported—250mt of cotton, 141mt of maize, and negligible quantities of soybean and sorghum. The average number of days for import processing are: 10 for maize, 15 for soybean and 12 for sorghum. The number of days it took to process the required paperwork varied by crop and was constrained by stringent national biosafety requirements and the absence of a one-stop permit management system. Other bottlenecks included delays due to confusion regarding the approval sequence among government officials, resulting in delays obtaining export certificates and Agricultural Marketing Authority approval. Despite such obstacles, the import/exports procedures were rated by seed companies as good on average.

Market share of top seed companies

As shown in Figure 2, the seed sector in Zimbabwe is dominated by few large companies. One company controls about 47% of the maize seed market and 67% of the soybean seed market. For maize seed, the second, third and fourth largest companies, control 16%, 13% and 10% market share, respectively. Two of the largest companies in the sorghum market control 39% and 35% of the market, respectively. There is a monopoly in the supply of cotton seed, which is currently supplied by Quton Seed Company only. As mentioned above, in 2012, two other companies entered the scene, but they are not yet producing cotton seed at significant rates.

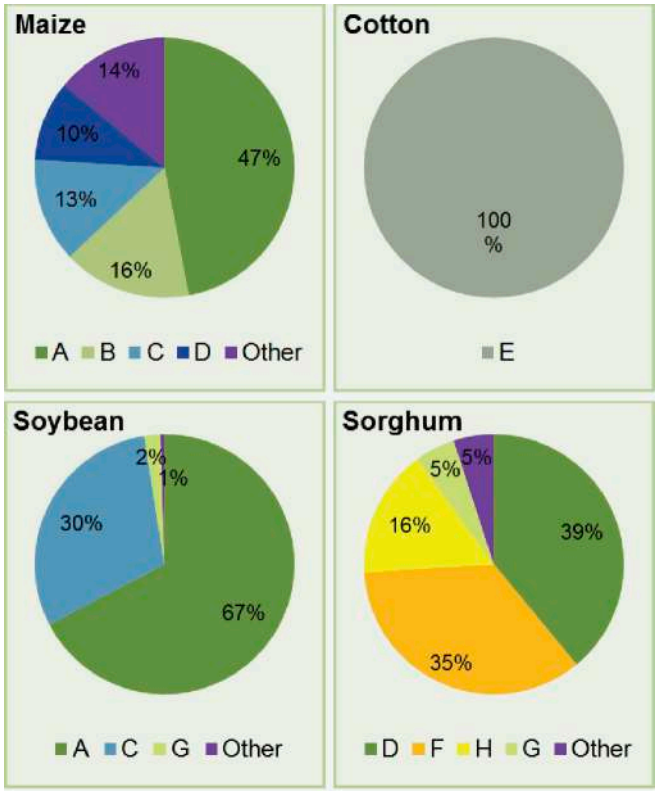


Figure 2: Seed volume market shares for staple crops

Seed companies in Zimbabwe largely compete for customers using product performance and services rendered to farmers. There is little variance in seed prices across companies due to government price controls. The government has also been purchasing and distributing significant amounts of seeds to farmers. For example, in 2013, the government bought 16,200mt (46.3%) of the 35,000mt of maize seed required each season for the production of maize grain. Seed companies submit information about their quantities of seed in stock to the Ministry of Agriculture whose officials determine how much seed to buy from each company.

Market share of government parastatal

Private seed companies are by far the dominant seed producers in Zimbabwe. However, two parastatals, namely ARDA Seeds and Zimbabwe Technological Solutions (ZTS), are currently producing and distributing minor quantities of seed. The two parastatals both have a mandate to meet the needs of smallholder farmers in areas of the market where private seed companies have limited involvement. Because of this, the competition between parastatals and private companies is little-to-none, and the seed industry is mostly privatized. At present, the combined market share of the two government parastatals above is 3% for maize, 2.25% for soybeans, and 4.68% for sorghum. In the TASAI survey, this indicator was rated "excellent" by respondents.

SERVICE TO SMALLHOLDER FARMERS

Concentration of rural agro-dealer network

The channels through which rural smallholder farmers access seed breaks down as follows: 28.7% access seed from regional seed company distributors or seed company depots; 21.1% from government programs, 18.4% receive seeds directly as seed given to farmers and farmer groups, 15.6% through NGOs and relief programs, 14.7% from rural stockists, 1.5% through contractors. Only cotton seed is accessed through

contractors/ginners to guard against fake seed. Larger commercial farmers generally have direct access of seed from seed companies. In the TASAI survey respondents scored the concentration of rural agro-dealer networks serving mostly smallholder farmers as good with an average score of 70%. When broken down by focus crops, the ratings were as follows: maize—76%, cotton—80%, soybeans—62% and sorghum—63%.

Availability of seed in small packages

The TASAI survey uncovered a growing trend among seed companies to distribute seeds in smaller packages suitable for smallholder farmers. Much of the maize and sorghum seed is packed in small bags of 2, 5 & 10kg. Specifically, during the time period surveyed, the package sizes for maize seed sold were distributed as follows: 6% were sold in 50kg bags, 6% in 20 or 25kg bags, 66% in 10kg bags, 13% in 5 kg bags, and 10% in 2kg bags. Soybean seeds are mainly sold in 25kg bags (67%) and some 10kg bags (16%) in line with the recommended seeding rate of 32–40kg of seed per acre. Smallholder farmers who plant less than an acre can buy 10kg packs. Cotton is supplied only in 20kg units, the designated amount for one hectare. Most smallholder cotton farmers in Zimbabwe work under contractual arrangements by registered ginning companies, which purchase inputs including cotton seed and fertilizers and in turn issue them to growers. The contracts are usually signed per hectare, making the 20 kg pack size most suitable for sale. Unlike farmers in Kenya and Uganda who prefer very small packages of seed (2kg or less), the preferred seed package size in Zimbabwe is larger in part due to larger land holdings and a longer history of adoption of improved seed. Despite relatively lower volumes of seed sold in very small packages, respondents to the TASAI survey scored the availability of seed in small packages as "good."

SEED POLICY AND REGULATIONS

Length of variety release process

Under normal circumstances, the time it takes for a variety to be released ranges from 12 to 24 months. The average release time is 22 months, or about two growing seasons. The minimum time of 12 months is only achievable when all documentation detailing information on Distinctness, Uniformity and Stability (DUS), and Value for Cultivation and Use (VCU) are submitted on time. The seed industry stakeholders (including breeding institutions, seed production and marketing companies) rated the length of variety release process as "excellent," with a score of 92%.

Quality of seed policy framework

Two seed laws support the variety development and seed certification in Zimbabwe, namely the Plant Breeders' Rights Act Chapter 18:16 of 1972 and the Seed Act Chapter 19:13 of 1971 with its enabling regulations and schemes. The varietal development by the private sector is strengthened by the Plant Breeders' Rights Act, which gives breeders rights to royalties on any of their varieties that are commercialized by seed companies. The Seed Act, its enabling regulations and the Seed Certification Scheme Notice (2000) spell out the procedures and guidelines for seed certification and quality control. The seed industry representatives surveyed for TASAI rated their satisfaction with Zimbabwe's seed policy framework as good with an average score of 65%.

Quality of seed regulation and enforcement

The average rating for satisfaction with seed regulations and enforcement is excellent at 83%. However, survey respondents from seed companies noted that the quality of enforcement is compromised by the national certifying authority's dependence on seed company vehicles to aid their mobility. They recommended that public inspectors have their own vehicles in order to conduct their work independently. Private seed inspectors and seed analysts have a dual role of enforcing seed laws and regulations on behalf of the NCA and meeting the interests of the seed companies where they are employed. This presents a clear conflict of interest. In addition, respondents noted the need for practical training and attachments among junior inspectors to maintain the quality of service in regulation and enforcement.

Adequacy of seed inspectors

The law in Zimbabwe stipulates that no seed company can be registered without an inspectorate section in place. However, the few companies that have been adversely affected by recent brain drain or staff attrition are supported by the Seed Certifying Authority. For the focus crops there are 56 inspectors including 12 from the Certifying Authority who are authorized to certify all crops. Private seed companies' seed inspectors generally inspect all crops except for cotton, which has specifically trained inspectors. The availability of seed inspection services is regarded as excellent with a score of 83%. Private inspectors are, on average, better resourced in terms of vehicles for mobility compared to the public ones. As such, public inspectors depend on transport from seed companies. Being chauffer driven in a private seed company vehicle can compromise the impartiality of inspectors. Whilst seed companies inspect 90% of their fields, public inspectors inspect the remaining 10% as a quality control measure. Seed Services has currently licensed six private seed testing laboratories from Seed-Co, Pannar, Prime Seeds, Forestry Commission, Tobacco Research Board (TRB)

and Quton respectively to test and certify seeds for local market. The laboratories conduct seed testing in accordance with guidelines from the Certifying Authority (Seed Services) of the government.

Efforts to stamp out fake seed

Fifteen Seed companies observed 41 cases of fake seed in the market over the past three years. Maize seed is the main target for counterfeit seed with very few reported cases in the other focus crops. Fake seed cases reported by seed companies over three years varied from a minimum of zero to a maximum of twelve cases reported per company. While these figures are considered low, they may indicate early signs of a problem that is likely to increase. The main source of fake seed has been through unscrupulous seed dealers outside the distribution networks. Government efforts for stamping out fake seed are rated by seed companies good with a score of 67%.

INSTITUTIONAL SUPPORT

Availability of extension services

Zimbabwe has a well-developed extension service system serving smallholder farmers. With an extension officer to farmer ratio of about 1 to 300, Zimbabwe outperforms Kenya Uganda and South Africa on this measure. The seed industry rated the availability of extension services as good, with an average score of 63.60%. Private seed companies keep a highly active relationship with government extension officers especially during the planting and growing season. However, access to government extension workers by private seed companies can be unequal. Large seed companies like Seed-Co, Pioneer and Pannar often run meetings where they award grower of the year and extension worker of the year, through which they provide motorbikes for extension staff to increase their mobility. Smaller seed companies with limited incentives to lure extension officers are less pleased with extension services.

Quality of national seed trade association

The Zimbabwe Seed Trade Association (ZSTA) is an umbrella organization for all seed companies representing the national seed trade association. The primary functions of ZSTA are to coordinate industry activities. The association also plays an advocacy role and represents members at various platforms and especially with government. The members of ZSTA are primarily all the seed companies, both private and parastatals. The current registration fee is US$1,000 per member, which is a comfortable figure if the economy is vibrant. However, because of the harsh economic conditions prevailing in the country, only 15 seed companies are formally registered. The performance of the ZSTA is rated by members as fair with an average score of 43%. The rating of the different aspects of the association are as follows: activeness is fair at 53%, effectiveness in advocacy is fair at 45%, managerial ability is fair at 52%, democracy in elections and decision making is fair at 53%, capacity to mobilize resources is poor at 26%. The poor performance of the association is mostly attributed to the lack of an independent secretariat to run the affairs of the seed industry.

CONCLUSION

The seed industry in Zimbabwe is mature and dominated by private seed companies. Most of the indicators discussed above show the dominance and importance of maize seed to the seed sector in Zimbabwe as evidenced by the number of breeders, varieties released, quantities sold per season and the number of active companies producing and marketing the seed. As measured by market share, the industry is dominated by four companies that control more than half of the market. Based on well-established seed policies and regulations, the seed sector is generally well functioning with the necessary mechanisms and controls for each stage in the seed value chain to ensure supply of certified seed to the farmers. However, the economic hardships facing the Zimbabwean economy over the last decade seem to be taking a toll on the overall performance of the sector. Weak demand by smallholder farmers (largely attributed to lower purchasing power by smallholder farmers) has justified government participation as a big buyer and distributor of seed. This could affect the long-term vibrancy of the industry. The seed traders association—ZSTA—is weak and unable to satisfactorily meet the needs of its members.

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Planting the Seeds of a Green Revolution in Africa



AGRA
Growing Africa's Agriculture

Several years ago a group of agriculture experts at the Rockefeller Foundation, frustrated by the state of agriculture development in sub-Saharan Africa, started a program with a simple mission. They wanted farmers in Africa to have something farmers elsewhere in the world take for granted: a steady supply of seed for more productive or "improved" crop varieties. This seed could help the farmers generate higher crop yields and overcome the constant barrage of plant pests, drought, and disease that are the enemies of agriculture everywhere.

For centuries, farmers in Africa have skillfully operated their own informal seed systems. They save seeds from one year's crop for planting in the next and share seeds through community networks. Many have worked like plant breeders in research laboratories, combining different varieties to obtain desirable traits and collaborating with other farmers to expand their knowledge.

Despite this impressive ingenuity, the performance of local varieties of maize, cassava, millet, and other African food staples now lags far behind the rest of the world.

Harvests per hectare for major crops like maize can be as much as 80 percent below their potential. More importantly, this yield gap is a key reason farmers in Africa are not producing enough food to sustain the continent's rapidly growing population.

The desire to give African farmers a wider range of seed choices—including access to seed of highly productive crop varieties known as hybrids, which have revolutionized food production elsewhere in the world—eventually led to the creation of the Program for Africa's Seed Systems, or PASS.

Today, PASS is an integral part of the Alliance for a Green Revolution in Africa (AGRA).

AGRA was launched by the Rockefeller Foundation and the Bill & Melinda Gates Foundation in 2006. Its goal is to develop practical ways to improve production and



Photo: AGRA
Cover photo: Neil Palmer/CIAT

income for the millions of smallholder farmers, who form the core of Africa's dynamic but neglected agricultural sector. And a key priority for AGRA is to upgrade Africa's seed systems.

In many ways, the work of PASS is just beginning to bear fruit in fields across the continent. Many obstacles remain to providing Africa's smallholder farmers with the seed they need and deserve. But the program is making substantial progress.

If the production from all 80 PASS-supported seed companies is added up, it constitutes the biggest seed producer working in sub-Saharan Africa today. From a mere 2,346 metric tons in 2007, annual production from PASS producers had risen, by 2014, to 80,606 metric tons of professionally certified seeds. Moreover, the companies are focusing on crop varieties endowed with traits carefully selected by local crop breeders for their compatibility with specific African agricultural environments— of which there are many.

The companies also are working with a wide range of crop types. They include improved, locally adapted varieties of maize, cassava, millet, rice, sorghum, beans, sweet potato, cowpea, groundnut, soybean, pigeon pea, sweet potato, banana, durum wheat, and bread wheat.

PASSing Along a New Seed System for Africa

AGRA's Program for Africa's Seed Systems, or PASS, has achieved several milestones. For example:

- PASS collaborates with 80 small- and medium-sized seed companies across Africa that produce 80,606 metric tons of professionally certified seeds each year. PASS-supported companies are collectively the largest seed producers in sub-Saharan Africa.
- PASS partnerships with national research programs have generated 464 new, improved varieties of 15 important crop species, 312 of which are now commercially produced and available for sale to African farmers.
- PASS has trained and certified 15,000 rural agro-dealers in 16 countries that now provide farmers with 400,000 metric tons of seed and one million metric tons of fertilizers. They also have conducted over 7,000 technology demonstrations and held nearly 4,000 farmer field days
- PASS support for training the crop breeders of tomorrow has resulted in 66 scientists earning PhDs and 135 earning master's degrees.



A farmer in Tanznia shows the beneits of hybrid maize.

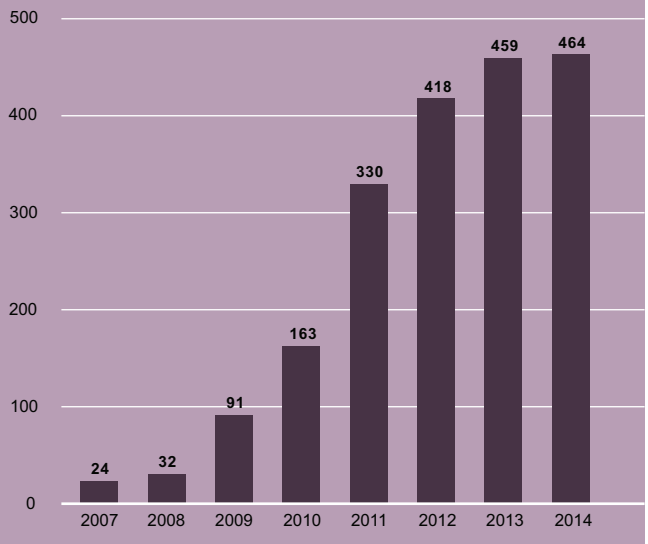
Seeking a Third Way for Seed Production

The collaboration initiated by PASS with small seed companies across Africa represents a new way of building a sustainable seed production sector in Africa.

In the past, there have been two approaches to expanding seed choices for Africa's smallholder farmers, and both of them have failed. First, there was the conventional development approach, which collapsed because it either failed to account for local farmer preferences or donor funding dried up. Second, farmers could purchase improved crop varieties from big multinational seed companies, but these companies typically focused only on maize, and not the broad spectrum of crops cultivated in Africa.

PASS is seeking a third way: nurturing small- to medium-sized seed businesses located in close proximity to the farmers they serve. These companies collaborate with farmers and with crop breeders working in public research programs to produce a steady supply of affordable, locally adapted, improved varieties of a wide range of crops. The goal is to establish resilient and responsive African-owned seed production capacity that can be self-sustaining and not reliant on donor financing to survive.g PhDs and 135 earning master's degrees.

Seed Varieties Released, 2007–2014



* Numbers as of April 2014

Strengthening Weak Links Across the "Value Chain"

An important lesson from the many failed efforts to improve agriculture production in Africa is that a successful seed program must strengthen multiple links of what AGRA calls the seed value chain. This means that PASS works in multiple areas simultaneously, from the breeding programs that develop new crop varieties to the companies that produce seeds to the agro-dealers who make them available to farmers.

For example, PASS works upstream of seed production to support national crop breeding programs, which are staffed by experienced crop breeders. The scientists are intimately familiar with local growing conditions, but their efforts have been starved for investments in recent years.

Since 2007, PASS has awarded more than 100 grants to allow scientists in national research institutes to develop improved varieties of a wide range of crops. The payback has been substantial. These partnerships have released 464 new, improved varieties of 15 important crop species, 312 of which are now commercially produced and available for sale to African farmers. PASS also is supporting efforts to train a new generation of African crop scientists. By the end of 2013, 66 PASS-supported scientists had earned PhDs and 135 had earned master's degrees. Given that the majority of African farmers are women, PASS also has focused on bringing more women into the world of crop breeding, Meanwhile, PASS is working with a rapidly growing network of small, community-based agriculture supply retailers, sometimes referred to as "agro-dealers." PASS started in 2007 working with just 331 agro-dealers to expand their offerings and improve their expertise. The number of PASS-trained and certified agro-dealers now stands at more than 15,000. This agro-dealer network has provided farmers in 16 countries with 400,000 metric tons of seed and one million metric tons of fertilizers. They also have conducted over 7,000 technology demonstrations and held nearly 4,000 farmer field days, where local farmers can examine test plots to see first-hand how the new varieties perform.

"PASS works in multiple areas simultaneously, from the breeding programs that develop new crop varieties to the companies that produce seeds to the agro-dealers who make them available to farmers."

The overall result is that farmers across Africa have much greater access to improved crop varieties—both those produced by PASS-supported companies and by other firms as well— along with the inputs required to realize their yield potential. A 2013 survey of farmers in nine countries found that the majority who invested in improved crop varieties achieved yields 50 to 100 percent above local varieties.

For example, 69 percent of farmers in Kenya, 74 percent in Nigeria, and 79 percent in Mozambique said improved maize varieties had doubled harvests per hectare. Meanwhile, 79 percent of farmers in Ghana reported doubling rice yields, and 85 percent of farmers surveyed in Uganda reporting doubling yields from cowpea.

Improving All Aspects of African Seed Production

PASS is organized to simultaneously address multiple weaknesses in different links of what it calls the seed value chain.

Education

Through the Education for African Crop Improvement (EACI) program, PASS identifies strong educational institutions and provides grant support to train scientists and link them with crop breeding programs.

Breeding

Through PASS' Fund for the Improvement and Adoption of African Crops (FIACC), it identifies crop-breeding teams and develops breeding strategies that include collaborations with local farmers. It also provides grants, links breeders with seed companies, and assists in commercializing their products.

Production

PASS' Seed Production for Africa (SEPA) program serves as its business incubator, identifying seed enterprises and providing grant support to help them acquire equipment and develop marketing strategies. It also connects them with potential investors.

Distribution

The Agro-Dealer Development Program (ADP) works with farm supply sellers or "agro-dealers," with particular focus on small, rural operations that are in close proximity to farmers. The ADP offers training, on such things as the proper use of fertilizers and other inputs, and it oversees credit guarantees.



A New Adventure Begins: Scaling Seeds and Technologies Partnership

PASS has achieved many important milestones. It helped build a new foundation for developing, producing, and distributing improved crop varieties that are intended for African farmers, African climates, African soils, and African dinner tables. Now, with support from Feed the Future through the United States Agency for International Development (USAID), AGRA is accelerating efforts to give smallholder farmers access to high-yield crop varieties and other innovations that can help them fight hunger and poverty. This work is aligned with the New Alliance for Food Security and Nutrition, a shared commitment by African leaders, private sector partners, and donor governments to lift millions out of poverty over the next decade.

The initiative is called the Scaling Seeds and Technologies Partnership, or SSTP. The goal of the Partnership is to coordinate a variety of country-specific initiatives that increase the use of improved seeds, fertilizers, farming techniques, and farming technologies on smallholder farms in Africa.

One objective is to encourage more players in the private sector, including local businesses and non-profit organizations, to play a role in seed production. Meanwhile, the Partnership will help governments craft policies and build regulatory capabilities to ensure new crop varieties developed by national research organizations and other breeding endeavors are quickly made available to farmers. Governments also will be encouraged to expand efforts to monitor seed quality and police the market for counterfeit seeds.

Specifically, the program provides USD $47 million for AGRA and PASS to work over the next four years in six countries—Ethiopia, Ghana, Malawi, Mozambique, Senegal, and Tanzania—to:

- attract USD $40 to $50 million in additional investments to improve private sector seed production at the national level;
- spur the development of 12 seed technology or supply enterprises led by women;
- commercialize at least 50 technologies for improving farm production;
- reduce the average distance between rural farmers and agro-dealers from 20 to six kilometers;
- achieve a 45 percent increase in use of improved seed, fertilizers, and other production technologies;
- increase grain production by 4.5 million tons; and
- boost food security for 7.6 million people.

Lessons Learned on the Frontlines of African Farms

PASS and SSTP will embark on the next phase of work endowed with hard-earned knowledge about what it will take to achieve a self-sustaining seed development, production, and distribution enterprise to serve the needs of millions of African smallholder farmers. Here are a few of the many lessons AGRA has absorbed in its ongoing journey.

It's Not Just the Seeds, it's Also the Fertilizers

There are many parts of Africa where crop production could quickly rival what farmers achieve in the world's great breadbaskets. But missing are not just seeds for high-yield crop varieties. Fertilizers—mineral and organic—are in short supply as well.

Fertilizers have a negative image in many parts of the world. In places like the United States, their over-use—both on farms and on residential lawns—has contributed to environmental harms, like waterways choked with algae. Yet Africa's breadbaskets remain largely untapped in part because farmers do not use nearly enough fertilizers. According to the World Bank, in sub-Saharan Africa, farmers use, on average, 10 kilos or less per hectare. Compare that to South Asia, where the average is 123 kilos, or to high-income countries, where the average is 143 kilos.

Even with the improved high-yield varieties being developed for African growing conditions, the addition of a modest amount of fertilizer can dramatically increase yields.

For example, in Western Kenya, over the last 10 years, the combination of improved maize hybrids and better access to fertilizers has allowed yields to more than double, from 838 kilos per hectare for a local variety produced with no fertilizer to 1,935 kilos per hectare for improved hybrids grown with fertilizer. The addition of fertilizer alone to the improved hybrids generated an additional 700 kilos per hectare.

Smallholder farmers elsewhere in Africa have achieved significant increases in yield by "micro-dosing" each plant with a mere bottle cap full of fertilizer. PASS is working through its agro-dealer program to greatly increase the availability and affordability of fertilizers in Africa and provide farmers with advice on how to safely and efficiently apply them.

Dispatches from a Seed Revolution

The PASS journey to transform seed development and production in Africa began with numerous trips and many intense conversations in rural communities across the continent. Meetings were held with a wide array of local business people who expressed confidence that, with proper support and a favorable business climate, they could make a living selling certified seed to the smallholder farmers who dominate agriculture in Africa.

It became clear that if this plan was to work, a few things had to be established. For one, the crop varieties offered needed to be suitable for local growing conditions and clearly superior to varieties farmers were currently planting. And farmers would need to see evidence that these new seeds would perform as advertised, preferably by observing them in action on small plots they could visit and examine for themselves.

Consultations with local communities also revealed that seeds needed to be available in packages of 2 kilograms or less, because most smallholder farmers in Africa are tending plots less than one hectare in size. In addition, there needed to be a strategy to ensure seeds and farm inputs were available closer to the farmers themselves. Farmers did not want to travel great distances just to get a bag of seed or a sack of fertilizers, though many did and many still do.

But one thing that stood out above all: the notion that African farmers are backward traditionalists resistant to change and uninterested in new agriculture technologies is absolutely false. They want what any other consumer wants: a quality product sold in a manageable quantity at an affordable price and available at a nearby retailer.

"African farmers want what any other consumer wants: a quality product sold in a manageable quantity at an affordable price and available at a nearby retailer."



Why PASS Promotes Private Sector Seed Production

Crop seed is a living technology, unforgiving of neglect or late delivery. Also, crop varieties are in need of regular renewal to help farmers overcome constantly evolving threats from pests and disease, adapt to new growing conditions caused by climate change, and take advantage of new agricultural innovations.

PASS believes that locally owned, private-sector enterprises that live or die based on their ability to provide smallholder farmers with high-quality seeds when and where they need them offer an opportunity to build a sustainable seed supply infrastructure in Africa.

The last few decades have seen many failed attempts by governments or donor agencies to establish effective systems for providing African farmers with quality seed. The PASS approach of employing public breeders to develop new varieties and private seed producers and suppliers to deliver them to farmers is working.

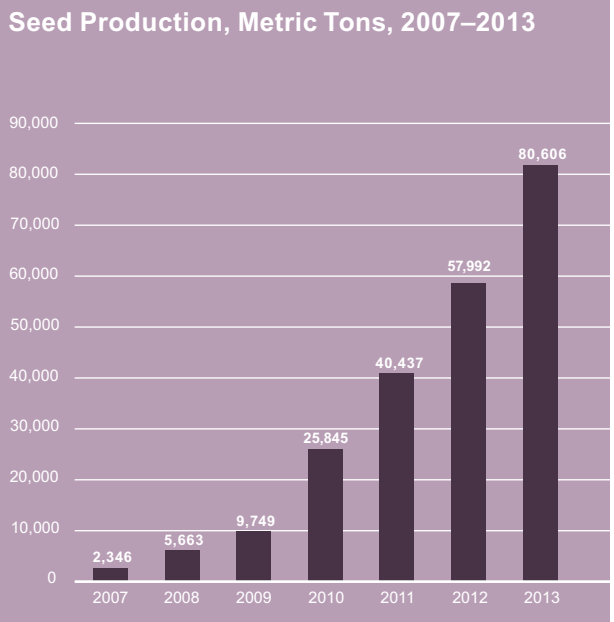


Policies Must be Cultivated Along with Crops

It is important to work closely with government officials to develop a policy environment that encourages innovation in seed production. In particular, PASS has found that, in many countries, there are policies in place that make it difficult for seed production enterprises to obtain "foundation seed" for new, high-yielding varieties developed by national crop breeding programs.

Essentially, when a breeder develops a new crop variety, the next step is to produce foundation seed that manufacturers require to generate the large quantities necessary to meet farmer demand. A lack of foundation seed has long been viewed as a significant barrier to giving African smallholder farmers greater access to locally adapted, high-yield crop varieties. The benefits of improved varieties developed by scientists can only be achieved if there is steady flow of foundation seed moving through the seed production system.

PASS is seeking ways to improve the quantity and quality of foundation seed available to all types of seed producers— including public sector seed producers and seed production initiatives organized by farmers and community groups. For example, PASS is encouraging governments to consider contracting out foundation seed production or allowing companies to work directly with plant breeders to produce their own foundation seed.



Already, PASS has helped organize public-private seed production partnerships in several countries, including Uganda, Zambia, Kenya, and Malawi. These alliances are proving beneficial to all: seed companies get the foundation seed they need and governments realize the benefits that accrue as the improved varieties boost food security and incomes in rural farming communities.

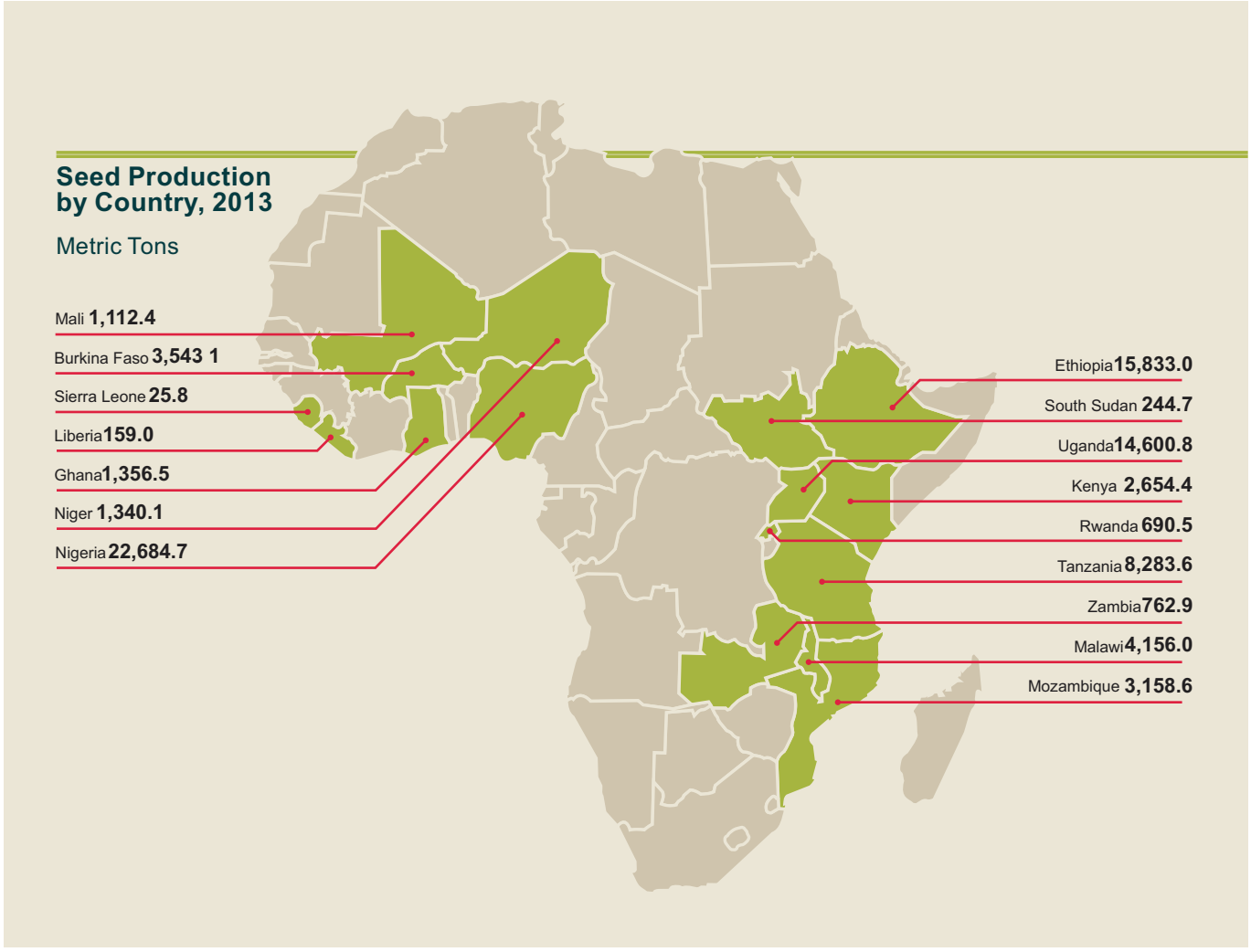
PASS also works with national governments to improve seed inspection and certification systems. In some countries, problems with seed quality and sales of counterfeit seeds have made some farmers reluctant to invest in improved crop varieties.


Photo: Neil Palmer/CIAT

The Importance of Collaborating with Smallholder Farmers

PASS works with thousands of smallholder farmers across Africa and they have proven critical to facilitating more widespread use of improved seeds and farm inputs. Farmers, particularly women farmers, say they look primarily to other farmers for advice and information on improving their production practices. For example, they are more likely to purchase seeds for a new variety—and the inputs to go along with them— if they have an opportunity to observe the results on a neighbor's farm. This practical approach shows the need to get local farmers more involved with testing new varieties.

Smallholder farmers also can help seed producers deal with challenges of scaling up production. PASS has addressed constraints affecting local seed producers by offering grants to help companies negotiate contracts with local farmers to multiply seeds. Initially, PASS-supported companies were handling all of their own seed multiplication. Now, 20 to 50 percent of production is handled by contract farmers, which has allowed overall seed production to double.



Snapshots of Success in African Seed Production

Generating Bumper Crops in Ethiopia

PASS grantee Alemayehu Makonnen and his company, Alemayehu Makonnen Farm Limited, are producing seed for hybrid maize, bean, and teff for farmers in Ethiopia's Southern Nations, Nationalities, and Peoples' (SNNP) Region. Now, more than 16,000 smallholder farmers in the region are cultivating the company's hybrid maize varieties and achieving bumper harvests of between four and six tons per hectare. One farmer, Wulchafo Surage, decided to plant hybrid maize after seeing it growing in Makonnen's fields. Surage subsequently harvested 18 tons of maize, six times more than his normal harvest.

Rice is Nice for Nigeria

In Nigeria, PASS grantee Andrew Efisue and his team of researchers at the University of Port Harcourt worked for six years to produce three new varietiesof disease-resistant, drought-tolerant rice. The new varieties offer local farmers an opportunity to boost harvests by 20 to 35 percent. AGRA hopes the new varieties can help increase rice production in Nigeria and across West Africa, where surging demand requires many countries to rely heavily on imports. Nigeria alone is one of the world's largest importers of rice, but has embarked on an ambitious plan to become self-sufficient in rice production.

For Africa's Drylands, a Wellspring of Drought-Tolerant Seed

In 2002, Ngila Kimotho used his savings to start a small business selling supplies to local farmers working the arid and semi-arid lands around Machakos, Kenya. He quickly became convinced that there was an underserved market of smallholder farmers in East Africa eager for crop varieties that could provide consistent yields even in relatively dry conditions. In 2004, Kimotho started Dryland Seed Limited and, in 2007, AGRA provided a grant to help expand his fledgling operation. Dryland Seed now has agreements with numerous research organizations to produce seeds for drought-tolerant maize, pigeon pea, sorghum, and green grams (mung beans). Each year, its products sell out. Dryland Seed is now working with AGRA and the Africa Enterprise Challenge Fund to rapidly expand capacity to meet farmer demand.

Brewing Up Better Cassava in Mozambique

PASS-supported scientists at Mozambique's Institute of Agricultural Research developed a new variety of cassava that offers improved starch qualities and disease resistance. But it faced a challenge: would there be enough seed to allow farmers to meet demand for raw cassava to be used in a new brand of cassava beer? So the International Fertilizer Development Center (IFDC) consulted with the Mozambique brewing company Cervejas de Moçambique (CDM) and its cassava processing partner, the Dutch Agricultural Development and Trading Company (DADTCO). They decided to send the seeds to Corredor Agro Ltd (CAL), a company that works with smallholder farmers in the region, for rapid duplication, and then on to farmers trained and organized by IFDC for further seed and cassava root production. By using local farmers to expedite seed production, CDM was able to rely on smallholder growers to produce enough cassava to help it launch Impala, the world's first commercially-made cassava beer.







Conclusion: Facing Future Challenges on a Foundation of Success

The effort to upgrade African seed systems to the level needed to power a Green Revolution and elevate food production across the continent still faces a number of challenges. A key advantage of working in several countries and with multiple aspects of agriculture production simultaneously is that AGRA is keenly aware of the many barriers that still prevent millions of smallholder farmers in Africa from cultivating high-yield crop varieties.

The following are examples of challenges PASS is working to resolve:

Africa still needs more seed companies. The increased volumes of improved seed reaching farmers now is encouraging, but far from adequate. Young seed companies grow slowly and it will take many such ventures to meet farmer demand for improved crop varieties. To help companies increase capacity, PASS assembled a team of seed experts with many years of industry experience to advise them on the do and don'ts of seed production, while at the same time imparting important skills.Revolution.

Local seed company owners need to become better managers. As their companies grow, these young business people will benefit greatly from expertise imparted by others who have traveled the same path, expertise that can be incorporated into management training courses designed with seed companies in mind. PASS has established a "Seed Enterprise Management Institute" at the University of Nairobi in Kenya where seed company staff come for short, specialized courses that are provided in partnership with the Seed Science Center of Iowa State University.

Government policies need to support building seed production capacity in Africa's private sector. Governments can play an important role by freeing up the supply of foundation seed developed by public-sector breeding programs and offering tax incentives to encourage investments in processing equipment, irrigation technology, and other seed production infrastructure.

"A key advantage of working in several countries and with multiple aspects of agriculture production simultaneously is that AGRA is keenly aware of the many barriers that still prevent millions of smallholder farmers in Africa from cultivating high-yield crop varieties."

Farmers need to learn more about how improved seeds— particularly for hybrid varieties—can rapidly increase food security and incomes. Seed companies do some of this education via farmer field days and on-farm demonstrations, but education initiatives are expensive. One alternative is to plant thousands more crop demonstration plots, which in many ways allow seeds to sell themselves.

Fueling the growth of small- and medium-sized seed companies requires better access to investment capital. Banks have proven to be too risk-averse to be effective partners for seed companies. This is an area where venture capital can really make a difference for poor, smallholder farmers in Africa. PASS has established two social impact funds to support seed production but more are needed.

Despite the many challenges that remain for Africa's seed systems, PASS has managed to achieve substantial progress. Its simultaneous focus on supporting breeding work, scientific training, seed production, and agro dealer networks has significantly increased the number of improved crop varieties available to farmers across Africa.

Several countries have made particularly important progress. In Uganda, Zambia, Kenya, and Malawi, there is a healthy pipeline of new crop varieties flowing efficiently from breeding programs to local seed companies. There also is strong interest from investors in supporting local seed production and balanced policies from governments that facilitate access to foundation seed. In addition, farmers in these countries are highly aware of the benefits offered by the new varieties now available and have greater access to them through their local agro-dealers.

Many more countries also are showing substantial improvement. AGRA and PASS are committed to working with them in the coming years as they continue to develop a uniquely African seed production and farm input supply system to power a uniquely African Green Revolution.

Alliance for a Green Revolution in Africa (AGRA). 2014. Planting the Seeds of a Green Revolution in Africa has been republished with kind permission of AGRA

SITA
Supporting Indian Trade and Investment for Africa



International Trade Centre

UKaid from the British people

WHY SITA?

The growth of emerging countries such as India, along with the expansion of global value chains, is creating new opportunities in East African countries for trade and investment-led economic growth, job creation and poverty reduction.

In recent years, India has increased its efforts to strengthen South-South trade linkages by implementing its Duty Free Tariff Preference (DFTP) scheme that gives preferential rates on 98% of tariff lines originating from least developed countries (LDCs).

The United Kingdom of Great Britain and Northern Ireland's Department for International Development (DFID) mandated the International Trade Centre (ITC) to design and implement a project initially titled 'Supporting India's Trade Preferences for Africa', with the ultimate objective of creating income and employment opportunities in East Africa.

During the inception phase from March 2014 to March 2015, in which the project was designed, a series of consultations involving around 200 stakeholders led to a shift to broaden the scope of the project to now include an investment component.

SITA, which now stands for 'Supporting Indian Trade and Investment for Africa', is a South-South trade and investment project covering the following countries: India, Ethiopia, Kenya, Rwanda, Uganda and the United Republic of Tanzania.

The project responds to the challenges that the selected East African countries face in increasing and diversifying their trade and market linkages. It also addresses the trade and investment priorities of these countries to help them achieve sustainable development.

SITA AT A GLANCE

Donor: Government of the United Kingdom of Great Britain and Northern Ireland through the Department for International Development (DFID)

TIME-FRAME: 2014-2020

INCEPTION PHASE	IMPLEMENTATION PHASE	
March 2014	April 2015	March 2020

Country Coverage: India, Ethiopia, Kenya, Rwanda, Uganda and the United Republic of Tanzania

Beneficiaries:

- East African businesses
- Indian companies importing from or investing in Africa
- National and regional trade support institutions (TSIs)

Objective: Increased value of business transactions between India and selected East African countries by creating productive capacities and enhancing incomes.

Strategy: The objective will be achieved by enabling access to markets in India and other countries, and by facilitating partnerships including investment and transfer of knowledge, expertise and technology from India to East Africa by:

- Promoting public-private dialogue and partnerships;
- Improving capacities of East African companies and TSIs; and
- Creating business linkages.

Expected results:

- Greater export flows from East Africa to international markets
- Enhanced competitiveness of East African businesses
- Increased investments, knowledge and technology transfer from India to East Africa
- Improved business-development services provided by regional and national TSIs
- Improved business environment fostered through public-private dialogue and partnerships

The Road Ahead

The project's intervention approach is built on seven outputs that will lead to enhanced Indian–East African trade and investment which in turn will contribute to the creation of productive capacities in East Africa.

IMPACT	Income and employment opportunities created in East Africa
OUTCOME	Enhanced Indian-East African trade and investment for African competitiveness
OUTCOME INDICATORS	• Increased export value to India • Increased export value to third markets/domestic sales • Value of investment created • Number of companies generating additional exports • Number of companies exposed to East African/Indian markets, market contracts or business transactions resulting from SITA
SECTOR FOCUS	• Emerging sectors • Sunflower oil • Leather • Cotton-Textiles-Apparel • Pulses • Essential Oils • BPO-ITES • Spices • Coffee
OUTPUTS	1. Investment linkages between India and East Africa acilitated 2. Trade linkages among East African and Indian companies developed 3. Market/Value chain intelligence and analytical capacities of East African actors improved 4. Operational efficiency of companies and marketability of products and services enhanced 5. Trade and investment support institutions strengthened 6. Trade and investment environment between East Africa and India improved

Inception Phase Milestones

The project's intervention approach is built on seven outputs that will lead to enhanced Indian–East African trade and investment which in turn will contribute to the creation of productive capacities in East Africa.

March 2014		Start of project, inception phase launch
May – June 2014		Supply studies undertaken
July 2014		First Partnership Platform meeting (shortlisting of sectors
Aug– Sep 2014		Needs Assessment and Project Design (NAPD) missions
September 2014		Second Partnership Platform meeting (validation of NAPD findings)
December 2014		Third Partnership Platform meeting (presentation of project plan to stakeholders)
February 2015		Approval of project plan for implementation
March 2015	START	Fourth Partnership Platform and Implementation Partners Meeting

SITA'S PARTNERSHIP PLATFORM

The Partnership Platform acts as a forum for evidencebased policy recommendations and as a vehicle for mobilizing well-informed public-private sector discussions in the countries in which SITA will provide trade and investment-related technical assistance.

The Partnership Platform provides a setting in which SITA's stakeholders come together to solve problems, with each side learning about the needs, constraints and obstacles that need to be addressed to achieve export competitiveness.

During the project's inception phase, the Partnership Platform:

Informed the design of SITA by serving as a forum for interaction and discussion between stakeholders on project approach and intervention logic; and

Gathered 200 project stakeholders who met on three occasions to validate the sectors and areas of intervention, the implementation phase work plans and how to make better use of India's Duty Free Tariff Preference scheme.

The Platform's approach is to focus on addressing sector-specific and cross-cutting issues through consensus building among project stakeholders to bring about reform along value chains and enhance sector competitiveness.

During the implementation phase, SITA's Partnership Platform will contribute to identifying policy options and solutions to improve the business and investment climate; reducing impediments to trade; and improving investment flows between India and the five East African countries.

ITC AND DFID

The International Trade Centre (ITC) ITC is the joint agency of the World Trade Organization and the United Nations. ITC assists small and mediumsized enterprises in developing and transition economies to become more competitive in global markets, thereby contributing to sustainable economic development within the frameworks of the Aid-for-Trade agenda and the Millennium Development Goals.

The Department for International Development (DFID) leads the Government of the United Kingdom's efforts to fight global poverty.

DFID operates under the International Development Act, which came into force in 2002 and establishes the legal basis for United Kingdom development assistance. DFID's overall aim is to reduce poverty by achieving the Millennium Development Goals.







'An Indian-African partnership underpinned by "jugaad*" will result in opportunities arising from adversity: the ability to do more with less; to think and act flexibly to find simple solutions for increasingly complex problems; and most of all, practicability that helps eliminate complexity.'

- Arancha González,
Executive Director, International Trade Centre

Address delivered on 9 March 2014 at the 10th CII-EXIM Bank Conclave on India-Africa Project Partnership, New Delhi, India
**Jugaad is a colloquial Hindi word that roughly translates as 'an innovative fix ; an improvised solution born from ingenuity and cleverness', according to the book Jugaad Innovation by Navi Radjou, Jaideep Prabhu and Simone Ahuja.*

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An Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Burkina Faso, Ethiopia, Ghana, Nigeria and Tanzania



Alliance for a Green Revolution in Africa (AGRA). 2014.

Executive Summary

Agricultural Policy and Regulatory Reform Priorities for MIRA and African Countries

Cross-Country Findings

A key theme from the five country studies is that policy and regulatory changes will only take a country so far. The agribusiness investment climate is shaped by many other factors, which are noted below. These factors are critically important in agribusiness development and can overshadow agribusiness-specific policies and regulations, which when reformed may only relax relatively minor bottlenecks. Deep-seated constraints to agribusiness development include:

- **Macroeconomic policies and forces that reduce competitiveness and discourage investment**: inflation rate, exchange rate depreciation or appreciation (and degree of currency over- or under-valuation), interest rates (including Treasury bill/note rates, Central Bank reserve rates), size of budget deficit (and extent to which government borrows to cover deficit).
- **Capacity, depth, commitment and competence of the public sector** in supporting private sector led agribusiness development and in providing critical public goods and services, as well as regulating the agricultural economy.
- **Extent of government intervention in the agribusiness system**; does government provide necessary public goods & services, or perform functions that the private sector could do if incentivized or provided support? Does the public sector compete with or crowd out the private sector?
- **Low government budgetary allocations** (well below the 10 percent CAADP target) to the agricultural sector, where costly input subsidy programs comprise a high proportion of allocations to agriculture in quite a few countries.

A broad issue of importance is what is the **role of the public sector in fostering agricultural development and the emergence of a competitive, private sector-led agribusiness system**. The extent of public sector intervention in agricultural input production, importation and distribution will vary by stage of economic development, but it is often excessive and impatient in SSA as governments insist that the private sector cannot or will not enter agricultural input markets, and that public sector distribution systems are necessary to protect farmers from exploitation (being sold fake or adulterated inputs) or to ensure that farmers in remote production zones are served. The extent of public sector intervention in agricultural product marketing, storage and processing is also justified on the grounds that private agents are exploitative and collusive, offering farmers unfairly low prices and earning excessive returns. Rather than encouraging the emergence of competitive marketing systems through infrastructural investments, effective regulation, and providing incentives for marketing agents to serve isolated production zones, African governments have more often than not intervened in markets directly by performing product assembly, storage, and distribution functions.

Although these larger issues constrain private sector opportunities and incentives, there are certain areas where micro-policy and regulatory reforms can make a difference. Below is a summary of areas for potential reform that consistently appear across countries.

Seed Sector Reforms. In many SSA countries, governments have recently put in place or updated legal and regulatory frameworks for seed breeding, foundation seed production, certified seed inspection and testing, seed quality, and sales practices (labeling, bagging). In very few cases, however, are African governments able to implement effectively these seed policies and regulations. Typically financial support is far from adequate to staff seed inspection and testing services, let alone operate government seed production, processing, testing and inspection services. Hence, a regulatory regime exists on paper in many countries that cannot be effectively implemented in practice.

The policy and regulatory regime is not always complete or consistent, however, so some changes could be useful. Common areas for seed sector reform across MIRA study countries include the following:

- Obtain ISTA (and OECD) accreditation in order to export (and legally/formally import) seed. This invariably requires upgrading laboratories used to test seed properties, as well as putting in place (and adequately funding) a workable seed inspection and certification system. None of the study countries has ISTA accreditation; Tanzania is the closest to obtaining it.
- Remove any import duties (or local cesses) applied to trade in seed or value-added taxes applied to inputs to (outputs of) seed production or processing.
- Encourage private firms to enter foundation seed production by making public sector produced pre-basic seed available to private firms and producer groups, as well as providing required (public) inspection services.
- Allow for private firms to invest in and operate laboratories and inspection services.
- Clarify, where necessary, any ambiguities in regional agreements (coming out of more than one regional organization covering the same region), and implement seed trade agreements agreed at the regional level.
- Clarify rules for entry of foreign seed companies in production of basic and certified seed, such as hybrid maize.

Fertilizer Reforms. Fertilizer is a very costly production input for small farmers in SSA. Most African governments have implemented subsidy programs that absorb large proportions of budgetary allocations to agriculture. Most evaluations of these programs point out that they have increased fertilizer use at high cost and with no assurance of sustained fertilizer purchase and use without a continued subsidy program. There are also allegations of fertilizer diversion into secondary markets, untargeted subsidies (with subsidized fertilizer going to users who do not need subsidies), administrative allocation of fertilizer import licenses (that invites corruption), and non-transparent fertilizer allocation and distribution practices. The purpose of this study has not been to evaluate the effectiveness of fertilizer subsidy programs, however, but to highlight how input subsidy programs can dampen private sector incentives to enter input marketing.

Common areas for **fertilizer reform** across MIRA study countries include:

- Allowing greater flexibility to fertilizer importers and processors to formulate and mix fertilizers that are better-adapted to specific crop requirements and soil nutrient deficiencies in different production zones. Requiring three seasons of testing under government supervision of 'new' fertilizer mixes, even when they are only slightly different from current formulations, is excessive and unnecessary regulation. The fee a private firm must pay to test a new fertilizer ($10,000 per season in Tanzania) in order to cover the costs of government testing at research stations and on farms, is considered far too high by the private sector and beyond the reach of smaller importers and fertilizer mixers. Generally, this is very little fertilizer blending underway in most African countries, and what capacity exists is for physical as opposed to chemical blending. There is also virtually no soil testing on farms, so farmers are unaware of precise nutrient requirements for their soils and crops.
- Strengthening the capacity of governments to monitor, regulate and sample/test fertilizer that is imported or formulated locally. Government capacity is severely limited; there is need for more inspectors, budgets to visit fertilizer sales and storage points to test for quality and truth in labeling, and reliable laboratories to test fertilizer samples from import shipments, in storage warehouses, and at sales points. (The extent to which these functions could be out-sourced to private firms or inspectors is worth investigating).
- Granting of fertilizer import licenses/permits (and subsidy program import quotas) needs to be done early enough to ensure timely importation of

fertilizer and delivery to rural areas. In most SSA countries, farmers complain of late arrival of fertilizers (particularly subsidized ones) to rural distribution points (whether run by agro-input dealers, rural cooperatives, or district agricultural offices).

- Licensing requirements for agro-input wholesalers and dealers could be harmonized across input types (improved seed, fertilizer, agro-chemicals) to lower transactions costs for registration and obtaining permits/licenses.

Common areas for reforms related to **agricultural mechanization** across MIRA study countries include:

- Reduction of import duties on tractors and related equipment[1] (where they exist) and on spare parts for tractors and other agricultural machinery, to zero from 15-40% ranges. This will encourage more timely maintenance and repair of equipment and prolong the useful life of machinery.

- Evaluation and possible discontinuation of public machinery import programs, whereby tractors (most commonly) are distributed by government agencies to individual farmers and farmer groups on highly subsidized terms, often without transparent selection criteria.

- Government-run tractor hire units, where they exist, should be phased out in favor of private sector managed firms that provide custom hire services to farmers (including rural transport) and machinery maintenance and repair to tractor owners (typically larger farms and farmer organizations).

- Government funding of low/no-tillage programs to test these innovations and promote their use where appropriate.

- Fund and carry out comparative studies of the advantages, costs and benefits of animal traction by small scale farms, as compared to mechanization.

Areas for improvement in provision of **agricultural finance services**, which do not necessarily require regulatory changes, include the following:

- Encouragement of banks and other financial institutions to accept agricultural equipment and other farm assets as collateral against which loans can be made. Development of collateral registries is one way to facilitate this practice.

- Development of credit reference bureaus to provide banks with more information about lending risks. Ideally, such bureaus should be in the private sector.

- Permitting (through a leasing law) leasing of agricultural machinery, heavy equipment for land and irrigation development, and vehicles used in transport of agricultural inputs and products.

- Attempting to keep interest rates at manageable levels by managing government debt and minimizing central bank borrowing requirements. Public debt financing, through issuing treasury bills at high interest rates, absorbs private capital (of commercial banks especially) that could be used for loans to agribusiness and other productive purposes.

- Putting in place legal and regulatory frameworks to encourage use of collateral-based lending and warehouse receipt programs.

Other areas for consideration of policy/regulatory reform include the following topics, which were not covered in depth by this study:

- Food standards and safety for agricultural products, including phytosanitary regulations, GlobalGAP and GMP, HACCP for food processors, and other norms (Codex Alimentarius, ISO). A key issue for domestic food systems is establishing sufficiently rigorous yet optimal regulatory standards, as opposed to adopting excessive, unobtainable standards from industrial countries.

- Standardization (and enforcement) of weights and measures. This is both a national and regional priority that can stimulate more trade in staple food products, as well as protect producers from predatory trading practices.

- Proper bagging and labeling of agricultural products, whether unprocessed or semi-processed staple food crops (such as maize or rice), or processed food sold in retail packs in grocery stores, at kiosks or in public markets, and in supermarkets.

- Land law, policy and registration/titling procedures. Although there are Policy Nodes for land in several African countries, and the World Bank and MCC have focused a lot of attention on rural land issues during the past several years, land registration and titling is a difficult and time-consuming process. The Abt team felt it could not add further value to this complex topic during such a short study. Yet formal land title is clearly important for farmers to access agricultural credit.

An Attempt at Formal Rankings of Policy/Regulatory Priorities by Country

The attached table is an attempt to rank order both the short and longer term policy and regulatory constraints

1 Accessory parts include seed planters, disc harrowers, shellers, and threshers.

and suggested actions for each of the five study countries. The selection criteria used in the rankings are as follows, with scores of 0 to 5 and weights for each criterion assigned on a 1-5 scale. Assigning weights is based on the judgment of the principal investigator, as is the scoring of each policy or regulatory action. Hence, the results should be considered illustrative and apolitical. Ultimately, policy and regulatory changes require political buy-in and commitment, and are rarely simple technocratic fixes. If policy-makers see no short- to medium-run advantage in reform, or if they favor continuing policies or regulations that benefit a particular stakeholder group (that would be hurt by reform), they are unlikely to commit to policy or regulatory change. We therefore undertake this exercise with humility and a certain trepidation.

The decision/scoring criteria for ranking policy and regulatory priorities are as follows:

- **Ease in getting buy-in** from policy-makers and probability of success (weight=5). The easier the political buy-in is to obtain, the higher the score. Probability of success refers to the chances of overcoming any stakeholder opposition and achieving buy-in.
- **Political expediency** (weight=5). A policy or regulatory reform that is more politically advantageous and acceptable in the near term will get a higher score.
- **Unacceptable delay** to date (weight=4 for short-run actions and =1 for longer run actions). If a policy action or regulatory change is long overdue and a critical mass of stakeholders are impatient for change, the score will be higher. The weight is much lower for long-run actions than short-run ones by definition, as constraints that require actions over the long run are less time-sensitive.
- **Degree of policy inconsistency** (weight=4 for short-run actions and =3 for longer run actions). Policy inconsistency or regulatory inconsistency with policy (or among regulations working at cross-purposes) are good reasons for reform. The higher the score, the greater the degree of inconsistency (and resulting need to address inconsistencies).
- **Lower private sector transactions costs** (weight=4 for short-run actions and =3 for longer run actions). Any policy or regulatory reform that reduces transactions costs for the private sector receives a higher score.
- **Requires funds for implementation** (weight=3 for short-run actions and =5 for longer run actions). The higher the public sector financial requirements for implementing the policy or regulatory action, the lower the score, as government will be less likely to approve costly additions to the budget, undermining prospects for effective reform implementation.
- **Public sector crowding out** (weight=4 for short-run actions and =4 for longer run actions). The greater the extent to which a policy or regulatory action addresses a problem in large part due to government crowding out of private sector agribusiness activity, the higher the score.
- **Cost to the public treasury** (weight=3 for short-run actions and =4 for longer run actions). To the extent that a policy or regulatory action reduces public expenditures (e.g., the case of phasing out a costly subsidy) or has a minimal effect on raising government fiscal outlays, the higher the score. If a costly public investment is implied, the score will be lower.
- **Fundamental underlying issue** (weight=4 for short-run actions and =4 for longer run actions). If a policy or regulatory action addresses a key underlying issue that has been a stumbling block for agribusiness system development, the higher the score.
- **Impact on small farmers and/or agribusiness SME** (weight=5 for both short and long run actions). The greater the **direct** impact of a proposed policy/regulatory reform on small farmers and/or agribusiness SMEs' capacity to invest and operate, the higher the score. The lower or more indirect the impact, the lower the score.

The results of this scoring show the following priorities by country:

- **Ghana:** Approving the ECOWAS regional seed agreement (and ensuring consistency of domestic seed policies with regional rules) and adopting (an already drafted) national seed policy are the highest short-run priorities. Reducing or eliminating duties on imports of agricultural equipment and spare parts are a third priority. Among longer-run actions, phasing out the fertilizer subsidy and implementing policy commitments agreed within regional organizations (ECOWAS and UEMOA) are the highest priorities. The subsidy program absorbs a large proportion of MOFA's budget, and it has discouraged private agro-dealer participation in fertilizer distribution. Failure of national governments throughout West Africa to implement regionally agreed measures is a systemic problem plaguing the region which restrains intraregional trade and opportunities for both producers and traders to expand output and trade.
- **Tanzania:** There is no obvious short-run leading priority. Reducing or eliminating duties on imports of agricultural equipment and spare parts had the highest score, followed closely by obtaining ISTA

accreditation and removing import duties on seed, VAT applied to packaging materials, and cess charged on locally produced seed. Over the longer run, dropping seed and fertilizer subsidy programs received the highest score, though modifications in the subsidy programs in 2014 are important to monitor and evaluate. Second priority is to avoid increasing rural land taxes by tenfold, which will provide a disincentive to investment in agricultural production and expansion of agricultural output (if enforced on all farm sizes).

- **Burkina Faso.** Eliminating import taxes on fertilizer equal to 8.5% of the import value is the highest short-run priority, as Burkina Faso is one of the few countries in SSA that applies duties and other taxes to fertilizer imports. A second priority is to finalize and publish an agricultural investment code, for which OECD has provided significant support over several years. This will facilitate investment in major irrigated agricultural production schemes (funded by donors) and related downstream agribusiness investments. Over the longer run, it behooves Burkina to implement policy commitments agreed within regional organizations (as with Ghana). A second priority is to upgrade the capacity of the National Seed Committee to inspect fields planted to foundation and certified seed, and to conduct laboratory tests on seed.
- **Ethiopia.** The top short-run priority for Ethiopia (though it will take time to implement) is to begin a gradual liberalization of the fertilizer industry, which has been completely controlled by the public sector since the late 1990s. Other high priorities are for the GoE to eliminate duties of 25% applied to agricultural machinery spare parts, and to obtain ISTA (and OECD) accreditation to enable seed exports. The highest priority among suggested longer term actions is to invest in upgrading public sector laboratories as well as promote the creation of private labs for testing seed and fertilizer quality. It is also recommended that the government legitimize and regulate the informal seed sector.
- **Nigeria.** The top short-run priority is to approve and implement the fertilizer law and regulations, with the related rectifying of inconsistencies between federal and state policies on fertilizer subsidies as the third priority. The second highest scored priority action is to expand the E-wallet system (and improve its operation), which will allow more farmers to get the fertilizer they need on time. Among longer term actions, creating an enabling environment that encourages entry of private agro-dealers into input (particularly fertilizer) marketing is the highest priority, followed by upgrading of seed testing labs to attain international standards and ISTA/OECD accreditation.

The within-country rankings are based in part on the weights applied to the different decision criteria; one might arrive at different rankings if the weights were changed. The weights reflect judgments of the principal investigator, whose views and preferences do not count in any real world African policy arena.

The MIRA coordinator or associated policy analysts in any of the MIRA focus countries can alter the weights, according to their judgments and preferences, and arrive at different outcomes. They might also drop one or more decision criteria or substitute others, or perform sensitivity analysis by varying weights applied to the decision criteria in the matrix. And of course government policy-makers may apply a different set of weights. So this attempt at ranking should not be viewed as conclusive in any sense.

Selection Criteria for Ranking Identified Policy and Regulatory Issues

	Political Expediency	Ease / Probability of Success	Unacceptable Delay to Date	Glaring Inconsistency	Lower P.S. Transactions Costs	Funding Requirements for Effective Implementation	Public Sector Crowding Out	Cost to Gov. Treasury	Fundamental Underlying Issue	Impact on Small Farmers or Agbiz SMEs	Un Weighted Sum	Weighted Sum	Rank
GHANA - Short-Run Policy and Regulatory Actions													
Weights	5	5	4	4	4	3	4	3	4	5			
Adopt & disseminate national seed policy	5	5	4	0	0	4	3	0	4	1	25	106	2
Clarify role of private companies in seed testing & inspection	3	3	0	0	0	3	5	3	0	1	18	73	4
Ratify/implement ECOWAS "treaty" on intraregional trade in certified seed	5	3	5	5	5	0	3	0	0	1	27	117	1
Develop harmonized, integrated registration & licensing system for input dealers	5	0	0	0	5	0	0	0	0	3	13	60	7
Create a one-stop shop for domestic and foreign investors in agribusiness	5	4	0	0	5	0	0	0	0	0	14	65	5
Reduce time (and cost) of port procedures for shippers (exporters) & importers	3	0	4	3	5	0	0	0	0	0	15	63	6
Reduce or eliminate duties on imports of agric. equipment & spare parts	4	4	0	4	2	0	0	1	0	2	17	77	3
GHANA - Longer Run Policy, Institutional & Public Investment Actions													
Weights	5	5	1	3	3	5	4	4	5	5			
Invest in upgrading public sector laboratories & promote creation of private labs	3	3	0	1	4	3	4	2	0	1	21	89	5
Upgrade institutional capacity of MoFA for field inspections/lab analyses of seed	4	4	0	0	3	5	0	3	0	1	20	91	4
Assess mandate, desired role & recent performance of NAFCO	2	3	1	2	0	0	5	4	3	0	20	83	4
Set rice import tariffs at consistent levels and avoid sudden changes	4	2	0	3	2	0	0	3	4	3	21	92	3
Phase out the fertilizer subsidy	3	3	1	0	2	4	4	5	0	2	24	103	1
Work on access to agricultural land issues, particularly leases to investors	2	2	1	2	4	0	0	0	5	0	16	64	6
Implement policy commitments agreed within regional organizations	4	5	5	5	1	0	0	0	4	1	25	93	2

	Political Expediency	Ease / Probability of Success	Unacceptable Delay to Date	Glaring Inconsistency	Lower P.S. Transactions Costs	Funding Requirements for Effective Implementation	Public Sector Crowding Out	Cost to Gov. Treasury	Fundamental Underlying Issue	Impact on Small Farmers or Agbiz SMEs	Un Weighted Sum	Weighted Sum	Rank
TANZANIA - Short-Run Policy and Regulatory Actions													
Weights	5	5	4	4	4	3	4	3	4	5			
Obtain ISTA accreditation	3	4	2	0	3	3	0	2	0	1	18	75	2
Remove import duties on seed, VAT applied to packaging materials, and cess charged on locally produced seed	4	2	0	3	3	0	0	2	0	3	17	75	2
Eliminate requirement of three seasons of tests for 'new' fertilizer blends	4	2	0	3	4	0	0	0	0	3	16	73	3
Abandon 18% VAT charged on bags, port services, and transport services	3	0	0	3	5	0	0	1	0	2	14	60	4
Reduce or eliminate duties on imports of agric. equipment & spare parts	4	4	0	4	2	0	0	1	0	2	17	77	1
TANZANIA- Longer Run Policy, Institutional & Public Investment Actions													
Weights	5	5	1	3	3	5	4	4	5	5			
Invest in upgrading public sector laboratories & promote creation of private labs	4	4	0	0	3	0	2	3	0	2	18	79	3
Strengthen capacity of MAFC and TOSCI	5	5	0	0	0	0	1	3	0	0	14	66	5
Drop seed and fertilizer subsidy programs	2	1	0	4	3	4	4	5	0	2	25	102	1
Do not increase (rural) land taxes ten-fold	3	2	0	5	0	0	0	2	5	4	21	93	2
Make market cesses applied by districts consistent and transparent	3	2	0	0	5	0	0	2	0	3	15	63	6
Do not allow periodic imposition of bans on food crop exports	3	1	0	4	4	0	0	0	0	3	15	59	7
Make rice import approvals transparent based on well- defined rules	2	1	0	4	3	2	0	2	0	3	17	69	4

	Political Expediency	Ease / Probability of Success	Unacceptable Delay to Date	Glaring Inconsistency	Lower P.S. Transactions Costs	Funding Requirements for Effective Implementation	Public Sector Crowding Out	Cost to Gov. Treasury	Fundamental Underlying Issue	Impact on Small Farmers or Agbiz SMEs	Un Weighted Sum	Weighted Sum	Rank
BURKINA FASO - Short-Run Policy and Regulatory Actions													
Weights	5	5	4	4	4	3	4	3	4	5			
Print and disseminate the national seed catalogue; also put this on a MASA website.	5	4	0	0	0	0	0	3	0	0	12	54	5
Make national fertilizer committee operational	4	4	3	0	0	4	0	3	0	1	19	78	4
Eliminate import taxes on fertilizer equal to 8.5% of the import value	4	4	0	3	4	0	2	3	0	3	23	100	1
Reduce or eliminate duties on imports of agric. equipment & spare parts	4	4	0	4	2	0	0	1	0	3	18	82	3
Finalize and publish an agricultural investment code	4	5	4	0	3	0	0	2	0	1	19	84	2
BURKINA FASO - Longer Run Policy, Institutional & Public Investment Actions													
Weights	5	5	1	3	3	5	4	4	5	5			
Invest in upgrading public sector laboratories	4	4	0	0	3	0	2	3	0	0	16	69	4
Seed processing unit investent required	3	3	0	0	3	2	1	3	0	3	18	80	3
Upgrade capacity of National Seed Committee to inspect fields and do seed tests	3	3	0	0	2	4	2	3	0	2	19	86	2
Work on formal registration of agricultural land	2	3	2	1	2	0	0	2	2	3	17	69	4
Implement policy commitments agreed within regional organization	4	5	5	5	1	0	0	0	4	2	26	98	1
Increase transparency and consistency in rice import tariffs	2	1	0	4	3	2	0	2	0	3	17	69	4

	Political Expediency	Ease / Probability of Success	Unacceptable Delay to Date	Glaring Inconsistency	Lower P.S. Transactions Costs	Funding Requirements for Effective Implementation	Public Sector Crowding Out	Cost to Gov. Treasury	Fundamental Underlying Issue	Impact on Small Farmers or Agbiz SMEs	Un Weighted Sum	Weighted Sum	Rank
ETHIOPIA - Short-Run Policy and Regulatory Actions													
Weights	5	5	4	4	4	3	4	3	4	5			
Obtain ISTA (and OECD) accreditation to enable seed exports	3	4	2	0	3	3	0	2	0	2	19	80	3
Increase the role of private seed companies in producing foundation seed	2	2	2	0	4	0	4	1	1	2	18	77	6
Establish an independent regulatory agency to supervise seed prod.	2	2	2	4	0	3	3	2	0	0	18	71	7
Enforce the Plant Breeders' Rights Proclamation of 2006	3	3	3	0	0	0	2	0	4	0	15	66	9
Discontinue the process of administrative estimation of seed demand	2	2	0	3	0	0	5	3	2	2	19	79	4
Begin a gradual liberalization of the fertilizer industry	3	1	0	0	3	0	5	3	2	3	20	84	1
Do away with bonded warehouse system that restricts duty-free entry of tractors	2	2	0	2	3	0	5	0	2	2	18	78	5
Eliminate duties of 25% applied to agricultural machinery spare parts	4	4	0	4	2	0	0	1	0	3	18	82	2
ETHIOPIA - Longer Run Policy, Institutional & Public Investment Actions													
Weights	5	5	1	3	3	5	4	4	5	5			
Invest in upgrading public sector laboratories & promote creation of private labs	3	3	0	1	4	3	4	2	0	0	20	84	1
Implement findings of recent IFPRI fertilizer study	2	2	0	2	2	0	5	2	0	2	17	70	3
Put in place land leasing regulations now used in Amhara Region	3	3	0	0	3	0	0	2	4	1	16	72	2
Analyze the cost structure of government transport companies	3	2	0	0	2	0	5	0	1	1	14	61	4
Examine regional trade agreements for inconsistencies in regulations	2	2	0	4	0	0	0	2	2	2	12	60	5
Legitimize and regulate the informal seed sector	3	2	0	1	2	2	3	2	1	3	16	84	1

	Political Expediency	Ease / Probability of Success	Unacceptable Delay to Date	Glaring Inconsistency	Lower P.S. Transactions Costs	Funding Requirements for Effective Implementation	Public Sector Crowding Out	Cost to Gov. Treasury	Fundamental Underlying Issue	Impact on Small Farmers or Agbiz SMEs	Un Weighted Sum	Weighted Sum	Rank
NIGERIA - Short-Run Policy and Regulatory Actions													
Weights	5	5	4	4	4	3	4	3	4	5			
National Seed Council revisits seed laws and revises in acc. w/ECOWAS regs	2	2	0	4	2	0	0	0	1	1	12	53	4
Clarify policies and regulations governing seed imports	3	2	0	2	3	0	0	1	0	1	12	53	4
Approve and implement the fertilizer law and regulations	4	4	1	0	2	3	2	1	0	2	19	82	1
Remove inconsistencies between federal and state policies on fertilizer subsidies	3	3	0	3	2	0	0	1	0	2	14	63	3
Expand E-wallet system	3	4	0	0	2	0	0	2	0	3	14	64	2
Govt. needs to apply consistent taxes/duties on rice grain (to not distort seed mkt)	2	2	0	4	0	0	0	2	0	2	12	52	5
NIGERIA - Longer Run Policy, Institutional & Public Investment Actions													
Weights	5	5	1	3	3	5	4	4	5	5			
Seed certification process is abnormally long and must be shortened	3	2	0	0	3	2	2	2	0	2	16	70	3
Create an independent monitoring and regulation entity for the seed industry	3	2	0	2	0	2	2	1	0	1	13	58	7
Upgrade seed testing labs to attain intl. standards & ISTA/OECD accreditation	4	4	0	0	3	0	2	3	0	2	18	79	2
Encourage development of a private sector agro-dealer network	4	2	0	0	4	0	3	3	0	4	14	86	1
Government should devise an exit strategy from the fertilizer market	3	1	0	0	2	0	3	5	0	1	15	63	4
Avoid policy shifts on rice imports that limit investment in seed rice & paddy prod.	2	2	0	3	1	0	0	1	3	2	14	61	5
Need to put in place a clear policy on warehouse receipts	3	3	0	0	2	0	0	4	0	1	13	57	8
Evaluate & remove inconsistencies betw. tariffs on imports of wheat and wheat flour and export bans on cassava and cassava products	2	2	0	4	0	0	0	2	2	2	14	60	6

BURKINA FASO

Summary of Priority Policies and Regulations to Address

As the only Francophone country covered in this initial MIRA diagnostic assessment, Burkina Faso is an outlier, reinforced by the fact that it has the lowest agricultural potential of the five study countries as a landlocked Sahelian country challenged by low and variable rainfall, as well as a small domestic market. Historically, agriculture has been dominated by cotton production, the key cash crop. Given the volatility of international cotton prices since the early 2000's, area cultivated to cotton and cotton output have fluctuated, and other "non-traditional" agricultural value chains have received attention. Efforts to promote production and export of cashews, mangoes, shea butter, sesame, and ruminant livestock have been supported by the World Bank and USAID, among others.

Agricultural policy analysis and training have received relatively less donor funding than in the other study countries. IFPRI does not have a program in Burkina Faso, and Mali was the early francophone choice for AGRA Policy Hub work. The Monitoring African Food and Agricultural Policies (MAFAP) program of research, funded by the Bill and Melinda Gates Foundation (BMGF) with FAO and USAID, has committed significant resources, however, to strengthening agricultural policy analysis capability in the Ministry of Agriculture (see http://www.fao.org/mafap/partner-countries/burkina-faso/en). In addition, two regional organizations, UEMOA and CILSS, are located in Ouagadougou, and they have some policy and trade analysis capability. CILSS monitors regional trade flows in cereals and livestock, as well as regional food vulnerability and insecurity. Burkina Faso was also chosen as the sole francophone pilot country in the pilot BMGF funded Agribusiness Indicator program implemented by the World Bank. This initial constraints analysis for MIRA draws on the aforementioned work, literature review, and over 30 interviews carried out by two analysts in March 2014.

As in many SSA countries, slower than hoped for agricultural sector growth and agribusiness investment are due to many factors other than policy and regulatory constraints. The capacity of public sector institutions to support agricultural sector and agribusiness system development is limited, as government agencies face infrastructural, management, organizational and human capacity shortfalls. Government budgets depend heavily on donor support (71% of public funding for agriculture from 2006 through 2010—from MAFAP), and there are insufficient funds for investment and operations, particularly field extension. Donors, particularly MCC and the World Bank, have made significant investments in expanding irrigated agriculture. Demand for improved policy analysis has been whetted by MAFAP, which invested in building MASA capacity to do economic analysis of price and policy incentives and distortions. Demand for high-quality policy analysis seems to be on the rise, and the MIRA project is well-timed to nurture this demand and increase the supply of strong analytical work.

MIRA's point of departure is that there is a set of policy and regulatory issues that can be addressed by the government in concert with private sector stakeholders over a 4-5 year time frame. This summary will identify briefly priority constraints that can and should be addressed, and which are in the manageable interest of the GoG. There are two lists of bullet points; the first one is for short-run, near-immediate actions that could be undertaken to relieve constraints to agribusiness investment. The second list is for policy, institutional and public investment issues that could be addressed over the medium to longer run.

Short-Run Policy and Regulatory Actions

1) **Print and disseminate the national seed catalogue; also put this on a MASA website.** This will clarify which seed varieties have been approved by the National Seed Committee and are authorized to be traded intraregionally. A draft document exists but has not been disseminated. In a francophone country where legal and regulatory texts are important for public enforcement agents and private producers and traders to see and have in their possession, there is urgency to get the catalogue disseminated, both as hard copy and on an accessible web site. *Implication for agribusiness investment in smallholder value chains*: This will clarify which seed varieties have been approved by the National Seed Committee and are authorized to be traded intraregionally. This will assist the formal seed trade, the 11 members of the recently established seed companies' association, to plan seed production, imports and exports.

2) **The recently created national fertilizer committee,** *Comité National de Contrôle des Engrais,* needs to become operational as soon as possible. Its mandate, decision-making role, and priorities need to be clarified, and its work in harmonizing fertilizer protocols should be supported and completed. AGRA is currently providing support**.** *Implication for agribusiness investment in smallholder value chains*: The work of this

committee should clarify the legal and regulatory environment for fertilizer importation and distribution for prospective private sector participants. The current subsidy program and dominance of fertilizer importation and distribution by cotton companies provide disincentives to private sector participation in the fertilizer trade.

3) **Eliminate import taxes on fertilizer equal to 8.5% of the import value.** While fertilizer imports from ECOWAS countries are not taxed, most fertilizer that enters Burkina Faso comes from non-ECOWAS suppliers. *Implication for agribusiness investment in smallholder value chains*: Fertilizer is a very costly production input once it arrives in Burkina Faso, a landlocked country far from seaports. Taxing a key input raises production costs, lowers fertilizer purchases outside of the subsidy program, and reduces private sector fertilizer sales.

4) **Reduce or eliminate duties and other import taxes on tractors, power tillers and other agricultural equipment** from 16-23% to zero or near zero. Similarly, remove import taxes on spare parts from the punitive level of 34-38%. *Implication for agribusiness investment in smallholder value chains*: Taxes on imports of agricultural machinery spare parts dampen incentives to invest in tractor importation, servicing, and custom hire operations. This policy inconsistency likely leads to suboptimal maintenance and repair of agricultural machinery. Duties and taxes on imports of spare parts should be zero, or at least aligned with imports of tractors and other agricultural machinery.

5) **Finalize and publish an agricultural investment code.** OECD (2013) has provided technical support to the creation of such a code, but more work is urgently needed to develop and publicize an agricultural investment code**.** *Implication for agribusiness investment in smallholder value chains*: Without an agricultural investment code, private investors in agricultural production and agribusiness face uncertainty and will consider Burkina Faso a risky country in which to invest. This will affect key GoBF/donor investments in irrigated agriculture schemes. Given the thin domestic private sector capacity and investment potential, a strong agricultural investment code is needed to help attract critical foreign investment. Smallholders will benefit indirectly.

Longer Run Policy, Institutional, and Public Investment Actions to Support the Emergence of a Competitive Agribusiness System

1) **Invest in upgrading public sector laboratories and move toward ISTA and ISO accreditations.** Testing of soil samples, seed properties, fertilizer content and efficacy, and food safety parameters (moisture, filth, contaminants, mycotoxins, pesticide residues, etc.) are necessary to move Burkina Faso toward scientific agriculture. *Implication for agribusiness investment in smallholder value chains*: The absence of accredited laboratories is a brake on the development of effective seed and fertilizer industries, as well as the emergence of scientific agriculture. It also increases laboratory testing costs if samples must be sent to foreign countries' labs. Inadequate testing facilities also have negative implications for food safety (and health) within Burkina Faso, and the competitiveness of agricultural exports (of horticultural products, cashews, shea butter, etc.) that must meet exacting international standards.

2) **Seed processing unit:** This is an important gap in capacity of great importance to the seed trade. There has been a recent private sector investment in processing in Bobo-Dioulasso, but that unit does not serve the entire private seed industry. *Implication for agribusiness investment in smallholder value chains*: As cereals seed processing has been carried out entirely by the public sector for many years, private and cooperative seed producers hesitate to invest in what is considered a public support service. AGRA could assist the private sector by providing grants for the establishment of more than one privately run seed processing facility.

3) **Provide significant funding to upgrade the institutional capacity of the National Seed Committee for carrying out field inspections and laboratory analyses of seed**, as well as sufficient resources to ensure efficient performance of these tasks and timely operation of the Varietal Release Committee (*Sous comité d'homologation des variétés agricoles*, SCHV) of the National Seed Committee. *Implication for agribusiness investment in smallholder value chains*: This assumes that private sector investment in these functions will not come on stream immediately *(and is not explicitly authorized in the 2006 law*) and that the public sector will need to continue to play its regulatory role and provide quality assurance for seed. If the public sector cannot fulfill these functions, development of the seed industry will be constrained.

4) **Need to increase transparency and consistency in rice import tariffs, as senior government officials grant import permits on a case by case basis.** Such a system sends mixed signals to rice producers and processors. Modest protection helps the local rice industry to become competitive over time, as long as tariffs are set at consistent levels. This is especially

important, given very large investments in irrigated rice production. *Implication for agribusiness investment in smallholder value chains:* Rice producers are negatively affected by imports of Asian rice, with some stocks allegedly several seasons old, which feed the urban poor. These imports undercut demand for domestic paddy and dampen domestic rice price incentives. Not only do high levels of rice imports reduce domestic incentives to grow rice, but rice processors end with less supply and lower capacity utilization.

5) **Work on formal registration of agricultural land**, which is proceeding very slowly despite the rural land law of 2009 and establishment of only one one-stop shop for land registration and transactions. One-stop shops need to be established in the provinces, and the GoBF needs to publicize and disseminate land laws. OECD (2013) recommends defining the concept of a farm enterprise to be incorporated in the Agricultural Investment Code. In addition, the GoBF should review leaseholds granted to domestic and foreign investors, document best practices, and share the most workable and pragmatic contract templates. It is important to track the experiences of such investors (and the communities from which they are leasing) with respect to land use and development over the past five years and going forward. *Implication for agribusiness investment in smallholder value chains:* Burkinabe farmers who are unable to register land will not be able to access finance from MFIs or commercial banks. Difficult, uncertain and high transaction cost access to larger tracts of land through leases deters investments in commercial agriculture, which can indirectly benefit smallholders as outgrowers.

6) As a broad principle, the government needs to **implement policy commitments agreed within regional organizations**, particularly ECOWAS. These agreements cover intraregional trade in agricultural inputs, products and services. Especially noteworthy are bans, often unannounced, on exports of Burkinabe agricultural products, particularly maize, to neighboring countries. Furthermore, movement of goods across borders and along major trade corridors needs to be streamlined. Some of the delays are due to insistence by customs, MASA and other officials, particularly at border crossings, that shipments be accompanied by documentation that is no longer required (certificates of origin) or that does not need to be issued a second time if provided by a trading partner (phytosanitary certificates). MIRA should assist the GoBF to highlight the bottlenecks, shine a bright light on unnecessary or questionable procedures impeding trade, expose malfeasance (opportunistic behavior), and provide information, focused training and public awareness campaigns designed to facilitate intraregional trade. *Implication for agribusiness investment in smallholder value chains:* Most West African economies are small, with limited markets. Without access to other markets in the same region, a production surplus in one country can easily lead to gluts and price collapses, while a neighboring country may face a deficit. In addition, processors in deficit countries will have limited access to supplies of raw materials if they cannot source regionally. Full and open access to the regional market will stimulate agricultural production, processing of regionally available surpluses, and reduce imports from the rest of the world.

Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Burkina Faso

Introduction

Objectives of the Country Study

The objectives of this policy landscaping study are to:

- Identify key stakeholders in the public sector who address or shape agricultural policies and regulations, as well as representatives of private sector agribusiness firms and associations who can play an advocacy role.
- Interview a sample of these stakeholders during a short mission of two weeks to learn their perceptions of priority agricultural policy and regulatory constraints to agribusiness investment, particularly investment by SME agro-enterprises.
- Produce a country report on the highest priority agricultural policy and regulatory constraints to address that currently constrain agribusiness investment in Burkina Faso.

Study Approach

Information was collected using key informant interviews conducted over a two-week period in Burkina Faso in March 2014. Interviewees were drawn from the consultants´ professional contacts and recommendations from Abt Associates' lead

investigator. Given the objectives of the study—and despite the scheduling and mobility constraints—interviews were conducted in person with representatives of 34 entities in Ouagadougou, Dédougou, Bobo-Dioulasso and Founzan. Interviewees spanned the full spectrum of those concerned with agribusiness including producers and farmers´ unions, input suppliers, buyers, wholesalers, processors, technical assistants, development partners, and public sector officials. The study's results are illustrative of the country's broad diversity of experiences and actors.

A semi-structured interview questionnaire (see Annex 3) guided the discussion between the interviewer and respondent to explore specific topics in an open, conversational manner. The questions concerned perceived constraints to investments in agribusiness and possible solutions to unblock or boost investments in the short- to medium-term.

Context

Burkina Faso is a low-income, land-locked country located in West Africa. The non-cotton agricultural sector in Burkina Faso remains characterized by low yields, almost exclusive dependence on rainfall, and generalized underuse of modern production technologies. The country is highly dependent on foreign aid, gold and cotton exports. Burkina Faso is the only Francophone country among the five MIRA study countries, so its legal system, role of government in the economy, and approach to regulation of economic activity is quite different than the three MIRA Anglophone countries and Ethiopia.

Findings

Burkina Faso has been systematic and steadfast in its efforts to improve the environment for private investment in general and agricultural sector investment in particular. Respondents pointed to the Strategy for Accelerated Growth and Sustainable Development (French acronym SCADD), as well as the National Program for the Rural Sector (PNSR) as providing the guiding framework for policy development in rural areas. These documents call the private sector the engine of growth and emphasize an approach that promotes growth poles, promising value chains and pro-poor growth policies.

The **premise that only a few legal or regulatory constraints limit the full potential of the private sector is not borne out by information gathered in the interviews. Rather, more intractable constraints such as weak institutional capacity, poorly trained human resources in both the public as well as the private sector, and** a **risk-averse banking sector that does not willingly invest in agriculture all contribute to block quick progress by the private sector in agriculture.** Burkina Faso is trying to tackle these more insidious constraints, with the active involvement of a number of development partners including IFDC, the World Bank, USAID, GIZ, AFD and DANIDA.

The institutions required to enforce contracts are fragile, rendering marketing agreements difficult to implement. Another constraint cited is the weak purchasing power of poor farmers. Extreme poverty and the immediate need for cash force farmers to sell their production at harvest time rather than storing and selling when prices are higher. This cycle precludes many farmers from accumulating capital and investing in improved technologies.

Generally, respondents found that the legal and regulatory frameworks in Burkina Faso were satisfactory. There is nothing that openly prohibits entry of private sector actors in the agribusiness sector. In fact, as reported below, one trader believes that private sector entry in the commercialization of cash crops is not sufficiently restrictive.

Several respondents said matters deteriorate with the implementation of laws and regulations, and delays in developing ensuing decrees. Difficulties can arise in applying certain laws, regulations and following procedures. An example includes application of the rural land law; although its implementation has progressed through investments in titling, the process remains complex and costly. Another example is contract enforcement: Farmer-based organizations often do not respect contracts and sell instead to the highest bidder, which reduces the flow of supplier credit for agricultural production in subsequent seasons.

Exacerbating weak implementation capacity, many respondents cited the lack of political will in effecting transformation. Upon probing, the term "political will" captured instances of conflict of interest in the market for factors of production, including those for land and agricultural inputs. Inconsistent implementation of rules and regulations sends mixed messages to the private sector.

Conversely, public sector respondents also expressed reservations about the private sector, pointing to instances of collusion in response to public tenders for agricultural products, inputs or services. Public sector respondents were also suspicious of reliance on prices to send signals to the private sector. Traders engaging in arbitrage are seen as speculators and opportunists rather than fulfilling a vital distribution function in a market economy.

Inputs

The market for agricultural inputs is heavily influenced by actions of the state. Since 2008, in response to the rise in food prices, the government intensified its

involvement in distribution of improved seeds and fertilizers. In 2011, it began distributing subsidized farm equipment.

At first, subsidized inputs were delivered by the public sector itself, but increasingly, the government avails itself of private sector distribution channels. AGRODIA, a private sector association of input providers, and COCIMA, a traders´ cooperative, are indispensable to these efforts. AGRODIA comprises 757 members made up of importers (10%), wholesalers (40%) and retailers (50%). In 2013, AGRODIA moved 12,000 MT of fertilizers and 8,000 MT of seeds for a total cost of CFA 7 billion (approximately $14,626,300) which represented the year's total government subsidy. In a 2013 evaluation[2], the government reported beneficiary satisfaction as high as 93%, although it recognizes (and our interviews confirm) serious deficiencies in timing and quality of inputs.

Although the input support program is under review by the Ministry of Agriculture and Food Security (MASA), it still lacks a comprehensive and independent cost-benefit analysis to shed light on productivity gains and determine more effective pathways for achieving results.

The public sector's hand is about to become more visible in input distribution with the creation of a centralized purchasing unit at MASA: *Centrale d´Approvisionnement en Intrants et Matériels Agricoles, or* la CAIMA. We were unable to obtain any documentation related to this initiative, as it is still being deliberated by MASA authorities; however, we gathered that efforts will be made to build and rehabilitate, maintain and assure the security of public sector warehouses for the storage of agricultural inputs and equipment at the sub-regional level. Presumably beneficiaries will need to be identified and inputs will need to be made available for distribution to beneficiaries no later than April 15, 2014. It is not clear whether this new system will be up and running in time for the 2014 planting season.

The effect of such a scheme on the private sector is not clear. If it results in transparent and rigorous procurement processes, the private sector could find it beneficial. However, private sector respondents were skeptical of government's capacity to deliver on the timeliness, transparency and management fronts.

Seeds

None of the public or private seed sector respondents was aware of the obligatory remittance of 25% of seed production to the public sector cited in the MIRA Terms of Reference. One respondent vaguely remembered a past stipulation that subsidized seed recipients provide 25% of grain produced to the public sector to serve as seed at level R2 during the next planting season. But that no longer seems to be the case. In any event, no one mentioned this as a cost factor in the production of seed.

Basic seed production

Burkina Faso´s 2006 seed law stipulates that INERA is the sole provider of basic seed. The ECOWAS seed regulation of 2009— only published in Burkina Faso in February 2014—opens the possibility of the private sector producing basic seed. INERA has already tested the outsourcing of basic seed production with NAFASO, a private seed company, and can build on this experience to increase the supply of basic seed. However, the experience has been marred by deep-seated mutual suspicion. NAFASO cites interference by MASA, while INERA claims that NAFASO has withheld basic seed rather than remit it all to INERA as per their agreement. FAO is helping to develop protocols for basic seed production. Having an independent entity temporarily broker the relationship is a cost-effective, timely way to expand availability of basic seed.

Respondents also pointed to the difficulty of consolidating needs for basic seed. INERA expressed exasperation with the process that determines these needs. The Union of Private Sector Seed Producers (UNPS-B) is unreliable and does not capture all of the demand. According to INERA's director, a contract plan between INERA and MASA is being developed to better determine needs for basic seed.

Thanks to the publication of the ECOWAS seed regulation in 2014, INERA may contract openly with the private sector for the production of basic seed. The DGPV plans to purchase all basic seed (produced either by INERA or by the private sector) and dispatch them in lots to regional directorates of agriculture for subsequent delivery to the private sector.

Certified seed production

The subsidized seed schemes introduced as a result of the food crises of 2008 saw a dramatic increase in the number of seed producers—with ensuing deficiencies in seed quality. The National Seed Services' budget is insufficient to inspect and analyze all certified seed. The Ministry of Agriculture is launching a new system for seed certification this year, which will reduce the number of seed producers by eliminating those not able

2 *Rapport d'évaluation des opérations 100 000 charrues et distribution d'intrants agricoles, Rapport provisoire, Décembre 2013, Ministère de l´Agriculture et de la Sécurité Alimentaire, Secrétariat Général, Direction Générale des Etudes et des Statistiques Sectorielles, Direction du Suivi, de l`Evaluation et de la Capacitation.*

to meet technical standards of production.

Features of the new system include the collection of all seed in Ministry-approved warehouses at the communal level (slightly over 200 warehouses have been identified countrywide[3]). The warehouse will be kept under two locks, with one key held by the local representative of the union of seed producers, and the other held by a MASA representative. Samples for testing are all sent to Ouagadougou, where they are coded and randomly re-assigned to one of five country laboratories.

The recent establishment of a national association of seed producers, *l'Association Nationale des Entreprises Semencières du Burkina* (ANES-B) is a positive development in the seed value chain. Unlike UNPS-B, which includes all would-be producers, ANES-B includes only 11 relatively robust seed companies. According to a recent study (MASA, 2013), certified seed production covered 36% of rice seed requirements and 20% of maize seed in 2012, but only 6% of sorghum and 3% of millet seed requirements. The same study reports that nearly all producers surveyed feel the subsidy on seed is necessary, with 55% stating that a subsidy of 25% would be acceptable while 38% think the subsidy should be 50% of the seed cost.

One of ANES-B's members is adamantly opposed to MASA's introduction of a new system for certifying seeds this year. Joint storage of seeds in pre-approved warehouses poses a risk of mixing seed, as well as contamination if a particular lot is infested. In addition, although the coding of samples for testing assures anonymity, it is cumbersome, costly and time-consuming. Finally, the 50-kg sacks destined for the government´s seed subsidy program will not have the labels of the seed-producing company and will not be identifiable for marketing purposes. For sale outside the government subsidy scheme, seed producers will be free to re-bag and label their seeds with their own labels.

Improved seed imports

None of the input traders cited constraints to the trade in improved commercial seed from other countries in the region or outside. According to some respondents, Burkina imports sorghum seed from Mali and hybrids from India, and exports maize and rice seed to Liberia and Nigeria. It is not clear whether breeder seed or basic seed for multiplying up from other countries, including those in the ECOWAS zone, are free to move. Typically, seeds have to be registered under the auspices of a regional organization and added to an approved national seed catalogue. The National Seed Committee recently approved the seed catalogue which awaits printing.

Fertilizers

Most of the fertilizer used in Burkina Faso (up to 80%) goes to the cotton sector, a portion of which is likely diverted by cotton farmers to food crops. In its ordering of fertilizers, SOFITEX estimates one hectare of inputs for cereal for every three hectares of inputs for cotton. The rest of the fertilizer imported, approximately 20%, is either purchased by government as part of the subsidized input scheme or brought in by private dealers. For the subsidized fertilizer scheme, the government launches bids to all interested parties. There are typically two or three bidders, based in Mali or Japan, or the fertilizer blending plant in Burkina Faso, CIPAM. Delivery is at the sub-regional level. The overwhelming importance of lowest cost in awarding these government tenders means that quality may be sacrificed.

In this context of subsidized fertilizers, what room is there for the private sector? The private sector is involved in distribution of the fertilizer, both in the cotton sector and in the government-run subsidy scheme. AGRODIA and COCIMA each participates in "*conventions*" which may include training of retailers in safe handling. These agreements must cover costs and provide an acceptable margin; otherwise the private sector would not participate.

Beyond this, is there a role for an agro-dealer to make money in fertilizer? Factors affecting the cost include transport, tax on inputs, and warehousing at the ports of Togo, Ghana, or Côte d`Ivoire. Margins on fertilizers are low, so volumes matter. King Agro, an input importer, wholesaler and dealer interviewed, is able to sell in spite of the subsidy scheme and the 11% customs duties paid[4]. The subsidized scheme only covers a portion of demand and does not ensure timeliness in delivery or quality. King Agro manages to bring in fertilizer from Belgium and is confident that the quality beats all available products in Burkina. However, another agro dealer, DTE, explained that they could not successfully enter the market for fertilizers by competing with the likes of Toguna Agro Industries (of Mali), among others.

SOFITEX is the largest of the three cotton operators in Burkina Faso and imports 150,000 tons of NPK and urea a year. The SOFITEX representative interviewed explained that they initiate their bids for fertilizers in September based on projections, and then launch a final bid in December when their final fertilizer needs are known. The trucks go out to the villages loaded with

3 Transport costs to the warehouses are borne by the seed producer.
4 Customs duties for fertilizers are 5%, but with other impositions such as the Redevance Statistique and Communauté de Solidarité, the total fee amounts to 11%.

fertilizers in January and pick up the cotton seed, maximizing efficiency in trucking by avoiding empty backhaul.

Progress is being made on harmonization protocols for fertilizers. AGRA has provided support for the creation of the fertilizer committee (*Comité National de Control des Engrais* or CONACER), which is not yet operational. AGRODIA is a member of this committee.

Quality of grain: A driving force in the market

Respondents engaged in processing activities lamented the poor quality of grain available for purchase. Grain with too high a moisture content does not store well and is not fit for human consumption, while impurities in the grain damage milling equipment. At this stage, food standards are not restrictive, and the enforcement capacity of overtaxed government agencies is weak.

Gradually, with programs such as the World Food Programme's P4P and AGRA´s support in the purchase of post-harvest equipment, farmer organizations such as FEPA-B are able to assure quality, sell to WFP (530 tons annually) and develop inventory credit schemes. Little by little, quality measures are gaining traction, making food safety in the domestic market an engine of growth.

Pesticides and Agricultural Machinery

Two of the agro dealers interviewed also deal in pesticides and agricultural machinery. Neither raised any specific constraint with respect to the pesticide side of the business. The fact that there needs to be a special license (agreement) was not considered unreasonable or too costly. At the ministerial level, the national committee for the control of pesticides (CNCP) is already established and operational.

As of 2012 (Agribusiness Indicator Study, World Bank, 2013), imports of agricultural machinery were officially subject to import duties of 5% and other taxes of 2.5% for total import taxes of 7.5%. Careful examination of customs data showed that tractors were subject to much higher rates of taxation, as VAT was not exonerated as it is supposed to be. Import taxes averaged 16.2% while power tillers were taxed at 23.4%. Obviously, customs officials were not applying the regulations consistently and exercising considerable discretion. Import duties plus TVA on spare parts were higher at 34-38%, which provides a disincentive to stocking of spare parts and leads to increased machinery down time and less regular maintenance.

Application of customs duties to agricultural machinery in Burkina Faso is ambiguous, especially if a piece of equipment can be used in a sector other than agriculture, such as a tractor. For the subsidized tractors being distributed by the government, one of our respondents indicated that the government purchases equipment and exempts itself from paying duties and taxes, bringing the cost down from CFA 2.5 million to CFA 1.9 million, which suggests that the import taxes are 32%. Clearly, taxation of agricultural machinery is high, a disincentive to its acquisition and proper maintenance, and should be eliminated or dropped to far lower levels.

Agricultural Commodity Trade and Processing

Respondents identified a number of constraints to dynamic commodity trading and processing. One private sector respondent complained about price ceilings that squeeze margins for maize and rice, but acknowledged that price controls offer some consumer protection from dramatic price hikes. Another big obstacle is the non-respect of contracts by farmers, as echoed by a number of interviewees. These included an agro-dealer who used to advance supplier credit from his own resources but ceased after accumulating too much debt, and a miller who used to advance seed and fertilizer to producers only to have them sell to a higher bidder.

Commodity Trade

The practice of side selling appears widespread and damages the overall credibility of farmers. According to one respondent, the value chain approach is indispensable to overcoming this constraint and increasing professionalism in the sector. In value chain associations in cereals and cowpea *(Comité Interprofessionnel des Filières Céréales et Niébé du Burkina Faso* or CIC-B), contracts tend to be respected for the benefit of all involved. A number of projects underway aim to strengthen value chains such onions, mangoes, livestock/meat, poultry and rice.

Side selling has precluded the advance of supplier credit. Another emerging form of credit that works well when contracts are poorly enforced is *warrantage*, discussed further below.

None of the private sector respondents said the legal/regulatory framework was too hard or expensive for most firms to comply with. In fact, progress has been made in cutting time to register a business: One

respondent said it takes a mere three days to register a business through the *Maison de l´Entreprise*. However, becoming a formal trading company can be disadvantageous when competing with informal traders. In grain trading, for instance, traders who do not possess warehouses or trucking fleets and who have not provided any pre-financing are able to offer better prices at harvest time and buy up all of the production. One respondent was dismayed by what she sees as unfair competition by such itinerant traders who end up participating in the market without paying taxes.

The issue of formalizing agro-enterprises in African countries is a vexing one, as enterprises choose to remain informal to avoid paying taxes, registration and licensing fees, and to minimize transactions costs associated with obtaining official approvals,. If time/effort required to register firms has declined and is manageable, the incentive for firms to operate informally is driven purely by tax considerations. Many of the agro-enterprises, including traders, in Burkina Faso operate on a small scale and thin margins, so avoiding taxes makes a difference.

Additional constraints to the emergence of dynamic commodity markets are the seasonal restrictions on cereals exports. A SONAGESS official said there were no formal bans—but at certain times the demands for documentation at the borders may intensify and become unreasonable. The private sector perception is that maize export bans are common, if not decreed or 7azette (and in that sense "informal"). But clearly high-level instructions are passed down to field agents on the roads and at borders to detain exports. The GoBF will not readily admit this, but major coarse grain traders stated that seasonal bans on maize exports were in force in four of five recent marketing seasons (World Bank, Agribusiness Indicator Study for Burkina Faso, 2013). Although seemingly counterintuitive, restrictions on agricultural exports rarely have the desired effect of protecting food stocks because they end up creating disincentives for producers, traders and processors. Producers are limited to sales in their own country even if they can fetch a better price across the border. Traders often find ways to get around the restrictions, but their costs rise because they have to bribe officials to do so. Processors are limited in their catchment area for raw materials. Seasonal export restrictions mean that trade is interrupted during the most important marketing period of the year, reducing regional trade and raising rent-seeking.

A couple of the respondents said that Burkina Faso has been more aggressive in complying with ECOWAS mandates for free trade than its neighboring countries and has made greater concessions to regional market integration at its own expense.

Other constraints to the free movement of goods include inconsistent application of the value-added tax on processed food products, no longer justified demands for certificates of origin, duplication of phyto-sanitary certificates (one and only one from a member ECOWAS country is sufficient) and road harassment. This last in particular makes commodities more expensive every day. The costs and hassles of paying bribes create disincentives for traders and transporters to neglect maintenance of their vehicles to legal standards and to overload their trucks to unsafe levels well beyond official axle load limits. Even if a vehicle is well-maintained and in conformity with the law, uniformed agents will often find pretexts to "fine" transporters for very minor or invented infractions. The behavior of many agents on the roads and at borders also contributes to a sense of lawlessness and corruption among drivers, customs, police, and government. In the final analysis, it is important for Burkina Faso and its trading partners to lower trade barriers and pursue regional integration as a way to enhance regional food security.[5]

Agricultural Processing

A 2013 OECD assessment of the agricultural policy environment helped government produce thematic notes in advance of the creation of the agricultural investment code. These notes included access to and management of land; fiscal and customs regimes; financing of agricultural activities and food industry; and the general investment framework in Burkina Faso. Many respondents felt the lack of an existing agricultural investment framework.

Currently agricultural processing units are not considered rural enterprises and do not as such benefit from any preferential treatment. In addition to improving the environment for contract enforcement, the value chain approach focuses attention on the critical node of processing, which has often been neglected. Many of the interviewees support the development of an agricultural investment code that includes agricultural processing in the definition of rural enterprises and which will provide fiscal and other incentives to investments there.

Agricultural Finance

Virtually all interviewees cited access to and the high cost of credit as binding constraints to agribusiness development. A generalized lack of credit for investment is due to a banking sector that is fundamentally not interested in agricultural

5 Plunkett, Daniel and David Tanenbaum, Trade Constraint Briefs prepared for the Food Across Borders Conference, Accra, Ghana, January 2013.

development. In some SSA countries, agricultural development banks have been created, or special lines of credit have been made available to agricultural producers, but typically the credit extended is subsidized and historical repayment rates have sometimes been low. Despite this experience, there is tremendous pressure on government to do something about access to and cost of credit for rural enterprise activity. In fact, government has already committed to establishing a dedicated financial institution, the *Caisse Nationale de Dépots et Investissement agricoles* (CNDI) which will be co-owned: 49% by the government, and 51% by the private sector, represented by FIAB and CPF *(Confédération Paysanne du Faso).* No particulars regarding its interest rate or collateral policies were available since the CNDI is still under study by the DGPER.

The practice of inventory credit, or *warrantage*, has become increasingly common and apparently successful. Although it does not provide immediate credit for inputs at planting time, this inventory credit mechanism allows farmers to store their grain until prices are higher. With the credit, farmers are able to meet some of their immediate needs and become involved in off-farm microenterprise activities. The fruits of those activities enable them to pay off the loan generally. It is a relatively low-risk form of credit in an environment where contracts are poorly enforced. The GoBF is keen to promote and expand *warrantage.*

Most cooperatives and farmers´ associations practicing *warrantage* work through the *Réseau de Caisses Populaires du Burkina* (RCPB), which applies standard interest rates between 9.75% and 11%. Interestingly, some commercial banks that are normally averse to agricultural financing are increasingly attracted to these opportunities. An interviewee heading a 2,500-member cooperative says that they have begun working with Coris Bank and are benefitting from better terms than what they obtained with RCPB. The success of the *warrantage* system is ultimately defined by the quality and volume of one warehouse. Investment capital is still required to build and upgrade storage facilities.

Another financing mechanism used increasingly in SSA is leasing. It can play an important role in expanding access to credit (it satisfies the collateral constraint and is not necessarily hindered by poor credit history). The agro-equipment importer and seller DTE said they were exploring expanding leasing operations in conjunction with the RCPB.

While leasing can be used to get equipment to large-scale producers and agro-enterprises, it is not accessible to smallholders. A recent study of IFAD's *fonds d'appui* in Burkina Faso under PROFIL (*Projet d'appui aux filières agricoles*) concludes that initial subsidies to resource-poor farms and micro-firms to engage in productive enterprise along priority value chains is one way to move unbankable participants in the agribusiness system to manageable lending risks (IFAD, 2013). IFAD and DANIDA seem to be the only donors to support the poorest farms and firms with grants that are considered poor credit risks.

Agricultural Investment Code and Access to Agricultural Land

In its *Policy Framework for Investment in Agriculture in Burkina Faso*, OECD (2013) has provided technical support to the creation of such a code, but more work is needed to develop and publicize an agricultural investment code**.** A key sticking point is access to agricultural land, both by small to medium scale farmers seeking access to credit and by large-scale domestic and foreign investors who need to obtain and consolidate sizeable, contiguous holdings to achieve scale and produce large commercial surpluses.

Formal registration of agricultural land is proceeding very slowly despite the rural land law of 2009. This led to the establishment of only one national level "one-stop shop" for land registration and transactions. This needs to be supplemented by one-stop shops in at least key provinces, especially where the potential for land transactions and commercial agriculture is highest. The GoBF also needs to publicize and disseminate land laws and procedures for registering and titling land. OECD (2013) recommends defining clearly and precisely the concept of a farm enterprise to be incorporated in the Agricultural Investment Code. Burkinabe farmers who are unable to register land are unable to access finance from MFIs or commercial banks.

GoBF should also review leaseholds granted to domestic and foreign investors in recent years, document best practices, and share the most workable and pragmatic lease templates. It is important to track the experiences of such investors (and the communities from which they are leasing) with respect to stakeholder consultations, land leases, and actual land use and development over the past five years, as well as going forward. By reducing difficulties and uncertainties associated with obtaining leases, and lowering investors' transaction costs, both domestic and foreign investors will have easier access to larger tracts of land through proven, workable leasing models.

Without an agricultural investment code, private investors in agricultural production and agribusiness face uncertainty and will consider Burkina Faso a risky country in which to invest. This will affect the success of

large GoBF/donor investments in irrigated agriculture schemes. Given thin domestic private sector capacity and investment resources, a strong agricultural investment code is needed to help attract critical foreign investment.

Agricultural investment stakeholder awareness needs to be raised by translating and disseminating laws and regulations into local languages. Prospective investors also require an easily accessible e-platform, dedicated to legislation and regulations on investment in agriculture, which includes a directory of laws and regulations relevant to agricultural investment. In addition, an **agribusiness investment promotion agency** should be established, as current efforts are diffuse and inadequate; the Mozambique experience with CEPAGRI is instructive in this regard. OECD suggests that such an agency can facilitate investment, particularly foreign investment, by providing agricultural investor kits that include useful contacts, administrative and registration procedures, where to find key documents and data/statistics, and selected value chain profiles detailing promising investment opportunities. OECD also recommends promotion of investment linkages between foreign investors and local SMEs and agricultural producers. Last, the prior investment authorization of the Ministry of Industry should no longer be required for agribusiness investors (as it is not international best practice).

Identification of Reform Advocates

Highest-priority agricultural policy and regulatory constraints include accelerating the adoption of improved production technologies, enforcing contracts, combating impediments to free trade, and addressing the agricultural finance issue. The following individuals were identified as individuals who could comprise an agricultural reform hub because of their familiarity with the policy issues involved and their scope of influence:

- **Mr. Jean Martin Kambiré**: Former deputy advisor of Ministry of Agriculture and head of the World Bank´s agricultural productivity and food security project, PAPSA; currently a consultant.
- **Dr. Dénis Ouédraogo**: Currently director of the Ministry of Agriculture´s Directorate General for the Promotion of the Rural Economy (DGPER).
- **Dr. Souleymane Ouédraogo**: Former director of the Ministry of Agriculture´s Directorate General for the Promotion of the Rural Economy, currently at INERA.
- **Mr. Issa Martin Bikienga**: Former Minister of Agriculture and former Deputy Executive Secretary of CILSS, currently consultant.
- **Mr. Alphonse Bonou:** Former Minister of Livestock, currently Advisor to the Minister of Agriculture.
- **Dr. Yiriyibin Bambio:** Researcher at the University of Ouagadougou´s Department of Economics.
- **Mr. Ouboli Jonas Yogo**: Dynamic proponent of private sector seed producers, head of the National Association of Seed Producers (*Association Nationale des Entreprises Semencières du Burkina* or ANES-B).
- **Mrs. Simone Zoundi:** Director of SODEPAL and articulate spokesperson for SME agro-processing, head of the agro-processing federation (*Fédération Nationale des Industries Agro-Alimentaires et de Transformation du Burkina* or FIAP).

Conclusions

In spite of its landlocked status and mediocre resource base, Burkina Faso is constructively pursuing improvements in the environment to attract agricultural investments. Quick-win policy, regulatory and legal reforms for agribusiness are not obvious. Steady improvements in underlying conditions should continue, such as the clarification of institutional mandates and a change in government attitudes and behavior toward the private sector. Staying the course of reform and capacity building are key.

With respect to agricultural intensification, sustained and significant improvements will follow improvements in access to credit, land tenure security and market integration. The recent publication in Burkina of ECOWAS regional harmonization of seed regulations points to movement in the Burkinabe seed sector and greater prospects for trade in seed. This represents an opportunity to increase the supply of basic seed, and ultimately certified seed, by expanding on INERA´s capacity to produce basic seed by contracting private companies.

If government measures are too heavy-handed, they may retard investments in the sector and be counterproductive. An example is the new mechanism for seed certification. It will certainly result in fewer, probably more professional seed producers, which will tend to improve quality. But will it deter entry by serious seed companies? Another example is the central acquisition unit for the purchase of inputs at the Ministry of Agriculture. If properly managed, it could enhance opportunities for private companies to bid on and win supply contracts. But skepticism abounds about the public sector´s capacity to manage such a system efficiently, transparently and without undue political interference.

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ETHIOPIA

Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Ethiopia

Summary

As a major recipient of donor funding, Ethiopia's policy and regulatory reform efforts have received significant attention over the past decade. AGRA has a strong presence in Ethiopia and has been working closely with the Agricultural Transformation Agency (ATA). Policy analyses have been produced by domestic research organizations including ATA, as well as by international organizations such as IFPRI, the World Bank, the Monitoring African Food and Agricultural Policies (MAFAP), the Sasakawa Africa Fund for Extension Education and numerous bilateral projects and programs (e.g. ACDI/VOCA for USAID). This initial constraints analysis for MIRA draws on that work, a literature review, and interviews carried out in April 2014.

Agricultural sector growth in Ethiopia has been strong from a low base, while agribusiness investment has been less forthcoming than in other Sub-Saharan Africa (SSA) countries. This is due to many factors, including policy and regulatory constraints. While the public sector plays an important role in the agricultural sector in Ethiopia, the capacity of public institutions to support the agricultural sector and agribusiness development is limited, as government agencies face shortfalls in infrastructure, management, and organizational and human capacity. Even though Ethiopia has shown a stronger commitment than many SSA countries by meeting the CAADP target of allocating at least 10 percent of government expenditure to the agricultural sector, public sector budgets are not fully adequate to address all the sector's needs. Donor support is significant, but it will be important for Ethiopia to mobilize both domestic and foreign investment in agribusiness development. Private agribusiness investment will generate incomes and create jobs particularly in the rural sector where most of the population and the most vulnerable households reside.

The Micro (Policy and Regulatory) Reforms for African Agribusiness (MIRA) Project seeks to identify, analyze and address key policy and regulatory gaps and issues that constrain agribusiness development and can be addressed by the government in concert with private sector stakeholders over a four-to-five year time frame. This report raises many such issues, but we shall identify below what we view as priority constraints that can and should be addressed, which are in the manageable interest of the Government of Ethiopia. There are two lists of bullet points; the first one is for short-run, near-immediate actions that could be undertaken to relieve constraints to agribusiness investment. The second list is for policy, institutional and public investment issues that could be addressed over the medium to long run.

Short-Run Policy and Regulatory Actions

1. **Obtain ISTA (and OECD) accreditation** to enable Ethiopia to export seed, particularly wheat seed, to regional buyers. As a regional center of excellence for wheat under the East African Agricultural Productivity Project (EAAPP), Ethiopia may have potential to export some wheat seed varieties. *Implication for agribusiness investment in smallholder value chains*: Seed company sales will be limited without access to the regional market. This will be a disincentive for investment and expansion in high quality certified seed.

2. **Increase the role of private seed companies in producing foundation seed by allowing them to use** breeder and pre-basic seed from the Ethiopian Institute of Agricultural Research (EIAR) and the Ethiopian Seed Enterprise (ESE), as well as imported seed or own-developed varieties. *Implication for agribusiness investment in smallholder value chains*: Government control over foundation seed production leads to inadequate seed quantities for multiplication. Seed companies cannot get sufficient basic seed to multiply. This limits investment in seed multiplication and seed companies' use of certified seed growers.

3. Related to the previous point, **enforce the Plant Breeders' Rights Proclamation of 2006** to provide an incentive for private sector investment in breeding new varieties, as well as encourage importation of new varieties that can be adapted to Ethiopian growing conditions. *Implication for agribusiness investment in smallholder value chains*: Lack of enforcement does not provide incentives for breeders to develop new varieties for private sector multiplication. Hence, very few new varieties are introduced each year in Ethiopia.

4. **Discontinue the process of administrative estimation of seed demand** by the GoE, and eliminate the cost plus approach for fixing the price of certified seed. Allow the seed market to develop

and articulate demand, leading to market-determined prices that send signals to both public seed agencies and private seed multipliers. (Note that ATA is already working on this). This will promote the development of a more decentralized free market system that would also help to regularize supply and demand, thus eliminating the perennial problems of shortages and "surpluses". *Implication for agribusiness investment in smallholder value chains*: Government estimation of seed requirements does not allow market demand to emerge. This can lead to mismatching of seed production (supply) and farmers' seed needs (demand), backed by farmer willingness to pay. Hence, there will be resource misallocation in foundation and certified seed production by the government and private seed companies.

5. **Establish an independent regulatory agency** (different from the MOA) to monitor and supervise the production of all classes of seeds. This would enhance the credibility of the regulatory system and engender confidence among stakeholders in the seed industry. *Implication for agribusiness investment in smallholder value chains*: MOA domination of seed breeding and foundation seed production, as well as regulation of private seed company multiplication, discourages private sector investment, as the government has a vested interest in maintaining tight controls.

6. **Begin a gradual liberalization of the fertilizer industry in Ethiopia.** Initial steps could be removal of the requirement that fertilizer be imported in vessel loads of 25,000 MT or more, and a tender system that encourages private sector bids on government tenders for smaller volumes. *Implication for agribusiness investment in smallholder value chains*: Government insistence on minimum imports of 25,000 MT per shipment eliminates the private sector from fertilizer importation and distribution. The financial requirements alone to purchase and ship this vast quantity cannot be met by prospective private sector entrants.

7. Do away with the bonded warehouse system that restricts duty-free entry of tractors and other agricultural machinery to six months. This will facilitate tractor and other agricultural machinery importation. *Implication for agribusiness investment in smallholder value chains*: This system discourages private importation and sales of tractors and other machinery.

8. **Eliminate duties of 25% applied to agricultural machinery spare parts** (to be consistent with the duty free facility granted to agricultural machinery). This will encourage maintenance and ensure a reasonable life span for machinery. *Implication for agribusiness investment in smallholder value chains*: Taxes on imports of agricultural machinery spare parts dampen incentives to invest in tractor importation, servicing, and custom hire operations.

9. **Remove export bans** that limit farmer maize sales and prices that farmers' receive for maize, which indirectly dampen incentives for maize production. *Implication for agribusiness investment in smallholder value chains*: Export bans provide strong disincentives to participating and investing in the private grain trade, as well as indirectly make processor access to raw material supplies less certain. Bans will also discourage farmer investment in expanded maize production.

Long-Run Policy, Institutional, and Public Investment Actions to Support the Emergence of a Competitive Agribusiness System

1) **Invest in upgrading public sector laboratories and promote the creation of private labs to improve the accuracy of laboratory testing** results of soil samples, seed properties, fertilizer content and efficacy, and food safety parameters (moisture, filth, contaminants, mycotoxins, pesticide residues, etc.). A prior action is to clarify whether it is legal, and whether a regulatory framework is in place, for private firms to establish seed, fertilizer, pesticide and plant testing laboratories, as well as inspection services, and whether government is encouraging a sharing of what are typically thought as of public sector responsibilities. *Implication for agribusiness investment in smallholder value chains*: The absence of accredited laboratories is a brake on the development of effective seed and fertilizer industries, as well as the emergence of scientific agriculture. It also increases laboratory testing costs if samples must be sent to foreign countries' labs. Inadequate testing facilities also have negative implications for food safety (and health) within Ethiopia, and the competitiveness of agricultural exports (of horticultural products, cashews, etc.) that must meet exacting international standards.

2) **Take the results of the recent IFPRI fertilizer study (2013) to the GoE and highlight findings** with respect to the cost structure of the fertilizer trade, the cost of subsidies implicit in the current distribution system, and the problem of high levels of fertilizer carryover at the cooperative level. Work with the GoE to implement the key IFPRI recommendation of "allowing the private sector to participate in the domestic markets alongside cooperatives." *Implication for agribusiness investment in smallholder value chains*: The current fertilizer distribution system provides no role for the

private sector and discourages the emergence of a network of private agro-dealers.

3) Seek to **put in place land leasing regulations** now used in Amhara Region that increase the length of land leases and allow larger tracts of land to be leased. This will encourage both investment in commercial agriculture and the ability of lessees to obtain bank credit.Smallholders could benefit as affiliated outgrowers. *Implication for agribusiness investment in smallholder value chains*: Making leases hard to obtain and the process of obtaining rural land for agriculture leases non-transparent discourages private investment in commercial agriculture by domestic and foreign investors.

4) **Analyze the cost structure of government transport companies** to ascertain if there are subsidies (implicit) that allow government firms to outbid private transporters and capture a large public market share in long-distance haulage. *Implication for agribusiness investment in smallholder value chains*: The absence of a level playing field in provision of transport services discourages private investment in transport.

5) **Examine regional trade agreements for inconsistencies in regulations** that Ethiopia (and other countries) are directed to apply to trade in inputs (seed, fertilizer) and agricultural products. *Implication for agribusiness investment in smallholder value chains*: Most East African economies have limited markets. Without access to other markets in the same region, a production surplus in one country can easily lead to gluts and price collapses, while a neighboring country may face a deficit. In addition, processors in deficit countries will have limited access to supplies of raw materials if they cannot source regionally. Full and open access to the regional market will stimulate agricultural production, processing of regionally available surpluses, and reduce imports from the rest of the world. Removal of inconsistencies in regional input trade regulations will also encourage private investment in seed production and trade.

6) **Move to legitimize and regulate the informal seed sector** that accounts for more than 90% of the seeds used by smallholders. **Put in place a system that would build capacity in seed production by cooperatives and communities, with necessary regulation** to meet some minimum acceptable standards in the production and distribution of improved seed. *Implication for agribusiness investment in smallholder value chains*: In some African countries, such as Ethiopia, the informal seed sector dominates but could be improved. Incremental private investment in seed production by now informal producers should be nurtured, which should lead to formalization over time. The current seed certification system in Ethiopia discourages this gradual upgrading of seed production which is currently largely informal.

Introduction

The Agricultural Sector

The agricultural sector is the cornerstone of Ethiopia's economy and therefore greatly influences economic performance in Ethiopia. The sector accounts for roughly 43 percent of GDP, and 90 percent of exports. Cereals dominate Ethiopian agriculture, accounting for about 70 percent of agricultural GDP.

Official statistics of the GoE reveal that Ethiopian agriculture has recorded consistent growth since 2003. Despite some recurring handicaps and setbacks facing the agriculture sector and the overall economy, Ethiopia has achieved significant progress in output and productivity in the last decade. The sector has averaged about 8 percent growth in the past two years. Maize production, a major staple, has expanded at about 6 percent per annum since 2003. In addition, the aggregate export value across all commodities has grown at about 9 percent per annum, contributing to annual GDP growth of about 11 percent (Federal Democratic Republic of Ethiopia, 2010). Despite the stellar growth in the economy, poverty still remains endemic, and hunger and food insecurity are still very prevalent within the majority of the population.

The agricultural sector is largely dominated by smallholders. About 11.7 million smallholder households account for approximately 95 percent of agricultural GDP and 85 percent of employment. About 25 percent of rural households earn some income from non-farm enterprises, but less than 3 percent rely exclusively on income from such enterprises. The country's unique and diverse ecological zones are capable of producing a wide range of agricultural products, and currently grow primarily cereals, pulses, oil seeds, coffee, tea and livestock (MOA, 2011). Yet Ethiopia has a total area of 1.13 million km2 and 51.3 million hectares of arable land, of which only about 11.7 million hectares are being cultivated, or just over 20 percent of the total arable area. Nearly 55 percent of all smallholder farmers operate on one hectare or less.

Livestock production accounts for about 32 percent of agricultural GDP and draught animal power is critical for all farming systems. Over the past decade, cereal production has more than doubled to nearly 15 million tons, as a result of horizontal expansion and increased yields. Nevertheless, food security remains a critical issue for many households, and for the country as a whole. Moreover, expansion of cropped area to more

marginal lands has led to severe land degradation in some areas. Ethiopia must transform its system of resource and income distribution in a more equitable and inclusive manner if the majority of its population is to benefit from the modest economic growth recently achieved by the country. An increase in productivity of smallholder farmers who account for more than 80 percent of the output is a prerequisite for the kind of economic transformation that could enhance income distribution and equity among the population.

General Characteristics and the Policy Constraints facing the Agricultural Sector

Ethiopian agriculture is dominated by subsistence, low input-low output, rain-fed farming systems, although in the past five years, a few large-scale commercial farmers have emerged. The use of chemical fertilizer and improved seeds is quite limited despite the efforts of the government to encourage the adoption of modern, intensive agricultural practices. Low agricultural productivity can be attributed to smallholders' limited access to agricultural inputs, financial services, improved production technologies, irrigation and agricultural markets—and, importantly, to poor land management practices that have led to severe land degradation. Ethiopia has one of the highest rates of soil nutrient depletion in sub-Saharan Africa. Extensive grazing systems, inadequate land planning and unsustainable farm practices, combined with a growing population, exacerbate land degradation. Estimates suggest the annual phosphorus and nitrogen loss nationwide from using dung for fuel is equivalent to the total amount of commercial fertilizer applied.

The agricultural sector has performed strongly over most of the last decade, but there is still substantial potential to improve productivity and production. Since 1996-97, the average growth rate of the agricultural GDP has been about 10 percent per annum, and since 2004-05, the sector has reportedly expanded at around 13 percent per annum, far surpassing the CAADP target of 6 percent. The poverty head count decreased from 44 percent of the population in 1999-2000 to 38 percent in 2005-06, and further declined to under 30 percent by 2009-10. Per capita grain production increased from below 150 kg in 2003-04 to 213 kg in 2007-08, close to the minimum 2,100 kcal/day nutritional standard.[6] Agriculture's share of GDP declined from 53 percent to 43 percent between 1995-96 and 2008-09, reflecting strong growth in other sectors of the economy. Despite these achievements, the Government has made poverty and hunger reduction its top priorities, recognizing much remains to be done in agriculture to realize Ethiopia's vision of becoming a middle-income country (defined as GDP/capita of USD 1,000) by 2020.

According to FAO (2011), the Policy Investment Framework of Ethiopia has identified the following as policy-related shortcomings to address if modest agricultural growth is to be sustained. These included:

- Improved management and use of water and soil;
- Commercialization of smallholder farmers;
- Wider access to agricultural inputs, including improved seed, and more involvement of the private sector in the production and supply of fertilizer;
- Better livelihoods for pastoralists, improved handling and storage of post-harvest crops, and a stronger livestock sub-sector;
- Increased access to financial services; and,
- Improved conservation and use of forest and biodiversity resources.

The government has demonstrated strong commitment to agriculture and rural development through allocations of more than 10 percent of the total budget—the allocation mandated by the African Heads of State and government in support of food security and poverty reduction among African Union (AU) Member States. To enhance delivery of improved production technologies and support services, the Government, with strong support from development partners, has embarked on (i) expanding coverage of the national agricultural research system into arid and semi-arid areas; (ii) training and deploying at least three extension agents to each *kebele*[7]; (iii) establishing farmer training centers in all 18,000 *kebeles*; and (iv) strengthening research-extension-farmer linkages to improve technology generation, transfer, use and feedback. All these initiatives would improve smallholder productivity and enhance the resilience of famers to leverage food security and reduce poverty and hunger.

Since the Government made agriculture its primary priority in 1991, Ethiopia has developed and implemented the Agricultural Development Led-Industrialization (ADLI) strategy to leverage productivity by smallholders, who are the main producers in the country. Underlying ADLI is an export-led development strategy of value addition through processing of agricultural raw materials. This achieves the necessary backward and forward linkages along the entire spectrum of the agricultural sector while generating employment along the value chain. Export growth is expected to benefit from the economic liberalization process underway in Ethiopia and the Government's strong commitment to creating a supportive environment for the private sector. Recognizing that large capital investments would be needed to exploit Ethiopia's resources and accelerate

6 2,100 kilocalories per day is the minimum standard used by the World Health Organization (WHO) and the U.S.Committee on International Nutrition.
7 A kebele (equivalent to "neighborhood" in Amharic) is the smallest administrative unit of Ethiopia similar to a ward, a neighborhood or a localized and delimited group of people. It is part of a woreda, or district, itself usually part of a Zone, which in turn are grouped into one of the Regions. (Source: http://en.wikipedia.org/wiki/Kebele)

agricultural development in the country, various incentives are being provided by the government to encourage foreign investment so that the agricultural sector significantly contributes to Ethiopia's development. The program, which covers all regions in Ethiopia, has become an integral part of the country's agricultural activities.

Overall Policy Framework—Agriculture and Rural Development Sector Gap Analysis

In theory, Ethiopia has a consistent set of policies and strategies for agriculture and rural development that reflect the importance of the sector in the nation's development aspirations. The policy framework is based on the Agricultural Development Led-Industrialization (ADLI) strategy, anchored in an economically transformed society in which agriculture will grow rapidly, but sees its relative importance decline in favor of an even more dynamic industrial and manufacturing sector. The rural non-farm sector also has an important role to play and currently accounts for a third of GDP. Demand for such goods and services are expected to expand in line with rising rural incomes, generating much-needed employment. ADLI covers all regions in Ethiopia and has become an integral part of the country's agricultural activities.

The 2009 Ethiopia CAADP Study, whilst not a policy document in itself, shows that Ethiopia has made the CAADP agenda an integral component of its overall agriculture sector policy. CAADP is a framework which African heads of state and governments agreed on as a flagship program to accelerate growth and eliminate poverty and hunger on the continent. CAADP embraces agriculture-led growth as a main strategy to achieve the Millennium Development Goal of halving poverty and hunger by 2015. It sets principles and targets to guide national sector strategies in:

- pursuit of a 6 percent average annual growth rate for the agricultural sector;
- allocation of at least 10 percent of the national budget to the agricultural sector;
- exploitation of regional complementarities and cooperation to boost growth;
- policy efficiency, dialogue, review, and accountability;
- partnerships and alliances to include farmers, agribusiness, and civil society communities, and
- assigning responsibility for program implementation to individual countries, while designating Regional Economic Communities to coordinate across countries.

Unfortunately, despite the capacity to produce sufficient food for domestic production and export, Ethiopia is a net importer of basic food items. A good proportion of these imports could comfortably be produced within the country. Crop losses from pests and diseases, including on-farm and post-harvest losses, are estimated to cost up to 45 percent of total harvested output. In addition to the perennially inadequate use of modern inputs, there is also the challenge of quality, safety, and sanitary and phytosanitary standards (SPS), which must be met if Ethiopia is fully enter the international market that could reorient the sector from smallholder to commercial.

Lack of private sector participation has also been identified as a core constraint to agricultural development in the country. This observation is closely linked to governmental control of major factors of production, including access and distribution of land, fertilizer and improved seed. Lack of regulations and rules that empower and promote entrepreneurship and encourage both domestic and foreign direct investment (FDI) are all serious obstacles to increasing productivity and agro-industry along the value chain of major staples of the country's agriculture.

The FAO (2011) has identified core areas for the Ethiopian government to focus on and implement targeted reforms for a strategic transformation of the agricultural sector in line with ADLI, including the policy and legal framework necessary to stimulate private and community based seed production and distribution systems. This could cover:

- Building of national capacity to review, update, harmonize and implement seed policies, seed laws and regulatory systems. Where these exist, strengthen them to address gaps that limit the efficient delivery of the national seed system.
- Initiating and formulating a national strategy that strengthens the capacity of cooperatives and the community seed systems to produce quality seed.
- Strengthening the link between research, extension and farmers (including the private sector) to produce and supply improved seed and other inputs.
- Establishing a national phytosanitary system to meet international trade and leverage value addition and international trade in major staples. Highlighted

areas include:

- Building capacity to review, upgrade and enforce regulatory standards and phytosanitary systems and procedures of high-value crops with export potential.
- Establishing technical guidelines with manuals for phytosanitary and quality control certifications to increase awareness of the standards to be met by entrepreneurs and regulatory authorities.

FAO also noted Ethiopia would have to put in place regulatory and institutional policies to facilitate development of the agricultural sector, such as:

- Identifying and quantifying main constraints limiting the production of major staples. Previously, some of these have included inconsistent administration and procurement of major inputs, including fertilizers, poor or non-existent market structures, poor pricing policies, and poorly trained and limited numbers of extension agents.
- Inefficient, weak information dissemination about marketing of inputs and outputs at the national, regional and *woreda* / village levels.

Public-private partnerships (PPP) are often cited as a way to definitively overcome a number of the constraints limiting agricultural development in the country. Yet the private sector itself needs to expand its participation in markets—and throughout entire commodity supply chains rather than in select activities determined by government agencies. This would help to increase the flow of private investment into Ethiopian agriculture from both domestic foreign investors while unlocking the country's untapped agricultural potential—including its rich endowment of human and natural resources.

This is not all. The International Food Policy Research Institute (IFPRI, 2010) published a diagnostic outlook for agriculture in Ethiopia and noted that the "formation of joint public/private development programs should be supported through target incentives and appropriate regulatory frameworks. The public sector should prioritize its role as catalyst and regulator, and undertake implementation strategically, seeking to drive activities that build self-sustaining momentum and foster growth of sizeable local private sector players in key value chains" (Gates Foundation and IFPRI, 2010).

In other words, there is a great deal of opportunity and space for the private sector to become more actively involved in the production and marketing of agricultural products. The government could focus mainly on formulating policies and strategies and creating an enabling environment and infrastructure for a vibrant agribusiness sector. This joint private-public arrangement would accelerate agricultural development and indeed the development of the overall economy, as outlined in ADLI.

Methodology

In accordance with the overarching goal and the specific objectives of the MIRA study—"to identify 'problem' policies and regulations and assess the extent to which they may be limiting investment in local SME agribusinesses, and the consequent impact on smallholders' access to inputs and markets," the study used a snowball research technique to identify key stakeholders for the purposes of collecting relevant information and data for the study.

With the help of a local consultant, a comprehensive list of key informants was compiled from a broad range of stakeholders representing different stages in the production, processing, and marketing of key agricultural commodities in the country. The team conducted an extensive review of scientific publications and policy research papers to identify past, current and projected trends in agricultural policies, which would identify gaps and thus produce recommendations and suggestions for interventions and policy reforms. The information gathered from primary and secondary sources formed the basis for further interviews, and meetings were scheduled with directors, managers, technocrats, policy analysts, and researchers, as well as civil organization and advocacy groups.

Information was collected from the Federal Ministry of Agriculture, the Ethiopian Seed Enterprise, the Ethiopian Input Supply Cooperation, the Agricultural Transformation Agency, Ethiopian Institute of Agricultural Research, the Ethiopian Commodity Exchange (ECX), the Ethiopian Investment Agency, the Ministry of Agriculture, IFPRI, CIMMYT, FAO in Addis Ababa, and a host of other public officials who requested anonymity.

Other sources included international researchers, development partners, local institutions and NGOs, and policy makers. Face-to-face interviews were conducted with key informants to complement information obtained from literature and also as a basis for data triangulation and reconciliation to ensure quality and consistency.

In effect, the methodology combined the use of literature search and review with interviews using interviewing guidelines to generate data and

information through a participatory approach that brought the relevant stakeholders onboard, including the government, researchers, the private sector, development agencies in discourse and dialogue. The hope is that AGRA would use the empirical findings from this study to nudge the government into policy reforms that could improve the efficiency and performance of the agribusiness sector.

The Seed Industry

The National Seed Policy of Ethiopia currently focuses on increasing smallholder use of certified seed by three means: first, the production of enough certified seeds from pre-basic and basic seeds; second emphasizes the production of certified seeds at prices that farmers are able and willing to pay; and finally, availability of certified seed so farmers can access them when needed. These factors determine quantities of seeds used by farmers and how much land is planted with certified seeds. The specific objectives of the national seed industry policy are to:

- Streamline evaluation, release, registration and maintenance of varieties developed by national programs.
- Develop an effective seed production and supply system through participation of public and private sectors.
- Encourage participation of farmers in germplasm conservation and seed production.
- Create functional, efficient institutional linkages among seed industry participants.
- Regulate seed quality, seed import/export trade, quarantine and other seed-related issues.

The study investigated the efficiency and performance of the seed industry to identify gaps and put forward suggestions for improvement.

Seed Production and Demand Estimates

The process of government policy to estimate demand and supply of seed aggregates from "demand estimates" produced by *woreda* and regional bureaus likely masks the growing demand for improved or certified seed and for quality maize seed throughout Ethiopia. So supply of certified/improved seed may be consistently falling short of demand. Lack of "unbiased estimates" of quantities demanded and supplied is the core reason for shortcomings in seed quality and timeliness of delivery in the country (Spielman *et al,* 2012).

Rapid and large-scale varietal changes also pose a challenge for a seed industry that is unable to stock a diverse variety of seed in anticipation of changes in farmer expectations. In some situations, this problem has led farmers to revert from improved varieties to local varieties, and for public and private maize seed producers to sell their seed as grain (Alemu *et al,* 2008).

The inability to correctly estimate quantities supplied and demanded implies that resources are not properly allocated, as the Ethiopian Seed Enterprise and other firms do have "surpluses" in some years despite low use of improved seeds. Most stakeholders think expert research should be undertaken to empirically verify actual demand and supply of certified seed.

Seed Laws, Regulations and Harmonization

Revised seed laws and regulations of Ethiopia have just been adopted and ratified by the People's Parliament after several years of delays. This development has been hailed as a big step forward by the private seed companies even though many stakeholders are still skeptical about implementation and the efficacy of the seed laws. Initial reactions are that most actors in the seed industry are not aware of the current development, and many have little or no knowledge at all of the contents of the laws and regulations. One strong recommendation is the urgent need for capacity building, training and awareness workshops, particularly at regional and district levels. Harmonization of seed policies and laws among regional and continental economic communities has been identified as a major factor that can accelerate national use of improved and certified seed. The regional seed industry faces many different standards and regulations in each country. The high costs of meeting these, coupled with relatively low "effective demand," within the region, make it unprofitable for local and international seed companies to provide the quantity, quality and variety of seed needed to support an expanding agricultural base in Eastern and Central Africa. Most costs take the form of non-tariff barriers: regulations, procedures, administrative and technical requirements imposed by the governments of these countries, which place discretionary and uncoordinated demands on importers, exporters, domestic producers and traders.

Within regional economic blocks, some countries overlap in their memberships and loyalty if they belong to two or more regional economic communities (REC) with different standards and regulations. For example, all ASARECA countries are members of COMESA with the exception of Tanzania, which is a member of SADC, while only five nations (Burundi, Kenya, Rwanda,

Tanzania and Uganda) are members of EAC. Once agreements are reached and published in the EAC gazette, they supersede national legislation, which may be in conflict with SADC and COMESA laws and regulations. Harmonization can streamline these agreements so they are consistent with the laws and regulations of their different economic blocks. Moving regional agreements into practice will require addressing capacity and performance of national and regional seed systems at various levels for each country and within each REC—a tall objective.

COMESA (to which Ethiopia belongs) has made progress in the harmonization of seed laws and regulations within the region. Problems persist, including some peculiar to Ethiopia, which limit the extent to which this country can effectively engage in cross-border trade with other COMESA member states. For example, in Ethiopia, the process of seed production and distribution tends to lock out most international and private seed producers. Most private seed producers act as contractors and sub-contractors for the Ethiopia Seed Enterprise. Distribution is still through official government channels that operate like public offices and are open only during official working hours and during weekdays. So farmers cannot always purchase at optimum times and at minimum cost.

Other constraints limiting participation of the private sector in global seed trade and production in Ethiopia include:

- National seed policy and regulations do not comply with or meet standards of international seed schemes (OECD, ISTA, UPOV, etc)[8]. Noncompliance with UPOV under plant breeding protection rights was cited by most stakeholders as a major reason why introduction of new varieties is lagging.
- Inefficiencies in the national and regional seed certification/accreditation process undermine credibility of seed producers.
- Ineffective, untimely information from national and regional governments leaves room for speculation on market supply and demand signals, market price controls, changes in the seed subsidy, etc., which results in high volatility of seed and grain markets.

Another constraint limiting development of the seed industry is protection of the rights of entrepreneurs who produce and market seeds. Protection of proprietorship rights is fundamental to conducting research for plant varieties that are more resilient, adapted to the environment, less vulnerable to pests, and which provide higher yields. A plant variety proclamation guarantees the right of a private individual or organization to be recognized as a breeder and owner of a plant variety. This means the owner can exercise exclusive temporary right—either personally or by a third party with the owner's consent—of a plant variety, and its propagation material for reproduction, production, distribution and sale, as well as use as parental material for the production of hybrids with commercial purpose.

Stakeholders specifically pointed out the need for the Ethiopian government to adhere to UPOV rules and regulations and to effectively monitor and protect breeders' rights. Until this is done, interviewees believe that the release and importation of new plant varieties will continue to be low and lag behind the need to replace old varieties with ones more adaptable to the country's changing environment and ecosystem.

Seed Marketing and Trade in Ethiopia

The pricing and marketing policy in the highly centralized Ethiopian seed system is another bottleneck in the development of an efficient seed industry. The government sets the price for most actors in the seed market, and private seed producers such as the Pioneer Hi-bred Seed Company receive a negligibly higher price. The government sets wholesale prices for different certified hybrid seeds and then uses the cost-plus approach, after consultations with various private seed companies, to determine retail prices, allowing a fixed amount for profit margins after discounting for transport and handling costs. Therefore, the pricing mechanism that sets prices below market-clearing levels in the country does not allow the private sector to produce enough quantity to generate a reasonable level of profit, which discourages private sector participation and undercuts any incentives for other private firms to enter the market (Mbata 2012). The consequences of such price controls and ceilings that fix prices below market equilibrium are entirely predictable: shortages in supply, disincentives for private investors to enter the market, encouragement of rent seeking and development of black markets (Rashid *et al* 2009; Worku *et al,* 2011 and Spielman *et al*, op. cit).

Due to government interventionist policy in seed marketing and pricing, empirical evidence has shown that even the hybrid maize business, which most seed companies find to be profitable in neighboring countries like Kenya, is not viable and profitable in Ethiopia. For the hybrid seed business to be profitable, the seed-to-grain price ratio should be around 5:1, and 2:1 for basic grains such as wheat and barley. In Ethiopia, the average seed-to-grain price ratio, for hybrid maize

8 International standards for seed are set by ISTA, the International Seed Testing Association, and UPOV, International Union for the Protection of New Varieties of Plants.

using the most recent data, translates to a seed-to-grain price ratio of about 7:1, which confirms that the current production of hybrid seed does not encourage private sector participation.

As a result of these constraints, seed imports in Ethiopia are also very low, averaging a mere 1% in the past five years (2010-2014). Lack of foreign exchange was also identified as a major problem affecting seed imports. The government policy of allocating and rationing foreign exchange gives sectors such as seed very low priority, which further dents the seed trade.

The creation of an enabling business environment, appropriate policies and regulatory frameworks, and the implementation of regional seed policies consistent with OECD and International Seed Testing Association (ISTA) standards and requirements would allow multi-national seed companies to enter the hybrid seed industry and compete with local public seed companies. This would help break the near-monopoly that public seed companies currently enjoy: more than 80 percent of the market share of total hybrid seed produced in Ethiopia. This would in turn force the public seed industry to design breeding programs for better-performing hybrids to enhance the productivity of maize and other grains.

In the last year, the Agricultural Transformation Agency (ATA)—with AGRA's support—has started experimenting with direct marketing of seeds in collaboration with private seed producers in selected regions. Preliminary results indicate this model could provide useful information for scaling up and creating a market-based seed system that allows demand and supply to regulate the market at prices that guarantee efficient production and use of certified seed.

Suggested Areas of Reforms in the Seed Sub-sector

A national network and procedures to demonstrate and popularize new varieties will create demand and help tap the potential of recently released varieties. Demand estimation should be aligned to the different planting seasons, and the system should produce different types of seeds to ensure choice as well as reserve stocks. The demand estimation technique that considers factors influencing seed demand should be improved, and quality assurance mechanisms should be rehabilitated, both internally with seed suppliers and externally through seed certification services. Having the seed certification system in the hands of the same institution that produces and distributes the seed is an apparent conflict of interest and creates an urgent need to establish an independent, efficient regulatory institution for the seed industry.

Capacity building is needed at all levels, including Ministry of Agriculture staff, Ethiopian seed enterprises, seed growers and other stakeholders, as well as training in better seed demand assessment and forecasting techniques—plus facilities such as transport and equipment like computers for *woreda* experts and development agents. Only the development of a real seed market will give an accurate idea of the demand for different kinds of seed.

Fertilizer Sub-Sector

The actual intensity of fertilizer use on arable and permanent cropland is currently estimated at 17 kg per ha of nutrients or active ingredients, which converts to about 29 kg per ha of commercial product. On land actively being used for grain production, however, the intensity of fertilizer use increases to 21 kg per ha, which is about 37 kg per ha of commercial products. Though fertilizer imports are rising, fertilizer use in Ethiopia does not meet these standards; it has increased only marginally in recent years and remained flat for much of 2005 to 2010. Field study results indicate that, in aggregate, fertilizer use rose by just 16.1 percent, from 31 kg of commercial product in 1995 to 36 kg per ha in 2008. One reason may have been that the rise in imports was mostly absorbed by a disproportionate increase in the area cultivated – this in 27

addition to the fertilizers often arriving well after the part of the season when their application would have been more effective (Spielman *et al,* 2011). Ethiopia's current fertilizer use is inadequate to meet the productivity increases outlined by the GOE in the policy framework of the Agricultural Development Led-Industrialization (ADLI) strategy and the Growth Transformation Plan (GTP).

Studies by IFPRI estimate that Ethiopia must essentially double its current consumption to 1.2 million metric tons (mt) of fertilizer products to meet GTP targets. This means removing bottlenecks currently limiting consumption, such as procurement arrangements, macro- and micro-economic environment, infrastructure and logistics, research and extension services, agro-dealer capacity, training of farmers and financing issues.

Figure 1: Fertilizer use intensity, 2005-2010

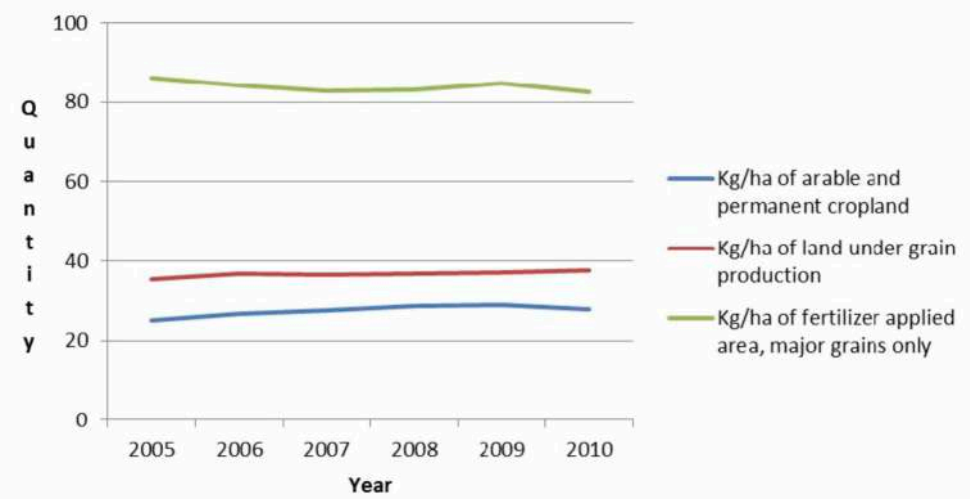
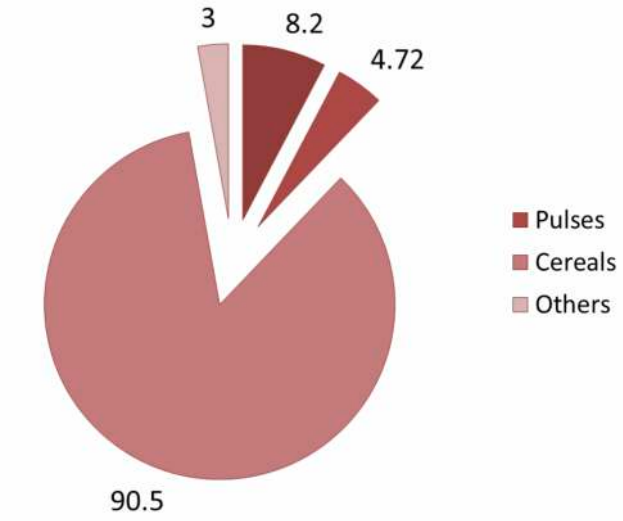


Figure 2: Fertilizer application according to crop type

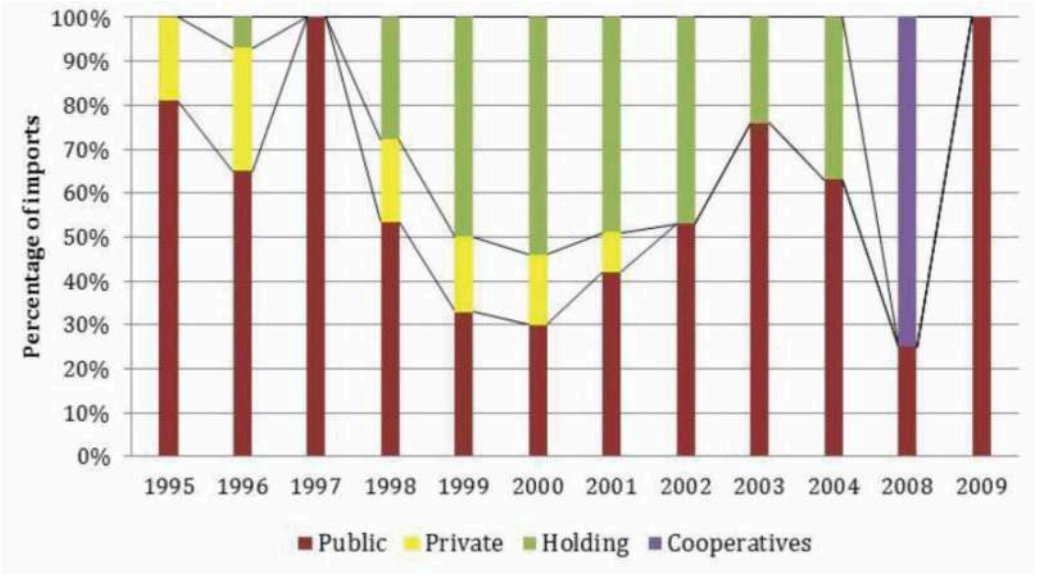


Fertilizer Procurement and Supply in Ethiopia

Fertilizer procurement and marketing in Ethiopia has been controversial for some time now and has been identified as a major factor constraining smallholders' fertilizer usage. Government's frequent interventions and sometimes complete dominance have greatly concerned donors and stakeholders in the fertilizer industry. Progress was made in the early 1990s, when the government seemingly liberalized fertilizer import and distribution and adopted free-market principles. The Agricultural Input Supply Corporation (AISCO), now the Agricultural Input Supply Enterprise (AISE), a government parastatal, lost the monopoly of fertilizer trade in the country and all fertilizer subsidies were removed. The private sector responded rapidly to these reforms: By 1996, several private firms were reported to be importing fertilizer, and 67 private wholesalers and 2,300 retailers had entered the market and assumed a significant share of the domestic fertilizer market (Spielman et al, 2011; Matsumbo and Yamano, 2010).

However, shortly after liberalization, studies revealed that because of trading policies that were heavily biased in favor of government-affiliated companies and parastatals, private fertilizer firms could no longer compete and quickly exited the market. Available data suggest that market share of private firms engaged in fertilizer import declined rapidly, from 33 percent in 1995 to 0 in 2009 (Spielman et al; op. cit.). Similarly, public sector's share of distribution soared to over 70 percent, while that of private dealers was drastically reduced to only 7 percent of sales nationwide in the same period (Rashid et al., 2012).

Figure 3: Share of fertilizer imports by type of market player, 1995-2009



Source: Adapted from Rashid et al. (2012).

Unfortunately, the AISE is once more in complete control of the fertilizer market and the sole importer and distributor of fertilizer in Ethiopia. Although the GoE claims there are no subsidies in the procurement and distribution of fertilizer, there are hidden subsidies in form of lower interest rates on finance provided to AISE to import fertilizer, costs of personnel, logistics costs, and investment in infrastructure required to import fertilizer. It would be interesting for AGRA and other development agencies to quantify these subsidies to clearly understand the economic and financial cost of the government system of fertilizer procurement and distribution.

Private Sector Participation in the Fertilizer Industry

AISE, in collaboration with the cooperative unions and the regional governments, has a monopoly on importing fertilizer and is supported by a government-guaranteed credit scheme and loans from commercial banks. Reasons abound for the apparent exclusion of the private sector, including difficulties private firms face in obtaining the required import licenses from the GoE. Import licenses are usually allocated through a tender process and require that fertilizers be imported in lots of 25,000 metric tons—which costs between US$5-10 million. Given that the GoE would require private importers to deposit 100 percent of the value of fertilizer to be imported when the line of credit is opened and for an import license to be issued, it's no surprise there was no local private importer of fertilizer in Ethiopia during this survey.

Ethiopia's main channel to distribute and market fertilizers is through cooperative societies and regional governments—no private agro-dealers, despite their proven role in increasing smallholder usage of fertilizers. Studies in countries such as Kenya with significant increases in fertilizer consumption show a good network of agro-dealers is a prerequisite for increasing fertilizer usage among smallholders. Ethiopia should consider this model to leverage fertilizer consumption; AGRA could partner with ATA and other development agencies to build a network of agro-dealers to reach remote areas where most smallholders produce staple foods.

Types and Usage of Fertilizer in Ethiopia

The two main types of fertilizers used by the farmers are urea and diammonium phosphate (DAP). This lack of diversity reflects a lack of comprehensive soil mapping and testing in the country. Some experts believe the limited response to fertilizer application may indicate the right fertilizers are not being applied in the correct amount or to specific soil types. Thus, assistance would be needed for the Ministry of Agriculture and the Ethiopian Institute for Agricultural Research to undertake a complete soil analysis of the country. This will help in mapping recommendations for fertilizer application to specific soils based on the nutrient requirements for various soil characteristics and profiles in each locality.

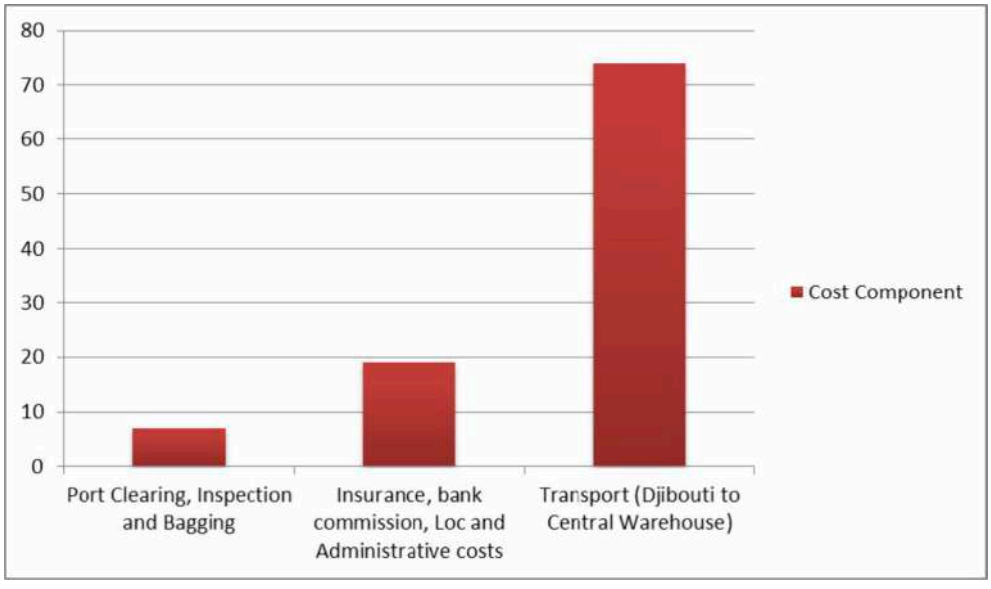
Fertilizer Transport Cost

Stakeholders pointed out the disproportionate cost of transport in the overall cost of fertilizer to smallholders. Empirical findings from two studies further illustrate how the distribution system adopted by AISE is contributing to the high price of fertilizer in the country. IFDC (2012) analyzed the fertilizer supply cost structure and the relative contribution of various cost

components to the farmgate price for DAP in the country. Assuming that world prices cannot be influenced by an individual importer, we focus on additional inland costs with possible savings by implementing appropriate policies reforms and by making the transport system more competitive In 2012, the average AISE contract cost and freight (CFR) Djibouti price for DAP was US$725.50. The cost of DAP delivered at AISE Nazareth warehouse was US$787 compared with US $878 at cooperative warehouses. These costs were based on the CFR Djibouti price plus inland transportation from the port, unloading at the central warehouse, insurance, financing costs (bank interest rates and Letters of Credit (LoC) bank commissions), warehousing, overhead and operational/administrative costs. The proportional breakdown of costs from Djibouti to the AISE warehouse are given in Figure 4. Inland transportation is a major operational consideration in the importation of fertilizer. The additional cost from Djibouti Port to a cooperative warehouse is $152.5 for DAP or 21 percent of the AISE CFR Djibouti import price. These figures show that inland transportation takes up to 74 percent, followed by insurance, bank commissions and administration costs at 19 percent and clearing cost, inspections, re-bagging and spillage losses at 7 percent of total inland cost up to the AISE warehouse.

Furthermore, long-haul freight (from port to warehouses) does not include backhaul cargo, which would help defray costs. Usually trucks offload their cargo at the nearest AISE warehouse at Nazareth to make more trips and avoid demurrage charges resulting from ship port delays. Once the ships are emptied, trucks then move fertilizer from Nazareth to other warehouses further up-country, such as Bahir Dar and Mekele. This practice adds extra costs due to unloading/reloading, product losses and warehouse management. IFDC also reported that this practice of loading and reloading contributes to fertilizer delivery delays to the main production regions, which is largely why farmers apply fertilizer late in the season. A second study (Mbata 2012) also identified the cost components of farmgate prices in relation to the CIF price of fertilizer in Addis Ababa, the first point of entry from Djibouti Port. Data from field surveys in Ethiopia in 2012 revealed that the CIF price is about 80 percent of the farmgate price, which implies handling and transaction costs make up 20 percent of the total cost to the farmer.

Figure 4: Proportions of costs from Djibouti to the AISE warehouse at Nazareth



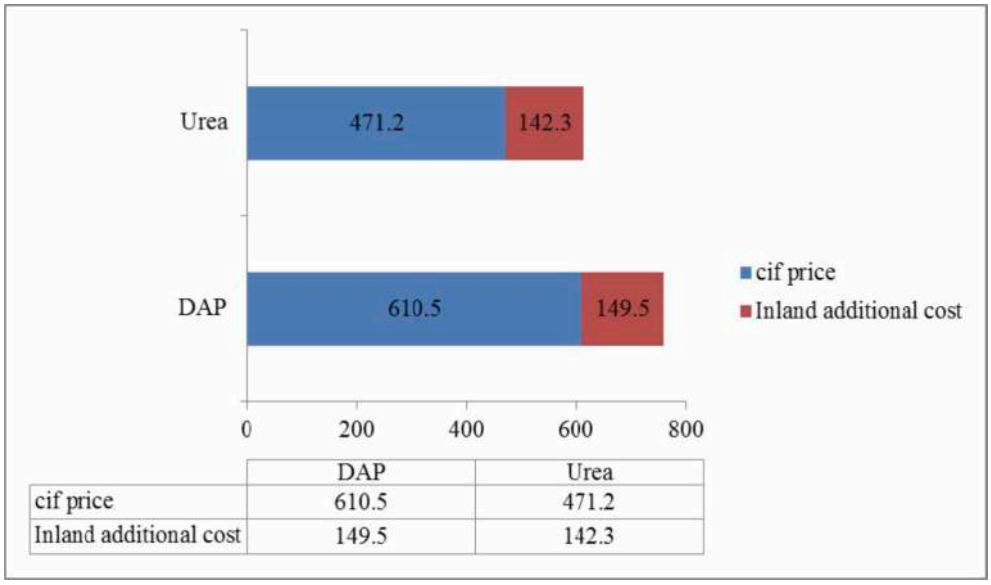
The examples above reveal the extent to which transport contributes to the high cost of fertilizers and indeed affects the transportation and distribution of overall agricultural inputs and outputs. Stakeholders complained about unfair competition from government-affiliated transport firms favored in securing contracts for hauling "strategic" inputs and commodities on behalf of the government, thus locking out private transport firms.

Government interventions in setting transport prices and in the transport industry also contribute to the high cost of both input and output marketing. Although transport prices are to a large extent determined by the market, there are some strategic commodities such as fertilizer, wheat (food grain), and coffee for which the government through the Ethiopian Transport Authority sometimes intervenes in setting transport prices. In this case, the Ethiopian Transport Authority (ETA) sets the transport prices by estimating the break-even point using the cost plus approach and then adds about 15-20 percent profit margin for the transporters. That is, the government sets the price when it seems that the high transport costs for these inputs could be transmitted to

the cost of production of these commodities to the extent where it could adversely affect supply and possibly make the country less competitive in the international export market.

In addition, tariffs and taxes on imported trucks include custom duties, excise tax, transaction taxes, surtaxes, VAT and in some cases withholding taxes. These taxes could add up to more than 70 percent of the CIF price of the imported trucks and parts, depending on the model. As a result, many freighters in Ethiopia are in poor condition, which contributes to high transportation costs. Most truckers interviewed complained that the business is not profitable given limited imported goods due to devaluation of local currency. In addition, truckers criticized unfair competition from government-owned transport enterprises, which tend to win most government bids and tenders for hauling goods and inputs. Thus, privately owned trucks tend to be underutilized.

Figure 5: Ethiopia fertilizer cost component 2011 (US dollars)



	DAP	Urea
cif price	610.5	471.2
Inland additional cost	149.5	142.3

Source: Mbata, J N (2012) Agribusiness Indicators Project in Ethiopia.

Agricultural Mechanization

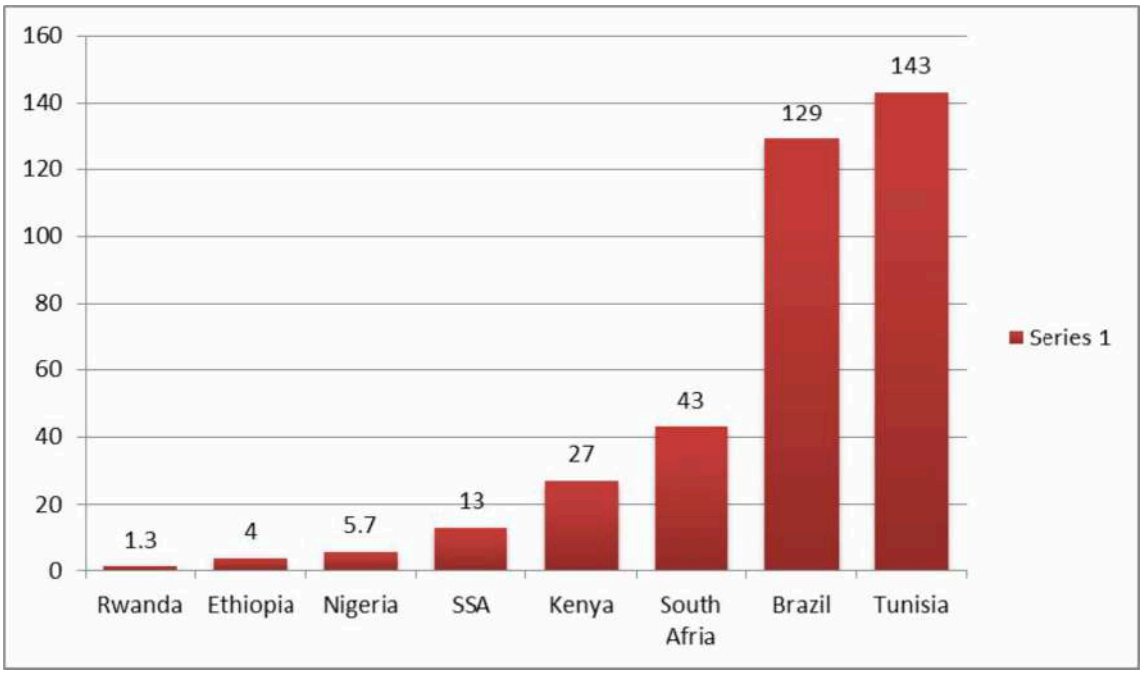
The full benefits of improved crop husbandry and modern inputs such as improved seed, fertilizer, and pesticides can only be realized with the use of improved tools and machines. Mechanization frees farm labor for more productive purposes. Mechanization also enhances agricultural productivity and profitability necessary for private sector investment.

Indeed, FAO (2008) has noted that agricultural mechanization can achieve the following:

- increase power inputs to farming activities, hence putting more land into production;
- reduce drudgery in farming activities, thereby enhancing lifestyles;
- improve the timeliness and efficiency of farm operations;
- accomplish tasks difficult to perform without mechanical aids;
- improve the quality and value of work, produce and processed products;
- provide employment (entrepreneurship) and sustainable rural livelihoods; and
- provide agriculture-led industrialization and markets for rural economic growth.

Smallholder farmers in Ethiopia, as in most other Sub-Saharan African countries, rely mainly on animal traction and human power, using simple implements like hoes and other hand tools. Yet a person alone produces only about 0.01 horsepower of continuous output (FAO, 2010), and studies have shown with simple hand tools, a farmer can only prepare about 0.5 ha for planting per season. For farmers to earn a living from agriculture, they must mechanize. In Ethiopia, the number of tractors per 100 square km of arable land was about 4.0 and 4.7 with and without pedestrian tractors, respectively. This number is far below North Africa and South America and indeed below the tractor density of sub-Saharan Africa as a whole.

Figure 6: Tractor density in Ethiopia, SSA and around world.



This survey and interviews with major stakeholders show policy gaps and the need for reforms if the GoE intends to significantly leverage agricultural mechanization in the country. Ethiopia has no operational mechanization strategy that sets out clear policies and a coherent path. Studies show that countries successful in mechanization have made concrete efforts guided by a comprehensive strategy detailing the type and amount of machinery and model for implementation. China's comprehensive mechanization strategy caters to different types and sizes of farmers rather than using "a one size fits all" approach. In countries like Ethiopia with a predominance of smallholders, well-articulated national and regional plans have proved more cost-effective. Such a model would bring about the critical mass needed to make more viable contractual services for machinery, rather than individual ownership, which promotes entrepreneurship based on competition and profitability.

Like most investment goods, tractor imports into Ethiopia are exempted from taxes and other excise duties as long as they are cleared and bought by customers within six months with tax exemption certificates, thanks to a bonded warehouse arrangement between the GoE and Djibouti Port. After six months, the tax-free privileges expire, and prospective buyers must pay the taxes. Where applicable, taxes on tractors are 10 percent and 15 percent for import duties and VAT respectively; the effective tax on imported trucks is 25 percent of the CIF price. Similarly, imports of spare parts for tractors are tax-free, provided they are imported at the same time as the tractors. However, spare parts imported separately attract an import duty of between 10 and 25 percent as well as 15 percent VAT.

Several policy gaps came to light during consultations with stakeholders on implementation of the tax-free policy on tractor and agricultural machinery imports. First, the time of importation of tractors does not synchronize with the time for loan disbursement. As expected, many businesses wait for government budget and associated policies before making businesses decisions such as what goods and services to import and, for lenders, what interest rates to charge. The government financial year runs from July 8 to July 7 of the following year, just before the long rains. The machinery thus arrives when the planting season is over, and the tractors remain in the bonded warehouse at the port for periods of over six months. To avoid demurrage, importers are forced to bring them to Addis Ababa, implying that buyers must pay duty on those tractors—taxes which are invariably are passed on to consumers of mechanization services. Most stakeholders contend that the government's approval of the national budget and subsequent release of funds should happen early in the year to allow farmers to initiate and complete the complex procedure of loan acquisition and purchase of tractors.

Secondly, most farmers are first-time buyers of agricultural machinery and therefore lack the technical knowledge about its use and maintenance. Some dealers unfortunately take advantage of this situation and do not provide after-sale service or adequate information for owners to effectively manage and

maintain the tractors. This has led to high loan default with much machinery underused and out of commission. This situation underscores the need for a comprehensive mechanization policy to specify regulations and procedures for selling and leasing heavy-duty agricultural equipment to individuals, cooperatives and farmer associations.

Two obvious policy reforms are needed to leverage agricultural mechanization, particularly in the short run. Engaging the government to streamline implementation of the tax-free policy would give importers greater flexibility in the procurement and distribution of newly imported agricultural machinery. This could mean extending the grace period to enable farmers to have adequate time to process the tax-free facility or removing the regulations of the bonded warehouse system altogether to help farmers acquire agricultural machinery tax-free.

Land Policy and Land Use System in Ethiopia

A confounding agricultural issue in Ethiopia is insecurity of tenure. The absence of any contractual or lease agreement with the government and speculation that the next round of land redistribution is imminent means minimal incentive to invest in land improvement. Tenure insecurity, coupled with the subsistence nature of farming, discourages long-term investment and accelerates land degradation through soil mining and nutrient loss (Alemu, 2005).

In addition, the small size of holdings and the subsistence nature of agriculture limit the flow of goods from rural areas to the cities and increasingly, the flow of goods from urban areas to rural areas. Thus smallholding also limits input usage. Studies have shown that a unit change in size of farm increases the chances of using chemical fertilizer by over two and half times, other factors remaining constant (Negatu, 2005). Larger farms benefit from economies of scale in using chemical fertilizer as they can better afford to purchase it. Small farms are generally cash-poor, have limited access to extension services and credit, have fewer mechanisms to offset risks of rain failure and crop production shortfall, and are less likely to use profitable technologies given higher transaction costs of acquisition and application of fertilizer per unit of operated land (Negatu, 2005).

Insecure land rights, land valuation and land transfer leads to exploitation and conflicts that affect both the national interest as well as individual interest and benefits at macro levels. Proper land policies and governance would help to:

- motivate productivity-enhancing investments and good stewardship of natural resources
- reduce the risk of land loss and the need for individuals to spend resources on protecting their rights
- provide a basis for low-cost functioning of land and financial markets

Some efforts have been made to address these land access and use constraints. The Ethiopian government has in recent years issued certificates of land use rights to smallholder farmers. In addition, some regional governments (like Tigray and Oromia) have enacted land administration laws that limit the possibilities of land distribution/redistribution of land to only certain specified land categories (Alemu, op.cit).

However, despite limited progress, several impediments still remain. Some amendments and draft proclamations contain clauses that could reduce land use rights of peasants and smallholders: For example, land use rights could be dispossessed if holders are deceased and have no heirs, have gone for resettlement or left the locality on their own accord, and stayed elsewhere over a long period. One draft proclamation also states that upon the wish and resolution of peasants and where land redistribution is the only alternative, land will be redistributed, taking into consideration the minimum desired size of holding.

The legal frameworks thus send mixed signal about land transactions. On one hand, proclamations and regulations that are not well articulated into policies tend to encourage farmers to rent out their holdings or use rights. On the other hand, smallholder farmers do not have adequate freedom, market information or tools to practice legal land transactions. Unfortunately, no federal or regional proclamation talks about collateral of land use rights for farmers. These and other limitations have drawn criticism about inconsistent legislative frameworks and unfair provision of use rights.

Despite policy constraints, land rental markets remain important in Ethiopia. Taking fixed rental and sharecropping together, 22% and 23% of households in Tigray and Amhara regions, respectively, cultivate someone else's land obtained through land rental markets. Such markets help land transfer from older, resource-poor farmers to young, healthier and/ or relatively resource-rich farmers. A key challenge is to find mechanisms for land transfer to allow some consolidation of land, while offsetting the dangers of rapid growth in landlessness through dispossession or unproductive accumulation of land. Many critics suggest that smallholder open-ended use rights should

be changed into a fixed, renewable, long-term lease agreement per the Chinese or Vietnamese model.

The basic problem—and the main underlying factor of land problems in Ethiopia—center on lack of a clear-cut land policy that uses the market approach to value land and to act a signal for land acquisition and usage in Ethiopia. Good land policy and governance in Ethiopia must take into consideration the following factors:

First, it must recognize location as an important variable in valuing and allocating land for production. Locations closer to markets and infrastructure tend to change the value of land and pricing. Market valuation could attach the right price to such valuable pieces of land so that entrepreneurs who put that piece to the best use get the land, enhancing productivity and income. Farm type matters: A large-scale foreign company could acquire land properly. A smallholder member of the landholding family could sell an unneeded piece to other smallholders or large-scale commercial farmers if there were clear pricing mechanisms for sale and purchase of land.

Unfortunately, the absence of good pricing curbs investments in land, increases the potential for conflict, and diverts resources to the defense of property claims that could be more productively deployed elsewhere. This area must receive immediate attention in the new land policy now being formulated by the government.

Agricultural Trade Polices and Export Quotas-The Case of Maize

Empirical findings show that countries that tax the agricultural sector, directly or indirectly, stall both their structural change and their economic growth. Discriminating against agriculture is both detrimental to economic growth and the transformation of the sector (Dennis and Iscan, 2011). This important factor may influence the success of the agricultural transformation agenda of Ethiopia if both explicit and implicit taxes result in negative nominal rates of protection for most agricultural commodities, including maize.

In 2009, faced with high food price inflation, the Ethiopian government banned the export of maize and sorghum. However, recently, the Ethiopian government decided to stop imposing export quotas on commercial farm outputs and processed goods. This commitment has been made in the context of the New Alliance for Food Security and Nutrition established by G8 countries to promote private-sector investment in African agriculture. Consistent with the new commitment, the Ethiopian government also lifted the ban on raw cotton exports. The Ethiopian Ministry of Agriculture announced that it would "tentatively implement" the new policy commitments before the end of September 2012. However, interviews with stakeholders suggest this policy reform is still to take off and will be implemented in the current cropping season (Addis Ababa Fortune, 2012).

The maize export ban is an example of how the policy can be distortionary and can indeed discourage farmers, particularly smallholders, from taking advantage of high prices and increasing production and farm income.

Government interventions in the maize market have been a major GoE policy to presumably stabilize the maize market. The government currently plans to lift the export ban (perhaps temporarily) because of the expected bumper harvest in maize in the 2013-14 cropping season. Despite its ineffectiveness, in that many exports are through the Kenya border, the GOE has continued to apply this ban for a long time. Maize exports are only profitable when domestic prices are unusually low, such as during the harvest season of a high-production year. Empirical studies suggest that the policy of imposing the export ban when domestic prices are high and rising has very little effect on trade flows, because maize exports are not profitable in that kind of scenario. Thus, in Ethiopia where the domestic price of maize is often higher than the international price in maize, the effective ban on exports is distortionary.

If the upcoming maize harvest is expected to be above average, it makes sense to remove the maize export ban. The opportunity to export maize legally could set a floor on the domestic price of maize equal to the export parity price, which would prevent farmers from being discouraged by low prices that characterize periods of glut. Consumers would pay a higher price for maize than they would pay with the ban still in place, but they would probably not pay more than they did in any other year, since in most cases the domestic price is higher that the international price. In other words, maize exports may offset the effect of a bumper harvest as they would increase demand for Ethiopian maize from outside, shifting demand curve to the right and raising the domestic price as well. Trading in the international market that would invariably involve the private sector is a better option to stabilize the market than GoE's export ban.

The main policy recommendation from this analysis is complete liberalization of the maize market to allow private traders to enter and participate in cross-border trade. Traders' incentives are aligned with those of the government: They will only make a profit if they buy Ethiopian maize when the price is low and ship it to Kenya or South Sudan for resale. They have no incentive to buy maize when Ethiopian supplies are short and prices are high. This meets the government's interest in stabilizing maize prices and preventing price collapses caused by gluts as has occurred in the past. It would also

restore and maintain the confidence of maize producers, particularly smallholders, and would allay fears of any glut and fall in the price of maize both in the short and the long runs.

In the short run, the best way to help farmers and traders cope with the risk of bans is to put in place policies that can "predict" bans ahead of planting seasons based on anticipated crop yields, input usage and other verifiable variables. This means the government would dialogue with main stakeholders before such bans are actually implemented. Unfortunately, trade bans are poorly communicated, meaning that traders and even border officials do not know what the real situation is, so it would be necessary to improve communication of when bans are put in place and when they are lifted. Making bans more predictable may be difficult to achieve, but it could benefit all to define verifiable conditions under which the government could exercise discretion to implement a trade ban.

Price stabilization policies would directly improve the market for hybrid maize, certified and improved maize seed, because these policies would also spur seed producers to maintain supply and produce sufficient maize seed. Policies that affect grain have also been shown to directly affect seed—an important factor that many policy analysts overlook (Van Mele and Guéi, 2011).

Overall Macroeconomic Policy and Implications for Agricultural Credit

One of the most controversial policies affecting the agricultural sector is the directive by the National Bank of Ethiopia (NBE) that compels commercial banks to purchase a 3 percent interest-bearing bill equivalent to 27 percent of their monthly gross disbursement to the businesses. A year after this regulation was introduced; it has managed to "siphon" some 11.6 billon birr from the banking system, causing a severe liquidity crunch. Stakeholders largely agree that the policy is inimical to economic growth, "pushing the private banks in Ethiopia to the edge of the cliff" as the total outstanding payment to purchase the bill reaches 12 billion, an amount that would have been otherwise available for investment in the economy, including the agricultural sector. As more of the five-year maturity bills accumulate at the National Bank, potential loanable money will be locked away for a long time.

As expected, however, the policy directive forcing banks to purchase bonds at 2 percent interest loss (5 percent for deposit and 3 percent earned on the bill), the cost of borrowing has also climbed by 2 to 3 percent in the private banks, reflecting the hidden cost of the directive. Findings show that interest charged on loans rose from 8-9 percent to 11-12 percent in some banks during the past year (Andualem 2013). In addition, the directive has also spurred banks to shift their portfolios to foreign reserve assets instead of loans and deposits, as reflected in the shift of their major earnings from interest income to fees and commissions.

Moreover, other plausible options exist (Andualem 2013), such those pursued by China and India, which have adopted a system that approximates the NBE-bill directive but are more pragmatic in making loans available to the core sectors of the economy. In India, the central bank requires that banks meet a minimum target percentage of total loan disbursements towards priority sectors. If banks do not meet this proportion, they must deposit the difference between required and actual disbursements into a pool of funds to eventually be loaned to the priority areas.

The NBE directive requiring banks to purchase government debt at a low interest rate limits money in circulation, while NBE uses the "mopped up" funds to finance the huge capital investments of the government. As a result, agricultural sector loans from the commercial banks remain at a low level as loanable funds have become more scarce and hence costly for smallholder farmers with limited assets and collateral.

Concluding Remarks

The Ethiopian government has made agriculture its primary priority in the current export-led development plan, anchored in its Agricultural Development Led-Industrialization (ADLI) strategy, which promotes economic growth in Ethiopia while coordinating agricultural and industrial development. The economic liberalization process has boosted economic growth in line with the Government's strong commitment to create a supportive environment for the development of the private sector.

Ethiopia's economic development is rooted in the agricultural sector, so impediments to increasing productivity should be eliminated. Unfortunately, several constraints still exist. With little suitable land available for expansion of crop cultivation, especially in the highlands, cereal growth would need to come increasingly from productivity improvements. Actual yields still remain well below potential for most crops.

Use of improved inputs is low, suggesting substantial scope for raising productivity through higher adoption of improved seeds and chemical fertilizer. In terms of improved seed usage, Ethiopia ranks very low among its neighbors in COMESA. Here is why: first, government dominance in production of pre-basic and basic seeds

greatly limits private sector participation, leading to a shortage of basic and pre-basic seeds needed to produce certified seeds. Lines produced by government research institutes and parastatals are not available for use by the private sector, which is also hampered by poor compliance and enforcement of UPOV regulations and laws that protect breeders' rights and encourage private sector importation of new plant varieties. Lack of clear procedures and strict rationales and allocation of foreign exchange continue to curb import of various types of seed to supplement domestic production.

These problems are compounded by the inability of the government to correctly estimate quantities of improved seed that would be demanded and hence supplied in a particular year. The current *ad hoc* process simply aggregates quantities estimated from regional government offices and cooperatives but does not factor in changes in prices of grains and seed and farmers' responses to changes in weather, consumer tastes, and other variables. This partly explains why areas using improved seeds are consistently in single digits while seed producers have high carryover

Most private seed companies act as contractors to the Ethiopian Seed Enterprise (ESE), underscoring the lack of competition needed to leverage development of the seed sub-sector. The GoE's cost-plus approach does not allow private seed companies to pursue investment options to stimulate industry development due to the fact that they do not have a free hand in pricing their products, which is necessary for both profitable operations and generating investible surpluses. However, the ATA, in collaboration with AGRA and with government permission, is experimenting with private seed companies in selected *woredas* and regions to devise a marketing system that allows free pricing by each actor.

The results appear encouraging, but the scope is limited, and there is no guarantee that the process would expand to other regions. AGRA would need to liaise with ATA to organize a stakeholders' forum and intensive advocacy to ensure the sustainability and scaling up of this particular initiative. The development of the seed sector hinges largely on the emergence of a marketing and pricing policy free from government intervention. Policy reforms in this area would go a long way to encourage competition and make the seed firms more responsive to the needs of the smallholder farmer in terms of price and supplies. They would also take into consideration farmers' preferences in diverse ecological zones of the country.

Major policy gaps also exist in the procurement and transportation of fertilizer inputs. The single firm charged with the responsibility for the procurement and distribution of the fertilizer is the Agricultural Inputs Supply Enterprise (AISE). Similar to seed, fertilizers are mainly distributed through cooperatives and to the regional MoA headquarters with no use of private agro-dealers or other private firms. Estimates tend to show marginal increases, but this has largely not translated to higher productivity.

Late arrival of the fertilizer due to the administrative bureaucracy involved in procurement and transportation continues to limit the full benefits of this input. High prices of fertilizer could be significantly lowered if a more efficient transport and distribution system were put in place. The absence of private sector importers has also been blamed for the limited variety of fertilizers imported into the country. Currently, only two main types of fertilizers are used, DAP and urea. Soil testing is infrequent and blanket recommendations are common despite the fact that Ethiopia has many different soil types in diverse agro-ecological zones. In collaboration with other development agencies, AGRA should help the Ethiopia Institute of Agricultural Research and others to acquire simple soil testing kits.

The obvious policy shortcoming in the fertilizer industry is that the private sector has been largely excluded. Lack of agro-dealers at the regional and *woreda* levels implies that farmers would have to travel unduly long distances to source fertilizers. Any policy change that liberalizes the market, encourages soil testing and promotes the development of agro-dealers would engender optimal use of this important input and enhance agricultural productivity per ADLI's objectives. The argument for government's continuous dominance of the fertilizer industry is that fertilizer costs rose, reducing fertilizer use. Yet imports have been increasing over the years, even as intensity of fertilizer use has stagnated (as shown in Figure 1, page 10). Complete liberalization of the fertilizer industry is needed. In neighboring Kenya, liberalization significantly increased the application rates among smallholder farmers, showing how the private sector—through a developing network of agro-dealers—can expand fertilizer usage.

As noted, the full benefits of fertilizer and improved seed usage cannot be realized without the timely use of both these inputs. Agricultural mechanization significantly improves the timely application and use of seed and fertilizer. It also, significantly increases land area under cultivation, thus increasing total output. Yet agricultural mechanization, going by the number of tractors in Ethiopia, is low. Although the industry is clearly dominated by the private sector, the government lacks a coherent strategy for mechanization and the enabling policy environment constitutes a major handicap. Growth in agricultural real incomes will require more diversification, intensification and higher efficiency that must

incorporate tractors and tractor- drawn implements to complement the use of fertilizer and improved seed. The current policy on mechanization would not accomplish this feat. The bonded warehouse system that restricts duty-free facility to the first six months within which imported agricultural machinery must be sold seems not to be working. This policy should be revisited and amended. Furthermore, the way tariffs and duties are applied to agricultural machinery spare parts should be overhauled since the full benefits of these investments can only be realized if they can effectively deliver optimum horsepower over a reasonable life span. In effect, lack of spare parts—which attract a 25% tariff if not imported with machinery—reduces the life span of agricultural machinery.

Most analysts believe land policy reforms need urgent attention if Ethiopia is to deliver on ADLI's lofty ambitions. Some progress has been made in land allocation through the establishment of the Agriculture Investment and Land Administration Agency to coordinate issues and the necessary support for prospective investors. The agency has succeeded in making about 3.6 million hectares of arable land available—though only about 60 percent of this land is in use. User rights are still limited, although the constitution has a wide spectrum of land use rights. If federal and regional land laws accommodate use rights and craft suitable and workable legal instruments, they could promote a wide range of land use.

The practice of land renting seems to be expanding as many farmers would like to access credit for agricultural inputs and non-agricultural activities using their land as collateral. The growing use of land as collateral and the acceptance of such collateral by credit institutions is a good signal for a move towards more land transactions. However, legal instruments remaining in place do not represent accurately the situation on the ground, and continue to militate against the greater use of rented land as collateral in obtaining finance. Rural landholders have already demonstrated the need for improved land transactions. Unlike many other countries, Ethiopia's rural landholders cannot enjoy freehold ownership, but they should be allowed to practice relaxed use rights. Credit institutions' growing interest in and practice of using land as collateral should signal the need for federal and regional governments to make changes in legal frameworks—as long as constitutional provisions on land tenure and property rights are not trespassed and land use right holders wish to practice relaxed use rights.

Overall, understanding is growing of the need to improve land use rights transactions in Ethiopia. Steps taken in Amhara Region to extend lease periods and remove restrictions on the size of landholdings to be leased will hopefully encourage other regions to follow similar practices. Considering factors driving towards land transactions, many hope to see changes in legal land sector instruments.

Although land ownership remains fragmented, the land lease would help to encourage consolidation of farms and to apply economically feasible technologies, including improved inputs. The current land use system, both for individual use or communal land systems, is largely inadequate. AGRA could join hands with the African Union Land Tenure Program and the UNECA Land Policy Initiate to help craft a land policy framework and participate in an advocacy group to lead the campaign for a comprehensive land policy reform throughout Africa, including Ethiopia.

The Ethiopian Investment Agency has put in place a number of incentives to leverage both private and domestic investment in the country, including exemption from import customs duties and other taxes on all investment capital goods like plants, machinery, equipment, goods and services. Spare parts worth up to 15% of the value of the imported investment capital goods are also exempted from duties, provided that the goods are not produced locally in comparable quantity and quality. Furthermore, Ethiopian products and services destined for export are exempted from the payment of any export tax.

Despite all these incentives, export bans on various agricultural commodities (and sometimes a complete export ban) are worrisome and a major disincentive that largely overrides the benefits of GoE incentives. Export quota policy as a means of domestic price stabilization for major commodities is not only largely unpopular, but has failed to stabilize prices. The case of maize has shown that policies are needed to stimulate domestic production and incentivize the smallholder to respond to increases in maize prices in international markets. AGRA can help the MOA empirically evaluate pros and cons and advocate for reforms to help smallholders increase their returns from maize and other staples.

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GHANA

Summary of Priority Policies and Regulations to Address

As a major recipient of donor funding, Ghana's policy and regulatory reform efforts have received significant attention over the past decade. Policy analyses have been produced by IFPRI's Ghana Strategy Support Program (GSSP), the World Bank's Development Policy Operations, the Monitoring African Food and Agricultural Policies (MAFAP), and numerous bilateral projects and programs. This initial constraints analysis for MIRA draws on that work, literature review, and interviews carried out by two analysts in March-April 2014.

As in many SSA countries, slower than hoped for agricultural sector growth and agribusiness investment are due to many factors other than policy and regulatory constraints. The capacity of public sector institutions to support agricultural sector and agribusiness system development is limited, as government agencies face infrastructural, management, organizational and human capacity shortfalls. Limited public sector budgets, particularly in light of recent public wage hikes, leave little for investment and operating funds. Nor is demand for improved policy analysis always evident, despite increasing reference to "evidence-based" policy-making. Some argue that demand for high-quality policy analysis has never been nurtured or stimulated in Ghana, as the supply of analytical work (coming from internal sources) is often considered weak and non-persuasive.

These caveats aside, MIRA's point of departure is that there is a set of policy and regulatory issues that can be addressed by the government in concert with private sector stakeholders over a 4-5 year time frame. This report raises many such issues, but we shall identify briefly what we view as priority constraints that can and should be addressed, which are in the manageable interest of the GoG. There are two lists of bullet points; the first one is for short-run, near-immediate actions that could be undertaken to relieve constraints to agribusiness investment. The second list is for policy, institutional and public investment issues that could be addressed over the medium to longer run.

Short-Run Policy and Regulatory Actions

1) Adopt and disseminate a national seed policy. A draft document exists but has not been approved; the consultant was unable to obtain a copy (even though it has been produced as an attractively bound document). This important policy needs to be discussed and approved and not delayed by long bureaucratic processes. The lag between the national seed law and seed regulations being formulated and released has been four years, unacceptably long. *Implication for agribusiness investment in smallholder value chains*: Lack of a clearly articulated seed policy by Government creates uncertainty for private seed companies and prospective investors, as Government has historically dominated seed breeding, foundation seed production, and testing and certification. The private sector needs clear signals as to Government's intentions to liberalize or privatize any of these functions.

2) Clarify whether private companies or individuals can enter seed testing, field inspection, or market inspection services. Develop training protocols and requirements for accreditation of private actors. *Implication for agribusiness investment in smallholder value chains*: This is an area ripe for private sector investment, but historically government-run agencies and research institutes have dominated. If private service providers were to emerge, government could ensure more thorough and timely inspection and testing of seed. This would ultimately benefit smallholders whose access to improved seed is limited.

3) Ratify and implement the ECOWAS "treaty" on intraregional trade in certified seed and permit expedited entry of varieties that have been approved and released in neighboring countries. Furthermore, insist that all non-regionally produced foundation and certified seed benefit from expedited trials (on station and in farmers' fields) and approval processes. *Implication for agribusiness investment in smallholder value chains*: Barring imports of improved seed from neighboring countries decreases competition in the seed trade in Ghana and ultimately hurts producers (who will have fewer varieties to choose from). In addition, Ghanaian seed producers' market opportunities are restricted by not having access to regional export markets.

4) Develop a harmonized, integrated registration and licensing system for input dealers and wholesalers to avoid time-consuming multiple registrations for seed, fertilizer, and

herbicides/pesticides each year. *Implication for agribusiness investment in smallholder value chains*: Agro-input dealers who handle multiple agro-inputs spend many weeks obtaining separate registrations, which detracts from their procuring and distributing inputs. More streamlined processes could lead to greater entry into input distribution and increase competition, lowering input acquisition costs for smallholders.

5) **Create a one-stop shop for domestic and foreign investors in agribusiness** who face numerous licensing and permitting requirements from regional, district and local level agencies, as there is no such "shop"[9] from which to get information up front. *Implication for agribusiness investment in smallholder value chains*: Potential agribusiness investors face high information gathering and transactions costs to obtain necessary government approvals. Their ability to plan is hindered, which may deter some investments in agriculture, which indirectly affects smallholders (who could potentially be outgrowers).

6) Reduce the time (and cost) of port procedures for shippers (exporters) and importers to comply with. *Implication for agribusiness investment in smallholder value chains*: Cumbersome and time-consuming procedures and inspections at ports, poorly coordinated across agencies, lead to higher cost operations and less timely input distribution and exportation of agricultural products.

7) Imports of tractors are not subject to duties, but **spare parts are charged duties** and associated fees of 27%. This policy inconsistency likely leads to suboptimal maintenance and repair of agricultural machinery. Duties and taxes on imports of spare parts should be zero, aligned with imports of tractors and other agricultural machinery. *Implication for agribusiness investment in smallholder value chains*: Taxes on imports of agricultural machinery spare parts dampen incentives to invest in tractor importation, servicing, and custom hire operations.

Longer Run Policy, Institutional, and Public Investment Actions to Support the Emergence of a Competitive Agribusiness System

1) Invest in upgrading public sector laboratories and promote the creation of private labs to improve the accuracy of laboratory testing results of soil samples, seed properties, fertilizer content and efficacy, and food safety parameters (moisture, filth, contaminants, mycotoxins, pesticide residues, etc.). *Implication for agribusiness investment in smallholder value chains*: The absence of accredited laboratories is a brake on the development of effective seed and fertilizer industries, as well as the emergence of scientific agriculture. It also increases laboratory testing costs if samples must be sent to foreign countries' labs. Inadequate testing facilities also have negative implications for food safety (and health) within Ghana, and the competitiveness of agricultural exports (of horticultural products, cashews, etc.) that must meet exacting international standards.

2) Provide significant funding to upgrade the institutional capacity of MoFA (PPRSD, CSD) for carrying out field inspections and laboratory analyses of seed, as well as sufficient resources to ensure efficient performance of these tasks and timely operation of the Varietal Release Committee and National Seed Council. *Implication for agribusiness investment in smallholder value chains*: This assumes that private sector investment in these functions will not come on stream immediately and that the public sector will need to continue to play an important regulatory role and provide quality assurance for seed. If the public sector cannot fulfill these functions, development of the seed industry is constrained.

3) The **mandate, desired role, and recent performance of the National Food Corporation (NAFCO) merit careful assessment**, given complaints of market disruptions and disincentives to the private grain trade. Consultations between the NAFCO and representatives of maize and soybean producers, traders and processors are strongly recommended. It would also be useful to carry out a rigorous assessment of the operations of NAFCO since its inception, building on an earlier IFPRI study.[10] *Implication for agribusiness investment in smallholder value chains*: NAFCO operations compete with private sector operations in the grain trade and discourage investment in grain storage and trade. NAFCO sets purchase prices that are often high support prices above market-clearing levels. As the parastatal typically does not obtain funding to begin buying grain until midway or later in the marketing season, it cannot defend the support prices earlier in the marketing season, which creates uncertainty among producers and in the grain market.

9 The optimal administrative level at which to place a one-stop shop could probably be at the regional level—high enough to cover national requirements but not too far removed from the local level and its regulations.
10 Insist, through MoFA and the Ministry of Finance, on full access to NAFCO accounts, warehouse logs, purchase, storage and sales data, and financial records. Examine the trading and storage activities, and costs and margins of a sample of licensed buying companies (LBCs). Carry out a mini-survey of farmer sellers of maize, rice and soybeans to LBCs as a cross-check and learn of their staple crop sales behavior in one or two recent years (comparing sales to NAFCO LBCs and other buyers).

4) Changes in rice import tariffs are intended to protect consumers but this sends mixed signals to rice producers and processors. Protection will help the local rice industry to become competitive over time, as long as tariffs are set at consistent levels (that decline over time) and smuggling of rice (across the Côte d'Ivoire border) is deterred. *Implication for agribusiness investment in smallholder value chains*: Rice producers are negatively affected by tariff cuts and smuggling, which lower demand for their crops and dampen domestic price incentives. Not only do high levels of rice imports reduce domestic incentives to grow rice, but rice processors end up with less supply and lower capacity utilization.

5) Phase out the fertilizer subsidy and re-allocate subsidies (on fertilizer and seed) to:

- Strengthen the Pesticide and Fertilizer Regulatory Division of MoFA.
- Increase soil testing in different agro-ecological and production zones. Encourage fertilizer blending to produce fertilizer mixes that are well-adapted to varied soil types, agro-ecological zones, and specific crop requirements.
- Strengthen the capacity of the public agricultural extension service to promote soil testing by farmers, smart fertilizer use (right formulations at right time in correct amounts), and better understanding of integrated soil fertility management (ISFM) principles.

Implication for agribusiness investment in smallholder value chains: The public sector can best perform certain important support functions during earlier stages of a country's agribusiness development. Typically these functions are not easily privatized for lower-value staple food crop value chains.

6) Work on access to agricultural land issues, particularly leaseholds granted to domestic and foreign investors. Document best practices, share the most workable and pragmatic contract templates, and track the experiences of such investors (and the communities from which they are leasing) with respect to land use and development over the past five years (and going forward). *Implication for agribusiness investment in smallholder value chains:* Difficult, uncertain and high transaction cost access to larger tracts of land through secure leases deters investments in commercial agriculture, which can indirectly benefit smallholders as outgrowers.

7) As a broad principle, the government needs to **implement policy commitments agreed within regional organizations**, particularly ECOWAS. These agreements cover intraregional trade in agricultural inputs, products and services. Especially noteworthy are bans, often unannounced, on exports of Ghanaian agricultural products, particularly maize, to neighboring countries. Furthermore, movement of goods across borders and along major trade corridors needs to be streamlined. Some of the delays are due to insistence by customs, MoFA and other officials, particularly at border crossings, that shipments be accompanied by documentation that is no longer required (certificates of origin) or that do not need to be issued a second time if provided by a trading partner (phytosanitary certificates). MIRA should assist the GoG to highlight the bottlenecks, shine a bright light on unnecessary or questionable procedures impeding trade, expose malfeasance (opportunistic behavior), and provide information, focused training and public awareness campaigns designed to facilitate intraregional trade. In light of recent wage hikes in public service, a policy of zero tolerance for corrupt practices that impede trade, border crossing, and movement of goods through ports is defensible. *Implication for agribusiness investment in smallholder value chains:* Most West African economies are small, with limited markets. Without access to other markets in the same region, a production surplus in one country can easily lead to gluts and price collapses, while a neighboring country may face a deficit. In addition, processors in deficit countries will have limited access to supplies of raw materials if they cannot source regionally. Full and open access to the regional market will stimulate agricultural production, processing of regionally available surpluses, and reduce imports from the rest of the world.

Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Ghana

Introduction

Objectives of the Country Study

The objectives of this policy landscaping study are to:

- Identify key stakeholders in the public sector who address or shape agricultural policies and

regulations, as well those from private sector agribusiness firms and associations who can play an advocacy role.

- Interview a sample of these stakeholders during 3.5 weeks of work to learn their perceptions of priority agricultural policy and regulatory constraints to agribusiness investment, particularly investment by SME agro-enterprises.
- Produce a country report on the highest priority agricultural policy and regulatory constraints to address that currently constrain agribusiness investment in Ghana.

Study Approach

Information was collected using key informant interviews conducted in Ghana from late March to mid-April 2014. Interviewees, listed in Annex 3, were drawn from the consultants´ professional contacts and recommendations from the World Bank Agribusiness Indicator study (2012) in which J. Holtzman participated. Most interviews were conducted in person in Accra, with about 10 more interviews in Kumasi and by telephone. Interviewees spanned the full agribusiness spectrum, including public sector officials, farmer and input dealer associations, large and SME agribusinesses, development partners (and donor-funded project staff), and selected financial institutions. Questions concerned perceived constraints to agribusiness investments and operating efficiency, as well as solutions to improve the functioning of the agribusiness system and boost near-term investments. Results are illustrative, not definitive.

Context

Ghana has made significant strides since the 1990s and is moving quickly toward middle-income status. It has a wide range of agro-ecological zones, two major ports (Tema and Takoradi), and gold and petroleum reserves—yet much of the country remains agricultural. The agricultural sector is characterized by low yields, heavy dependence on rainfall, and underuse of modern production technologies. The country exports gold, largely unprocessed and semi-processed cocoa, some non-traditional agricultural products (e.g. shea, horticultural products, and cashews), wood products, and some petroleum. Ghana was the first country working with AGRA to set up a Policy Hub and Nodes in sub-Saharan Africa. The GoG is eager to launch the MIRA Project in Ghana.

Despite its progress since the first days of structural adjustment, Ghana shows disquieting signs on the macroeconomic front. Both domestic inflation and depreciation of the Ghanaian cedi have accelerated since the 2000s, which have helped raise interest rates paid on government debt (with Treasury bill/bond rates from 21.2-23.5%). The public sector wage bill increased dramatically during the first part of this decade, saddling Ghana with high recurrent costs and limited funds for field implementation, public investment, and regulation. Government must borrow heavily to finance a rising public sector deficit, and bank lending rates start at 25% and can exceed 30%. Though cocoa exports generated over 2 billion USD in foreign exchange in 2011 and 2012, Ghana imported at least a billion USD, primarily rice, maize grain and other feedstuffs, frozen chicken parts, other meat products, vegetable oils, and dairy products. These are all challenges to promoting agricultural sector development, but the scope for import-substituting agricultural production is enormous.

Key Findings

Access to Markets and Transport

Many of the country study recommendations focus on barriers to intraregional trade and transport, as Ghana is a key regional market for neighboring, particularly francophone and landlocked, countries. Ghana's ports (Tema, Takoradi) service the entire region; they are congested and inefficient, particularly Tema, and the over-plied and often sub-standard trunk roads are infrastructural bottlenecks to trade.

Crossing borders is also problematic. Shippers of agricultural products often pay fictitious fines or speed money to opportunistic, under-paid uniformed agents. Other delays are due to limited hours of operation of customs posts, as well as officials' requests for documents, approvals (e.g. certificates of origin) or tax payments (VAT on staple foods) no longer required in intraregional trade within the ECOWAS "free trade" zone. Overloading of heavy trucks is endemic throughout the subregion, calling for more investment in weigh bridges and vigorous enforcement.

In addition to cross-border trade problems, MIRA could choose to address several domestic agricultural marketing issues with regional repercussions. These include non-standardized weights and measures, which can encourage cheating of producers (and buyers/consumers) by traders. Non-standard bags for assembling and transporting agricultural products, particularly grains, tubers and legumes, lead to opportunistic behavior by both sellers (producers) and buyers (assemblers and wholesale traders), making it impossible to develop a system of grades and standards common to modern commodity trading systems. Uniform pricing, regardless of quality, offers producers

no incentive to sort and grade their produce. Clearly, the interrelated issues of weights and measures, standards, and grades require innovative thinking and the introduction of measures to change behavior along staple food crop value chains.

Import and export duties and bans on staple food crops, typically imposed by Ghana's trading partners in response to crop production shortfalls and perceived cereals shortages, disrupt intraregional trade. The GoG should push for implementation of the ECOWAS Trade Liberalization Scheme, which prohibits such practices in staple food crop trade.

A last topic worthy of further investigation is an assessment of the role, operations and impact of NAFCO, the parastatal staple food crop buyer, since its inception in 2010. NAFCO announces minimum grain prices early in the marketing season that are perceived as low but it cannot support floor prices, because the company depends on GoG funding that arrives late. Some observers accuse NAFCO of driving down prices with announcements of low minimum prices. It is also reported that rural assemblers will offer lower prices than they would have offered post-harvest, when many farmers need cash and are compelled to sell most of their grain. Such allegations of the impact of NAFCO interventions call for a serious analysis of NAFCO buying, storage and sales activities, and how NAFCO maize price announcements affect prices in rural areas. Clearly, policymakers and key private stakeholders need accurate factual information with which to evaluate NAFCO and its effect on staple food crop markets, particularly the maize market.

Access to Finance

Limited access to finance constrains agribusiness investment and trade in Ghana, and as agriculture is perceived as risky, agribusiness lending suffers most. Government-imposed measures such as restricting loans in hard currencies further limits firms' and commercial farms' access to affordable credit, as does forcing resident borrowers to service foreign currency-denominated loans using cedis converted at the average interbank foreign exchange rate.

Various innovative patient capital and agribusiness investment funds are active in Ghana and provide finance (both debt and equity) to selected commercial agriculture production schemes and agribusinesses. Though premature to evaluate their success and spillover effects, many of the funds' investments appear promising.

Access to Inputs

No "quick fix" policy or regulatory reforms will improve farmer access to and use of inputs. Parliament passed the Plants and Fertilizer Act of 2010, and the regulations for this act will be approved in 2014. So the regulatory framework is in place—but not the fiscal resources to upgrade public facilities, strengthen field staff capacity, and hire additional extension agents, seed and fertilizer inspectors, and regulators. Though Ghana is wealthier than a decade ago, it depends heavily on donor contributions to supplement thin operating budgets.

Access to Seed. Disappointments include a long gap between passage of the seed law and accompanying regulations, and lack of approval for the ECOWAS regulation on intraregional seed trade. However, Parliament will soon approve these regulatory changes—after which come the challenging tasks of effectively implementing and regulating the seed sector, which will require significant investment in inspection, testing, processing, and cold storage capacity. The GoG will need to hire and train more qualified technicians, inspectors, and regulators; more operating funds are also needed, particularly for frequent on-site inspections of foundation and certified seed production.

Access to Fertilizer. Most fertilizer imports go to cocoa, Ghana's major cash crop, and its subsidy program is characterized by poor targeting, leakages (including smuggling), delays in delivery, and limited effectiveness. Fertilizer inspection, testing and regulation are inadequate, as the public sector lacks resources, organization, and capacity to regulate the quality and truth-in-labeling of this key input. Widespread use of one NPK formulation, 15-15-15, is ill-adapted to the wide range of soil types and crops grown in Ghana. This, plus limited public sector agricultural extension and farmer knowledge of soil/crop requirements and fertilizer formulations, means little demand for alternative fertilizer formulations—and hence scope for investment in fertilizer blending.

Investments in upgrading Tema port and road transport will facilitate fertilizer imports and lower costs to upcountry distribution points. Agro-dealer registration should be simplified to one all-inputs registration procedure, as opposed to three separate ones. Upgrading laboratory testing capacity and inspection services will require investments in physical facilities and equipment, reagents, and training of laboratory technicians and inspectors. The GoG, in consultation with the private sector, needs to assess the scope for private sector labs and inspection services.

Access to Markets

Market opportunities for agriculture abound in Ghana. Domestic consumption of rice grew 54% from 2009 to 2013[11], and consumption of maize[12] increased 12.5% over the same time period[13]—representing significant opportunities for local producers to meet expanding demand. These are just two examples, but the general trend is expected to hold true for most crops as Ghana's middle class continues to expand. Regional and international demand for agricultural products from Ghana is similarly strong. However, market opportunity does not automatically translate into market access for many producers. Unfortunately, a number of policy and regulatory issues hinder farmers' and processors' ability to tap into this burgeoning demand.

Hindering Foreign Investments

Large-scale expansion of Ghana's agriculture sector will require the participation of foreign investors, who bring not only capital but also new technologies and access to markets. While their important role is generally acknowledged by the government, Ghana's current policy environment could be improved to encourage and facilitate more foreign direct investment in the agriculture sector.

New minimum foreign investment requirements: The 2013 Ghana Investment Promotion Centre Act increased the minimum foreign capital investment requirement to USD 200,000 for enterprises with at least 10% Ghanaian ownership (up from USD 10,000), or USD 500,000 for wholly foreign-owned enterprises (up from USD 50,000, which had been pegged as the minimum in the 1990s). These significant increases in the up-front capital required to invest in Ghana make it less attractive for potential investors, particularly medium- to large-scale producers looking to scale up slowly through outgrower schemes—in turn limiting the potential opportunities smallholders have to link with nucleus farms to access larger markets.-

Lack of a "one-stop shop": Agricultural investors face a number of licensing and permitting requirements from national, regional, district and local level agencies, and there is no "one-stop shop"[14] from which to get information up front. This hinders potential investors' ability to plan and increases transaction costs, ultimately deterring investments in agriculture.

One investor who has spent four years in Ghana trying to start up maize production on a 10,000 hectare farm in the Afram Plains (the better part of which was spent waiting to get the land title) described new fees that he recently faced from the Environmental Protection Agency (EPA), the Water Resources Commission, and the local district assembly. For example, under the EPA "Fees and Charges (Amendment) Instrument" of 2013, he was required to pay previously undisclosed processing fees of GHS 5,938 and permitting fees of GHS 20,000 for a "large impact scale" project—and as he pointed out, there was also no clear classification system as to what constituted "large scale". More cumbersome than the fees themselves, however, is the fact that they came as a surprise; had they been detailed to him earlier, he would have been better able to plan for them, both in terms of incorporating them into his budget as well as allowing for the time and other resources necessary to obtain and complete the requisite paperwork.

Impeding Access to Regional and International Markets

With a population of roughly 25 million, Ghana's domestic market is fairly sizeable, but for agriculture to become a greater contributor to GDP—and to promote regional food security—the country must also look outside its borders. A number of policies, however, unnecessarily complicate the export process, impeding access to international markets for both large-scale exporters as well as the smallholders who feed into their aggregated supply.

Lack of coordination among inspection agencies at ports: Agricultural products currently undergo inspections by various government agencies—including Customs, the Plant Protection and Regulatory Services Directorate (PPRSD), the Ghana Standards Authority (GSA), and the Narcotics Control Board (NACOB)—prior to export. Unfortunately, these are most often carried out separately—meaning at least four separate occasions on which fresh, often highly perishable produce is extracted from cold storage and removed from its packaging for inspection. This significantly increases the likelihood of damage or spoilage, increasing losses and reducing export earnings from each shipment. Better coordination to reduce the process to one single inspection conducted by all relevant agencies simultaneously (or by one officer on behalf of multiple agencies) would reduce post-harvest losses and increase export competitiveness.

Prohibition against quoting, paying, or receiving payments in foreign currency: In October 2012, the

11 Index Mundi. Ghana Milled Rice Domestic Consumption by Year. Retrieved from http://www.indexmundi.com/agriculture/?country=gh&commodity=milled-rice&graph=domestic-consumption on March 29, 2014.
12 While maize remains a key staple in the Ghanaian diet, the greater opportunity for domestic maize producers lies in using maize as livestock feed, particularly in poultry production and aquaculture. When domestic maize supplies are short, Ghana imports large volumes of yellow maize from the world market (113,300 mt in 2012, valued at $38.9 million, as reported by COMTRADE).
13 Index Mundi. Ghana Corn Domestic Consumption by Year. Retrieved from http://www.indexmundi.com/agriculture/?country=gh&commodity=corn&graph=domestic-consumption on March 29, 2014.
14 The optimal administrative level at which to place a one-stop shop could probably be at the regional level—high enough to cover national requirements but not too far removed from the local level and its regulations.

Bank of Ghana (BoG) issued a public notice regarding enforcement of the provision of the Foreign Exchange Act, 2006 (Act 723), prohibiting the pricing, advertising, receiving of or paying for goods in foreign currency, in particular US dollars. For companies that trade goods or provide services (e.g., shipping/logistics) across borders, the inability to work in hard currencies makes it more difficult to do business with other countries and increases vulnerability to foreign exchange losses, constraining access to regional and international markets. This results in lower farm gate prices for smallholders, who get squeezed at the bottom of the value chain, and limits their potential opportunities to feed into export value chains.

Lack of use of standards weights and measures: The Weights and Measures Decree of 1975 stipulates that "no person shall use for trade or industry any unit of measurement of length, area, volume, or mass or weight, which is not included in the First Schedule." Despite this legislation, most agricultural traders in Ghana rely on traditional methods of weighing and measuring such as *olonka* (American tin cans), margarine tins, baskets, sacks and bottles. In fact, in a survey of nearly 250 farmers, traders, consumers, weigh scale dealers, and GSA staff, 93% of respondents were unaware of the laws governing the use of standard weights and measures in trading, reflecting lack of enforcement of these policies.[15]

Use of traditional containers rather than the required metric standards complicates trade with neighboring countries such as Côte d'Ivoire, Togo and Benin, where standards are more strictly enforced. In addition, with no uniform weights or measures, pricing is correspondingly inconsistent. Smallholder famers—typically "price-takers"— suffer most from this lack of transparency.

Lack of enforcement of quality and food safety standards: The Ghana Standards Authority maintains a vast library of standards pertaining to food and agricultural products; some are voluntary, such as the GlobalGAP National Interpretation Guidelines for Ghana (required by many European buyers), while others are mandatory. The latter, however, are rarely if ever enforced for sales in the domestic market. As a result, smallholder farmers have no incentive to produce to a higher standard, as there are no penalties for non-compliance and a lack of certification/grading limits their ability to achieve price premiums based on quality. This, in turn, makes it difficult for exporters and processors to source the volumes of quality products that they need—or requires them to undergo costly and time-consuming internal sorting and grading—in order to be competitive in regional and international markets.

NAFCO and its Effect on Domestic Cereals Markets

NAFCO is a parastatal "buffer stock company" created in 2010 in response to the "food crisis" of 2008. The GoG resurrected the defunct Ghana Food Distribution Company (GFDC) as a staple food crop buyer that is supposed to maintain a strategic reserve as well as serve as "buyer of last resort." These measures were designed to protect producers and consumers. NAFCO intervenes mainly in markets for maize and rice in ways that distort market operations, however.

The study team was unable to interview any official at NAFCO. Many observers consider that its operations are non-transparent. There is some information on NAFCO operations on the MoFA website (see http://mofa.gov.gh/site/?page_id=705), where NAFCO's mandate is stated:

- To guarantee an assured income to farmers by providing a minimum guaranteed price and ready market.
- To mop up excess produce from all farmers in order to reduce post-harvest losses resulting from spoilage due to poor storage, thereby protecting farm incomes.
- To purchase, sell, preserve and distribute foodstuffs.
- To employ a buffer stock mechanism to ensure stability in demand and supply.
- To expand the demand for food grown in Ghana by selling to state institutions such as the military, schools, hospitals, prisons etc.
- To manage government's emergency food security.
- To carry out such other activities that are incidental to the attainment of the above objects or such other duties as may from time to time be assigned by the Minister of Food and Agriculture.

NAFCO operational stocks are used to run and operate the company, while emergency stocks are held for the Government for use in emergency situations. The target operational stocks for 2012 for maize were 15,000 MT of white maize and 15,000 MT of yellow maize, 15,000 MT of paddy rice; 1 000 MT of soya. Emergency Stocks were project to be 10,000 MT of white maize, 10,000 MT of milled rice, and 1,000 MT of soya. These stock levels would comprise only 3% of the 1.7 MMT harvest.

15 Development Action Association. *Advocacy to develop standard weights and measurements in the weighing of agricultural produce*, no date (approx. 2012).

NAFCO buys through 73 LBCs (licensed buying companies) and not directly from farmers. A post-harvest committee within MoFA sets pan-territorial and pan-seasonal prices based on one set of cost of production estimates. The GoG provided NAFCO with 15 million Ghana Cedis in 2011/12 to finance its operations, with five million coming from the GoG and 10 million from donors through the HIPC grants (IFPRI, 2011). While some research on the impact of NAFCO buying on local maize and rice markets has been conducted by IFPRI (ibid., 2011), the findings are inconclusive and cover only one marketing season, 2010/11.

In practice, NAFCO is unable to carry out its extensive mandate. Information from interviews with private sector participants in cereals value chains and farmers organizaitons revealed that NAFCO interventions do not complement the private trade or help farmers. However, they point out NAFCO buys modest volumes, so its aggregate impact on the market is relatively insignificant. This is partly because funding from the GoG arrives late, which means the buffer stock company starts buying only after the grain marketing season is well underway.

NAFCO announces minimum grain prices early in the marketing season that are often perceived as low by producers. Many small farmers end up selling to private traders shortly after harvest because they need cash. Others hold their stocks off the market in anticipation of cross-seasonal price rises, which they anticipate will lead to higher private sector offer prices later in the marketing season. If NAFCO obtains funding late, however, it cannot support the floor price, as it lacks the liquidity early in the post-harvest marketing season to buy grain. Some observers go so far as to accuse NAFCO of driving down prices with announcements of low minimum prices. It is also alleged that rural assemblers (some of whom may be LBCs) offer lower prices to farmers than they would have offered post-harvest in the absence of NAFCO minimum prices.

Various views of the impact of NAFCO interventions are not consistent, which calls for a serious analysis of NAFCO buying, storage and sales activities since its inception. Such an evaluation should ascertain how NAFCO maize price announcements, and actual purchases (volume, timing) affect prices in rural areas. Policymakers and key private stakeholders need accurate factual information with which to evaluate NAFCO and its effect on staple food crop markets, particularly the maize market. This is a topic ripe for rigorous assessment and policy discussion; we recommend it be added to MIRA's policy research agenda.

Trade Barriers

Sound policies that promote regional trade are critical not only for the growth of Ghana's agriculture and agribusiness sectors, but also for the food security of its people and those throughout the region. Both formal and informal barriers limit the expansion of trade and increase the final costs of food products, placing them out of the reach of many poor consumers. The constraints also reduce farmers' and processors' incomes, limiting their ability to invest in and grow their businesses, and create a climate of uncertainty that deters investments along the value chain.

Non-Compliance with the ECOWAS Trade Liberalization Scheme (ETLS)

The Economic Community of West African States (ECOWAS) is a group of 15 countries, including Ghana, dedicated to promoting regional economic integration. In 1979, members took the first step toward establishing a common market with the introduction of the ECOWAS Trade Liberalization Scheme (ETLS) guaranteeing the free movement of transport, goods and persons within the region. Unfortunately, many of the sound protocols that exist on paper have yet to be fully implemented or enforced in practice.

Unnecessary requirement for Certificate of Origin: Certificates of origin verify the country in which a product was grown or manufactured, and are used by customs officials to determine applicable import tariffs. To promote regional food security, ECOWAS eliminated tariffs on food products traded within the region, and stipulated that Sanitary and Phytosanitary (SPS) certificates were sufficient to establish country of origin. More specifically, Article 10 of ECOWAS Protocol A/P1/1/03 states that "a certificate of origin shall not be required for agricultural or livestock products" to be traded across regional borders.

However, in practice, traders of agricultural goods within West Africa are routinely asked by customs authorities to produce a certificate of origin. If unable to do so, they are often made to pay extra fees (approximately USD 42 per shipment in Ghana), or to pay taxes as though their products originated from outside the ECOWAS zone. Demanding unnecessary certificates of origin raises transaction costs in terms of both time and money, making products less competitive in regional export markets. For processors, the requirement increases the cost of inputs sourced from regional markets.

Lack of acceptance of national SPS certificates: Under bilateral technical agreements between ECOWAS

countries, SPS certificates issued by the country of origin are officially valid throughout the region. As with certificates of origin, however, the situation on the ground is quite different. Border officials regularly require traders to obtain duplicate SPS certificates or pay a fee to receive a national stamp on their existing paperwork. For example, maize traders traveling between Techiman in Ghana and Kantchari in Burkina Faso report fees of approximately US$4.60 per truck in Ghana and US$24 in Burkina Faso. The table below summarizes average additional costs assumed by transporters around the region as a result of these policies:

Table 1: Redundant SPS Certification Fees in West Africa, 2012

Country	Cost Per 10 MT Truck (USD)
Benin	$20
Burkina Faso	$16
Cote d'Ivoire	$20
Ghana	$7.50
Mali	$20
Niger	$16
Senegal	$20
Togo	$20

As with certificates of origin, requiring unnecessary SPS certificates raises transaction costs in terms of both time and money, reducing product competitiveness in regional markets and increasing the cost of inputs for processors.

Failure to approve/implement VAT exemption for staple foods: ECOWAS countries have agreed in principle to exempt basic staple foods and inputs from Value Added Tax (VAT) on intra-regional trade through the Additional Act on VAT in 2009, which exempts all agricultural and livestock staple foods and inputs from VAT. However, the Act has not come into effect as the countries have not yet agreed on the annex with the specific list of products.

The West African Economic and Monetary Union (most commonly referred to by its French acronym UEMOA), which is comprised of eight member states that are also ECOWAS members, established a common VAT policy in 1998 that exempts most staple foods. However, national governments are permitted to supersede the policy as long as VAT is applied uniformly to a given product, whether it has been produced domestically or in another UEMOA country. UEMOA countries also implemented a Common External Tariff in 2000, and ECOWAS approved a similar scheme in 2013, to be implemented beginning in January 2015. This profusion of policies has led to much confusion among traders, freight forwarders, truckers, and border officials regarding the proper application of or exemption from VAT for agricultural goods traded within the region.

The inappropriate application of VAT amounts to a border tax that makes agricultural products less competitive in regional export markets, and increases the cost of inputs sourced from regional markets.

Imposition of Import and Export Duties and Restrictions

Free trade is important both for economic growth as well as regional food security—a position recognized in theory if not in practice by the members of both ECOWAS and UEMOA. Both local and national governments regularly impose seasonal import and export duties and bans that disrupt trade and investment in agriculture and ultimately increase the cost of foodstuffs for consumers.

Uncertainty regarding import/export duties and bans in Ghana: Unlike many of its neighbors, the Government of Ghana has not instituted export bans of agricultural products in recent years; however traders and investors do not yet fully trust that the current policy will remain in force if external market dynamics change in some way.

Import duties and bans, however, are another matter. One prominent example is the case of rice, which has seen import duties fluctuate from year to year, including a complete lifting of tariffs in mid-2008 in response to the global food crisis. Duties were re-imposed in 2010, but the 18 months of no tariffs on imports was a blow to local rice producers. More recently, in November 2013,

the Government of Ghana banned imports of rice by road, only to relax the ban two months later.[16] Shortly thereafter, in response to Ghana's swelling trade deficit and rapidly depreciating cedi, the Minister of Trade indicated that the government was considering a complete ban on rice imports, which totaled US$374 M in 2013.[17]

The USAID Enabling Agricultural Trade (EAT) project also reported the following in its 2012 study *The Market for Maize, Rice, Soy, and Warehousing in Northern Ghana*: "The main concern of speculators and traders is the existing export licensing system, which is set up to allow for trade policy changes without warning in response to political or food security pressures. Traders are apprehensive, as they have been burned by sudden changes in trade policies in the past. In 2008, speculators were holding [maize] stocks in anticipation of the expected seasonal price increase, when a ban on imports was suddenly lifted, imports flooded the market, and prices plummeted."

According to the World Bank's 2012 report on Agribusiness Indicators for Ghana, individuals from the private sector gave the country an average score of 2.6 out of 5 for "policy consistency." Per the World Bank analysis, "Private sector expects that the Government changes its policy from time to time, but the frequency is not that high, as shown from their average rating. More than policy inconsistency, private sector respondents were concerned that there is not a lot of transparency from the side of the Government in sharing policy and strategies."

Import and export duties and bans distort pricing and disrupt market access for exporters and the supply of inputs for processors. The uncertainty regarding their imposition makes long-term business planning difficult and deters investments in production and processing of agricultural goods. Ultimately, this limits the opportunities for smallholder farmers to sell their produce to regional traders and/or processors.

Import/export restrictions in neighboring countries: During the 2011-2012 season, national and local governments in Benin, Burkina Faso, Guinea, Mali, Senegal and Togo imposed some form of export restriction on agricultural products, including inputs used in agro-processing in Ghana. For example, in December 2011, Burkina Faso's Ministry of Agriculture prohibited "irregular" exports of cereals, without defining what constituted an irregularity; in January 2012, Togo stated that staple crops being exported from Togo required an export permit, which was not always granted.

As these examples demonstrate, export restrictions can come in many forms. The table below summarizes different types of export restrictions collected by the USAID ATP/E-ATP projects:

Table 2: Agricultural export restrictions in some West African countries, 2007-2012

	Benin	Burkina Faso	Mali	Nigeria	Togo
Blanket official restriction (no set time limit)		■	■	■	
Seasonal official restrictions (time limit specified)		■	■		
Unofficial, but real (exports denied at border)	■	■	■		
Administrative (e.g., local approval required)			■		
Administrative (e.g., new permits required)	■				■

Export restrictions in neighboring countries limit sourcing opportunities for Ghanaian processors and deter investments in expansion to serve regional markets. Although the Government of Ghana cannot directly control the policies of other governments, it can advocate for the implementation of free trade policies promised through regional organizations such as ECOWAS and UEMOA.

Smuggling of agricultural products: The institution of import and export restrictions often has another unintended consequence: it encourages the smuggling of goods across borders, usually with the complicity of government authorities, who accept illicit payments in exchange for clearance. For example, rice traders in Ghana complain that individuals regularly introduce rice into the local market that has been smuggled across the border from Côte d'Ivoire, where import duties are lower. Legitimate traders and local producers are then unable to compete with the lower-priced imported Asian rice that crosses into Ghana illegally.

16 The directive stated that it "is intended to provide a framework of administrative procedures through which the numerous unfair trade practices including evasion of import duties and other taxes, under-invoicing, infringement of trademarks, and smuggling shall be controlled". It was removed after lobbying by the Ghana-Ivory Coast Rice Importers and Sellers Association.
17 Ghanaian Chronicle. "Ban Rice Imports? Yes, But..." March 10, 2014. Retrieved from http://www.modernghana.com/news/528298/1/ban-rice-imports-yes-but-.html on April 3, 2014. Note that COMTRADE reported total rice imports of 508,600 mt into Ghana valued at $347.4 million for 2012. The high average value of $683/mt indicates that most of Ghana's rice imports are premium quality milled rice.

Port Inspections and Clearance Procedures

Burdensome inspections and clearance procedures: In 2013, the Government of Ghana instituted a new "Presidential Special Operations Task Force" at the port charged with reviewing and clearing imports and ensuring that related revenues are not misdirected to individuals. The Task Force is also charged with enforcing the 30- and 21-day time limits[18] for the clearance of general and perishable goods, respectively, to help ease congestion at the ports.

While the policy has merit in theory, in practice traders and logistics firm complain that the Task Force operates in addition to, rather than in place of, reviews by other agencies, adding significant delays to clearance times and merely amounting to another opportunity for illicit payments. The extra burden of clearing goods through the Task Force adds to already high transactions costs, increasing the cost of imported agricultural inputs and ultimately making end products less competitive in local and regional markets.

Transport

Agricultural production is a tough business—crops are highly vulnerable to extreme weather conditions, pests and disease—and that only gets you as far as the farm gate. For farmers to get their produce to market and processors to get their products to end users, transport policies must ensure a stable infrastructure that allows for the easy flow of goods around the country and region. Unfortunately, numerous studies have shown that transport costs in West Africa are among the highest in the world, and Ghana is no exception.

Road harassment: Despite the fact that the ECOWAS Trade Liberalization Scheme guarantees the free movement of goods both across borders and within individual countries, truck drivers—both those who are fully compliant with ETLS regulations as well as those who are not (including the informal carriers who haul most agricultural commodities)—regularly face numerous unjustified fees, payments to officials, and demands for unnecessary paperwork or inspections. These are particularly onerous for transporters of agricultural goods, because officials take advantage of their perishability to extort higher payments.

Data collected by the USAID West Africa Trade Hub and the USAID ATP/E-ATP projects reveal that transporters of agricultural commodities in Ghana are subject to bribes that are twice as high as those incurred by transporters of other commodities. While that may be shocking, the situation is even worse elsewhere in the region: bribes are six times higher in Burkina Faso, 12 times greater in Benin and more than 15 times higher in Niger.19 The table below documents the total number of checkpoints, bribes and delays encountered along four agricultural corridors, two of which pass through Ghana:

Road harassment hinders development of a professional transportation sector—if even fully

Table 3: Checkpoints, bribes paid, and delays in regional transport in West Africa, Q1 2013[20]

Corridor	Country	Checkpoints	Bribes (USD)	Delays (Min)
Kantchari-Accra (Onion)	Burkina Faso	5	65	21
	Ghana	11	21	82
Fada-Parakou (Livestock)	Burkina Faso	6	46	12
	Benin	4	179	12
Techiman-Kantchari (Maize)	Ghana	16	16	40
	Burkina Faso	6	32	27
Parakou-Niamey (Maize)	Benin	9	338	26
	Niger	8	233	35

Checkpoints, bribes and delays add to the cost of agricultural goods both through increased transport costs as well as increased post-harvest losses, reducing potential profit margins for farmers and processors. They also discourage regional trade, limiting the potential size of the market into which producers and processors can sell.

Lack of enforcement of axle load limits: A vehicle's axle load is the fraction of the total vehicle weight that rests on any given axle; roads are engineered to support a maximum axle load to avoid damage. In Ghana, axle weight limits for haulage vehicles range from 21 MT for a single vehicle with two axles to 60 MT for an articulator (cab plus trailer) with six axles. However,

18 These limits are part of a directive issued along with the duties of the Task Force; we were unable to find a copy of the directive.
19 Per 100 km
20 USAID WATH, USAID ATP/E-ATP, UEMOA. *23rd Road Governance Report.* January-March 2013.

traders report that these are not always enforced, or that drivers of non-compliant vehicles simply pay a bribe to continue on their (overloaded) way.

Among the many protocols agreed upon by ECOWAS members is a harmonized set of axle load limits for the region's roads. According to those regulations, the maximum load for a vehicle with six axles should be 51 MT. Despite Ghana's shortfall in compliance with this directive, the country is still doing better than its neighbors—the maximum axle load in Togo, for example, is 68 MT. This lack of harmonization complicates regional trade, and leads to complaints by domestic transporters that trucks from other countries are treated more leniently when they pass through Ghana, giving them an unfair advantage.

Lack of enforcement of axle load limits encourages drivers to overload their vehicles, and allowing drivers to circumvent the rules by paying a bribe perversely increases overloading even more, as drivers seek to compensate for the cost of the extra payment. Overloaded vehicles lead to the rapid deterioration of roads, and poor quality roads limit access to markets and increase transaction costs, making products less competitive. The need to frequently rehabilitate damaged trunk roads limits transport ministry/public works allocations to more routine road maintenance, particularly on secondary and tertiary roads that are important for linking farmers to markets.

Access to Finance

Difficulty accessing financing consistently ranks among the top constraints identified by private sector operators in agriculture and agribusiness in Ghana, be they smallholder farmers or large processing firms. Commercial banks, which account for 87% of all lending in the country, allocate just 5% of their portfolio to agribusiness[21]—a statistic that is particularly noteworthy given that the sector accounts for approximately 30% of Ghana's GDP and 60% of overall employment.[22] Most banks indicate that agricultural lending is simply too risky. Even the Agricultural Development Bank, established by the government in the 1960s to meet the banking needs of the agriculture sector, dedicated just 29% of its portfolio to agriculture in 2010, and just 3% of that went to food crops.23 One hopeful sign is the emergence in Ghana of patient capital and agribusiness investment funds, which enable SMEs to access finance unavailable from commercial banks (see Annex 9); yet they have identified many of the same policy constraints:

Restrictions on loans in hard currencies: In response to the rapid depreciation of the cedi, which fell 17% against major currencies in 2013 and an additional 7.2% in the first three and a half months of 2014[24], the Bank of Ghana issued a directive in February 2014 declaring that "no bank shall grant a foreign currency denominated loan or foreign currency linked facility to a customer who is not a foreign exchange earner."[25] Shortly thereafter, the Bank issued another directive indicating that "servicing of existing foreign currency denominated loans to residents by resident banks are to be made in Ghana cedis converted at the average interbank foreign exchange rate prevailing on the day of conversion."[26]

For borrowers who need capital for inputs or machinery that will be purchased in hard currencies—which is often the case in the agricultural sector, e.g. for tractors or processing equipment—this policy effectively increases the already high cost of borrowing. With competing 91-day government Treasury Bill rates currently set at 23.5%[27], interest rates on far riskier agricultural loans typically range from 25-40%—high even by Sub-Saharan Africa standards—and are further raised by currency depreciation and high inflation, which was at 13.5% for 2013 and 14.5% for the first quarter of 2014 (from http://www.bog.gov.gh inflation data). These high rates make it difficult for farmers and processors to obtain financing to expand their businesses.

Inability to enforce security under leasing arrangements: Rent-to-own agreements—in which an individual makes regular payments for the use of an item for a defined term, at the end of which he obtains ownership of the item—are useful financing instruments for the agriculture sector, particularly for farmers who do not have the up-front cash to purchase a tractor. They are also attractive to financial institutions as they essentially include built-in collateral: if the lessee fails to meet the scheduled payments, the lessor simply recovers the item.

The provisions of Ghana's Hire Purchase Act, however, require leasing agents to obtain a court order to recover items in case of non-payment. This has the effect of transferring ownership to the borrower up-front, which discourages regular payments according to the rental

21 Defined as the full value chain, including production, procurement and application of inputs, transport and logistics, processing, and distribution.
22 USAID Financing Ghanaian Agriculture Project. *Participating Financial Intermediaries Mapping Assessment*. October 2013.
23 World Bank. *Agribusiness Indicators: Ghana*. April 2012.
24 Bank of Ghana, Newsbrief Summaries from Foreign and Local Media, 22 April 2014.
25 Bank of Ghana. *Notice No. BG/GOV/SEC/2014/02, Revised Rules on the Operation of Foreign Exchange Accounts (FEA) and Foreign Currency Accounts (FCA)*. February 4, 2014.
26 Bank of Ghana. *Notice No. BG/GOV/SEC/2014/04, Clarification to Notices on: Additional Operating Procedures for Forex Bureaux in Ghana (BG/GOV/SEC/2014/01); Revised Rules on the Operations of Foreign Exchange Accounts (FEA) and Foreign Currency Accounts (FCA) (BG/GOV/SEC/2014/02); Repatriation of Export Proceeds (BG/GOV/SEC/2014/03)*. February 13, 2014.
27 Ghana has the highest Treasury bill rates of any country in sub-Saharan Africa, as reported in *Business Day*, Vol. 1, No. 11, 7-13 April 2014. The 182-day (six-month) Treasury note yields 21.2%.

schedule. Ultimately, the policy deters financial institutions from entering into leasing arrangements by increasing the transaction costs for lessors to enforce their security, in the process effectively removing a financial instrument that could serve the "missing middle" agriculture firms looking for financing options to improve mechanization.

Poor implementation and oversight of EDAIF: The Government of Ghana established the Export Development and Agricultural Investment Fund (EDAIF) in 2011 to provide low-cost financing for SMEs.[28] The facility provides funds to commercial banks at 0-2.5% interest, and caps the bank spread at 10%—effectively making loans available to SMEs at a maximum interest rate of 12.5%, far below prevailing market rates.

Though a well-intentioned initiative, private sector firms complain that the funds are difficult to access. Individuals consulted for this report stated that the application process takes too long, particularly for time-sensitive working capital requirements in the seasonal agricultural sector; that changes to the program are not well communicated; that the selection process is not transparent, with funds often going to those with the right connections; and lastly, that the banks receiving the low-cost funds are often not using them in accordance with the regulations of the scheme. Poor implementation of the scheme and lack of adequate monitoring and evaluation of the fund limit its reach, further constraining access to finance for farmers and processors.

Other Sources of Agribusiness Finance: Investment funds work with producer groups and agribusiness SMEs in Ghana and provide short, medium and longer-term finance—setting interest rates at or close to prevailing commercial bank rates. These funds typically provide more intensive technical support and oversight than a commercial bank and aim to fill a critical niche of start-up and expansion capital in the "missing middle," enabling SMEs to gain access to much-needed finance that they cannot get from commercial banks. Some of these investment funds, such as Root Capital, provide trade finance and loans for working capital. Annex 4 provides more detail on some of the funds operating in Ghana.

These agribusiness investment funds should be encouraged to pursue early stage yet ultimately bankable investment opportunities that commercial banks typically are hesitant to finance. They should be allowed to access offshore accounts and foreign currencies and make investments and provide debt in foreign currencies to selected SMEs. Government should welcome these investors and impose as few restrictions as possible on their activities, as they go where commercial banks hesitate to provide finance.

Seed Policies, Regulations and Institutional Capacity

Production of high-quality, high-yielding certified seed is a challenge for most sub-Saharan African countries, due to its technical, institutional, regulatory and planning complexities. Only South Africa, Kenya and Zambia have achieved ISTA (International Seed Testing Authority) accreditation, which allows a country to export its seed legally.

Ghana passed an updated seed law in 2010, the Plant and Fertilizers Act 803, but the accompanying regulations have not yet been approved by Parliament, and Ghana has not implemented the regional ECOWAS agreement on plant protection, varietal release, and intraregional trade in seed. Yet a revamped legal and regulatory framework is only the start of a long and costly process of upgrading Ghana's capacity to develop new seed varieties, multiply enough new varieties to meet farmers' needs, inspect, test and certify seed production, regulate the private seed trade, and evaluate imported germplasm, foundation seed and certified seed.

Significant donor support—both technical and financial—will be required to improve public sector seed production, certification and regulatory capacity. AGRA and other donors have provided resources to boost private sector seed production and trade, but public sector capacity also needs strengthening while the government works out a new set of public and private sector roles and interrelationships.

Access to Improved Seed. Certified seed for the two main cereals, maize and rice, represents a small percentage of the seed requirements for those grains. A recent IFPRI study of Ghana's seed sector found average annual certified maize seed production was 3,000 MT for maize from 2008 to 2011, 1,400 MT for rice, and far lower for other crops.[29] As a rule of thumb, approximately 20,000 MT of maize seed are required to sow the typical 1 million hectares planted to maize in

28 Export Development and Agricultural Investment Fund Act 823 dated 25 October, 2011, Act 582 4of 4 October 2000 was amended to include the provision of financial resources for the development and promotion of agriculture relating to agro-processing and agro-processing industry. Originally the Export Development Investment Fund (EDIF), it is now known as Export Development and Agricultural Investment Fund (EDAIF).

29 From **Ghana's Commercial Seed Sector: New Incentives or Continued Complacency?**, Robert Tripp and Akwasi Mensah-Bonsu, Ghana Strategy Support Program (GSSP), IFPRI, April 2013.

Ghana; for rice seed, at least 16,000 MT are needed to plant 200,000 hectares of paddy.[30] MoFA data show certified seed was planted in just 19% of the area used for maize production in 2010, and only 8% of the area used for rice production.[31] Two SEEDPAG leaders estimated only 10-15% of total seed requirements for field crops in Ghana are met with certified seed. The head of the Ghana Grains and Legumes Board (GGLB) estimates 13% to 21% of maize area planted has been sown with certified seed from 2009 to 2012[32]—and said that Ghana has too many maize varieties (at least 15) to maintain and produce.[33] Planning production of maize foundation seed is challenging, as pre-planting needs of seed growers are not clearly communicated to GGLB and other producers of foundation seed. MoFA intends to improve foundation seed forecasts with rolling three-year plans.

Seed Legislation and Institutional Framework. The Plant and Fertilizers Act 803 of 2010, which replaced the outdated Plant Quarantine Act of 1965, conforms to the ECOWAS Regulation C/REG.4/05/2008 on the Harmonisation of Rules Governing Quality Control, Certification, and Marketing of Seeds. The ECOWAS regulations on plant protection, varietal release, and intraregional trade in seed have never been approved by the GoG, but they are expected to be approved by Parliament in June 2014. The Ministry of Justice says the ECOWAS regulation needs to be gazetted; as it is a "treaty" and not a law, a Parliamentary Committee on Subsidiary Regulations is required to approve it first. Hence, while ministers from the 15 ECOWAS countries signed a regional agreement to permit free trade in approved varieties in 2008, the reality is that intraregional seed trade in West Africa is not yet allowed in some countries.

The Ghana Seed Inspection Division (GSID), under the Directorate of Plant Protection and Regulatory Services, is charged with seed testing, quality control and certification. GSID's central laboratory, near Accra at Pokouase, tests for moisture content, germination percentage, varietal purity, foreign matter (and weed seed) content, etc. There are five regional offices. In theory, GSID also inspects seed growers' fields at least twice per growing season and should be present for seed harvesting. In practice, this level of supervision cannot be assured, given staffing and budgetary shortfalls.

A National Seed Council, created with the 2010 Act, oversees seed varietal improvement, seed production, seed testing, and regulation of the seed trade. It has some 15 members and meets periodically, most recently in March 2014.

Variety Release Policy and Practice. Under the old seed law, variety release was criticized as too slow; the variety testing and evaluation process officially required three years but tended to take up to five years. New seed legislation has supposedly speeded this process, with two seasons of multi-locational tests considered satisfactory and able to run concurrently with two years of on-farm trials. All varietal trials for field crops continue to be run by the public sector agricultural research establishment, which includes the Crop Research Institute (CRI) in Kumasi and SARI, the Savanna Agricultural Research Institute in northern Ghana, and also involves professors at several public universities. Government-funded researchers therefore write recommendations for (or against) particular varieties to the Technical and Varietal Release Committee. According to the 2013 IFPRI study,

> *Such committees are standard features in most countries, but the real challenges involve the organization of variety testing, the financing of such testing, and the criteria used for approval. In many countries what appear to be straightforward procedures turn into unclear and drawn-out processes that seriously delay the introduction of new varieties.*[34]

The Variety Release Committee meets twice a year and comprises 18-19 members, not all of whom have a technical background. One estimate found it costs as much as $50,000 to do the testing and trials for varietal release in Ghana. Agricultural researchers note that conducting multi-locational trials throughout Ghana is costly, and funding is typically lacking.

Production of Foundation and Certified Seed. SEEDPAG, the seed producers' association, has some 35 members from larger firms and 250-300 total members[35], most of whom are smaller to medium scale producers. It finds foundation seed production in Ghana inadequate, meeting only about half of private seed multipliers' needs. Until 2010, the Ghana Grains and

30 Recommended seeding rates per hectare in Ghana are 50 kg/ha for maize and 100 kg/ha for rice (though 80 kg/ha is quoted in other countries).
31 Ghana Agribusiness Indicator study, World Bank, 2012.
32 Approximately 1 million hectares are planted in maize in Ghana. The maize seeding requirement is 20 kg/ha, which translates to approximately 20,000 mt of seed needed for planting maize. MoFA seed production figures and FAOSTAT estimates of area planted to maize are used to calculate the proportion of area planted to certified seed. In order to multiply 2,500 to 3,000 MT of certified maize seed, 40-50 MT of foundation seed must be supplied according to GGLB.
33 *Obatampa*, released in 1992, is in highest demand among farmers though its varietal purity is questioned. CRI has developed quality protein maize (QPM) varieties from CIYMMT germplasm that are medium maturity (105-110 days), include both white dent and flint varieties, and are versatile—useful for human and animal consumption (poultry, pigs). QPM varieties require a lot of fertilizer, typically 50% more NPK per acre than OPVs. A Pioneer hybrid maize variety released in late 2013 is being multiplied in 2014.
34 Discussion Note #10 from GSSP Transforming Agriculture Conference, November 8-9, 2012, Accra, Ghana
35 A CRI researcher claims that SEEDPAG has some 1,000 seed growers, far too many to work with and supervise, and that the quality of seed produced by the private sector is highly variable and often poor.

Legumes Board (GGLB) was mandated to produce all the foundation (or basic) seed in Ghana. The Plants and Fertilizer Act of 2010 relaxed this monopoly so that several larger SEEDPAG members are now allowed to produce foundation seed under government supervision. Agricultural research institutes, notably CRI and SARI, also produce some basic seed of the varieties they control (for which they have breeder seed).

Despite private sector entry into foundation seed production, key informants claim that there is a severe shortage of GoG seed inspectors, as well as inadequate funding for them to visit often remote foundation and certified seed production sites. An institutional capacity assessment of the Seed Inspection Service should verify this. SEEDPAG would like to see capacity emerge for private sector seed inspection, but the necessary training and accreditation are not yet in place. The former leader of the Seed Policy Node believes a blend of public and private sector seed inspection services would be best. Possible agenda priorities for MIRA could be how to support private sector entry into foundation seed production, as well as inspection of foundation and certified seed production.

The seed processing, conditioning and storage facilities of public agencies, including MoFA and GGLB, are obsolete and need to be replaced. Cold storage for breeder and foundation seed is broken down or sub-standard. Injaro Investments has invested in a Volta Region seed company, M&B Seeds and Agricultural Services, which acquired seed processing equipment, a first for the private sector.

Seed Imports. The Plants and Fertilizer Act permits imports of hybrid maize seed. With a $20 million investment by AATIF, the Africa Agriculture and Trade Investment Fund, Wienco/Ghana introduced imported PANNAR hybrid maize seed in the second half of the 2000s and its use has soared, particularly in northern Ghana.[36] Under the new Act, importers of seed must register the seed variety and provide international certificates of DUS (distinctness, uniformity and stability) and phytosanitary inspection, and preferably ISTA certification. While PANNAR 53[37] hybrid maize seed has generally performed very well in northern Ghana, the Ghanaian seed producers' association (as well as a CRI breeder) notes that PANNAR seed was allowed entry but bypassed the normal varietal approval procedures (without the required normal three-year varietal trial and testing period). Allowing an imported variety such easy entry, they reason, discourages local private sector production of both foundation and certified seed.

Seed Co, a Zimbabwean seed company, is now operating in Nigeria, which it plans to use as a regional platform for producing and selling seed. It has seed production programs in Zimbabwe, Ethiopia, Kenya, Zambia, Malawi, and Rwanda. As with PANNAR, a South African firm acquired by DuPont Corporation, Seed Co breeds, produces, processes (cleans, treats, bags), markets and distributes excellent hybrid seed maize varieties suitable for a wide variety of growing conditions in East and Southern Africa. It also supplies certified seed for crops such as barley, groundnuts, sorghum, soybeans, sugar beans and wheat. It remains to be seen if Seed Co will be allowed to export from Nigeria to Ghana.

AGRA Investment in the Seed Sector. One Ghanaian observer, who sits on the cross-agency agricultural working group, said investment is needed in public sector infrastructure for seed breeding, basic seed production, seed storage, and seed certification and inspection. Recent increases in civil servant salaries in Ghana have squeezed public agency budgets, limiting operating funds for field trials and inspections, laboratories, and seed facilities (processing units, cold storage, etc.). He noted that CIDA invested in seed research and production 20 years ago (primarily in CRI and SARI), but that it is time for re-investment and upgrading, not to mention training of qualified technicians.[38] The AGRA Programme for Africa's Seeds Systems (PASS) provides grants to private seed producers[39], but a perception remains that AGRA gives little funding to public sector agricultural research institutions. The observer feels this seed sector development strategy is unbalanced—yet the criticism is not entirely true. Under the **PASS Fund**

for the Improvement of African Crops, AGRA has given nine grants totaling $1.76 million, mainly to CRI and SARI, which actually exceeds the $1.48 million in 10 grants provided to private seed companies. The best-funded AGRA seed programs in Ghana are

36 Wienco has supported a maize production scheme of 3,000 farmers (in 2010) in Northern Region and Upper West predominantly, but also with some growers in Upper East, Brong-Ahafo and Northern Ashanti. The contract maize growers are grouped as a registered as a farmer organization under the name of Masara N'Arziki. Wienco
provides PANNAR hybrid maize seed, NPK fertilizer (supplied by YARA), and herbicides in an integrated package that has more than tripled dryland maize yields to 2.25 mt/ha in 2010. Maize Program initiated in 2005 by Wienco (Ghana) Limited.

37 Proseed hybrid maize of South Africa is also available in Ghana. One kg of maize seed costs 12 GHC for PANNAR 53, 4.5 GHC for Proseed, and 2.5 GHC for *Obatampa*.

38 The West African Center for Crop Improvement based at the University of Ghana is training 32 PhD students in four cohorts drawn from Ghana, Nigeria, Niger, Burkina Faso, Mali and Cameroon. They are working on most staple crops of West Africa to improve the capacity of breeding institutions across selected countries in addressing farmers problems in the region. PASS also supported 10 students at MSc level in Plant Breeding and Seed Science and Technology at Kwame Nkrumah University of Science and Technology from Ghana (6), Niger (1), Sierra Leone (1) and Liberia (2), who have since graduated and gone back to work in their home countries. The second cohort comprises 14 students from Ghana, Mali, Niger, Sierra Leone and Liberia who are still in the middle of their MSc programs. All the graduates are employed in either NARS or seed enterprises in their countries. (Taken from http://mofa.gov.gh/site/?page_id=7588)

39 Support for five start-up seed companies (in Tamale, Kumasi, Ho, Ejura and Wa) to improve on the supply of high quality certified seeds of basic staples such as maize, rice, cowpea, and sorghum. The companies are also supported with business development services and linkages to financing through AGRA-supported West African Agricultural Investment Fund (WAAIF).
(Taken from http://mofa.gov.gh/site/?page_id=7588)

education/training grants, worth $6.7 million, though this training benefits other West African countries that send their students to Ghanaian institutions.

As this Ghanaian observer shows, AGRA faces a perception problem: Officials in government and donor agencies think AGRA is not collaborative, creates parallel or duplicative structures (i.e. the Policy Hub), and sometimes bypasses government. For example, the Policy Hub Coordinator does not sit on the cross-agency agricultural working group, comprised of key GoG officials and selected donor representatives, and a key coordinating mechanism for information sharing and agenda setting for agricultural policies in Ghana. One study recommendation is for the Policy Hub and MIRA coordinators to participate in monthly meetings of this working group (or at least to assure that one of the two regularly attends).

Seed Pricing. A MoFA-led Seed Technical Advisory Committee of 15-20 members establishes annual seed production costs and fixes prices for private seed firms and growers to sell certified seed. The MoFA pricing formula follows a ratio of 4:2:1 for breeder seed, foundation seed, and certified seed. The certified seed price is a minimum, which buyers cannot undercut. Most observers think the price ratio is too low and does not offer strong incentives for private seed multiplication, particularly hybrids.

A seed subsidy in Ghana on OPV maize seed takes the government controlled price from 80 GHC for 45 kilograms to 60 GHC. Seed growers who participate in the subsidy program report that subsidy payments by Government are invariably late.

Complaints about the Seed Trade. Several criticized the private seed trade, noting that:

- Certified maize seed is not always multiplied from proper foundation seed.
- Cases of fraudulent sale of maize bagged and (mis)labeled as seed exist but seem to be relatively minor, though the true scale of such practices is unknown.
- Quality of seed multiplied by private seed growers in Ghana is uneven, with lower than desired germination rates (sometimes below 90%) and higher than acceptable rates of varietal mixing and impurities.
- Prior to 2014, SEEDPAG has been criticized as being incapable of estimating farmer demand for certified seed and the seed multipliers' derived demand for foundation seed. This makes it difficult for GGLB and agricultural research institutes to forecast foundation seed needs and to plan accordingly.
- Some Ghanaian maize seed ends up crossing the border into Burkina Faso. The extent of this informal trade is unknown, though government fears that both subsidized seed and fertilizer is exported to neighboring countries.

Access to Fertilizer

Registering to Sell Inputs. Every year an agro-dealer has to do separate registrations to sell seed, fertilizer and pesticides. Seed registration can take up to six months, but only one month is required for each of the other two registrations. Private agro-dealers find multiple registrations cumbersome and time-consuming and ask why an agro-dealer cannot do a one-for-all registration procedure. The fertilizer registration process for importers is straightforward, although import permits are required. Applying for import duty exemption is a little more time-consuming, requiring a letter from MoFA to the Ministry of Finance (and ultimately the Ghana Revenue Authority, which oversees income and corporate taxes, VAT and customs).

Fertilizer Subsidy Issues. Although well-meaning and a good tool for making fertilizer available and affordable for small farmers in Ghana, the fertilizer subsidy program is being implemented in ways that are problematic to the private sector. The program is entrenched, and the GoG cannot remove it without losing votes. However, farmers are now paying a higher percentage of the real cost of fertilizer (approximately 70%), compared to three-four years ago (when they paid 30-40%).

The head of the Ghana Agro-Input Dealers Association (GAIDA) says the fertilizer subsidy system works best for importers, though they tend to wait a long time for their subsidy reimbursement.[40] He also claims importers capture most of the transport subsidy on fertilizer, and that agro-dealers get very little of this, so there is no incentive to move fertilizer into rural areas. Most fertilizer is sold in towns, and some farmers have to travel far to get their fertilizer, discouraging purchase and use. He claims that the calculated agro-dealer margin is too small to motivate agro-dealers, and he reports that many have exited the subsidy program in recent years, though there are no firm estimates on this.

40 As of mid-April 2014, importers participating in the fertilizer subsidy program had not been paid for imports in 2012 and 2013. Importers said they would not participate in the subsidy scheme in 2014 unless the GoG had cleared these arrears. Note that GoG reimbursements will be in Ghana cedis, and the exchange rate has moved from $1.00 = 1.9 GHC to $1.00 = 2.8 GHC since 2012.

A prominent fertilizer wholesale distributor in Kumasi claims that he would lose money if he covered shipping costs to Upper Northwest and Upper Northeast provinces. Hence, he sells from his Kumasi warehouse to retail distributors who bear the transport costs to rural production zones. Fertilizer prices in more remote production zones are therefore likely to be well above intended subsidized price levels.

Fertilizer Regulations. Re-bagging of fertilizer is technically illegal but not curbed through enforcement. Many agro-input dealers who sell fertilizer retail in Ghana re-bag, as not all farmers can afford a 50-kg bag. Importers have fertilizer shipped to Ghana in bulk and then bag in 50-kg bags only (not 25-kg bags). Agro-input dealers therefore end up breaking bulk, particularly for non-subsidized fertilizer sales. Some sales are in plastic bags with as little as 1-2 kg of fertilizer, applied primarily to vegetable gardens.

Fertilizer quality monitoring and inspection are grossly inadequate, due to very few PPRSD staff with no travel money.[41] The GAIDA president claims inspectors cannot even adequately cover the Eastern Region capital, where his shop and some 20 others are located. Some faking and adulteration of fertilizer products happens, but the GoG is trying to limit this, and overall it is considered to be a minor problem.

Blending of fertilizer is allowed, and most importers do some blending (though proportions blended relative to non-blended fertilizer—sold as imported—are not known). The standard NPK formulation in Ghana is 15-15-15, established over 25 years ago, but this "one size fits all" formulation is ill-adapted to soil differences across production zones and to different crops. Soil scientists in Ghana suspect NPK ratios do not always correspond to what is labeled on a fertilizer bag, but there is no proof of this as fertilizer testing is not done systematically.

They also note that yearly application of fertilizer leads to soils becoming saline (from over-application of nitrogen) or basic (from over-application of phosphorous). Soil scientists emphasize the need for ISFM, integrated soil fertility management, which calls for greater mixing of organic material in the soil (through composting and plant residues) and use of both organic and inorganic fertilizer to match soil specificities in different agro-ecological zones. Intercropping and crop rotation are also techniques for offsetting soil nutrient depletion, as is using appropriate blends of N, P and K by crop, such as an NPK mix of 0-22-18 for legumes.

Chemico, one of the largest fertilizer importers, is blending fertilizer for crops such as maize and rice. The company worked with the Crop Services Department and developed blends they planned to deliver through the subsidy program, but ultimately the Government did not provide subsidy support.

Another fertilizer importer states that blending fertilizer to order is expensive, and a blending firm needs large-volume orders to make it profitable. The international market for fertilizer ingredients is volatile, and storage of ingredients (e.g. ammonia, phosphoric acid) is costly and should not be done for long periods. Furthermore, an importer of ingredients cannot hedge. Blending can work if a national market is open and competitive, but if there is a large subsidy program in place, blending is not profitable—especially in a country where there is neither routine soil testing nor farmer knowledge of soil types, and where farmers are highly price-sensitive to input costs. In Ghana, most farmers, other than the largest and most commercial, are unprepared to pay higher prices for fertilizer blends tailored to their soil types. This importer said Chemico's physical blending plant is underused, which illustrates how demand for blends is limited in Ghana, and thus unprofitable.

Organization of the Fertilizer Trade. Three players dominate Ghana's fertilizer importation industry: Yara, Chemico and Louis Dreyfus (formerly Golden Stork). Annual imports are at least 50,000 MT. Other suppliers include OCP (but will not provide fertilizers on credit), AMG West Africa[42], and OLAM.

Demurrage charges at the port of Tema present a major problem, especially during peak periods of fertilizer imports. Government regulations to inspect fertilizer on land cause delays, as does the lack of dedicated berths at the port for fertilizer (while there is a separate berth for fresh vegetables and pineapple). Fertilizer inspection should be done on ships, according to Chemico, which claims to have been fined hundreds of thousands of USD in demurrage charges. The delays leading to demurrage charges are largely due to congestion at the undersized Tema port, which serves the entire central corridor of West Africa. The port needs expansion, but operational efficiency is also the culprit. According to the IFDC (2012), onerous demurrage charges due to port delays and high road transport costs in Ghana contribute to the high cost of fertilizer delivered to the farm.

41 It is also alleged that some PPRSD officials in upcountry towns have their own agri-chemical shops, so they have little interest (and time) in inspecting other agro-dealer sales points.
42 AMG is an Indonesian fertilizer manufacturing and trading company based in Surabaya. It is able to ship eight different NPK blends, a couple phosphate fertilizers, six types of bio-fertilizer, and many other types of soil fertility-enhancing products. See http://amgfertilizer.com/eng/products/707112011160410/bio-fertilizer/.

GAIDA has about 3,000 registered agro-dealer members. Dues are a mere four GHC/month, regardless of size, storage capacity or throughput. Ghana has 4,000-5,000 agro-dealers.

Farmer Use of Fertilizer. Fertilizer use is typically below recommended application levels: only 7.3 kg/ha of fertilizer nutrients in 2009 (IFPRI, 2012). According to IFDC (2012), nearly 40% of fertilizer imported into Ghana was used on cocoa in 2010-11—an estimated 130,000 MT.[43] The remainder is imported through subsidized or non-subsidized channels for use on food crops and vegetables. Low levels of fertilizer are the result of limited farmer liquidity and an absence of seasonal agricultural production credit. Extension services are also under-performing in Ghana, partly because public extension coverage is limited (one extension agent per 2,500 farmers, well under the recommended ratio of 1:500). The few remaining extension officers are now generalists with no subject matter specialists with expertise in particular crops or livestock. Soil testing is expensive[44] and can only be done in a few locations. Most labs need reagents, even if reasonably well-equipped. Soil testing kits are inexpensive and mobile (though less accurate than lab analyses), but not widely used.

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43 Estimates of fertilizer imports into Ghana vary: 218,000 mt in 2009 (IFPRI), 295,900 mt in 2010 (World Bank), 335,100 mt in 2009 (IFDC). Using World Bank estimates, 31% of fertilizer imports in 2010 went to cocoa.

44 An SRI researcher in Kumasi said that the SRI laboratory at the CSIR complex in Accra charges 50 GHC for a 'complete' soil analysis—this seems implausibly inexpensive. He quoted the cost at public universities as more than 100 GHC per sample.

NIGERIA

Summary of Priority Policies and Regulations to Address

Nigeria's Agricultural Transformation Agenda (ATA) was launched in 2012 with the objective of delivering inputs in a reliable manner through the Growth Enhancement Scheme of the Federal Ministry of Agriculture and Rural Development (FMARD). The main aim is to unlock the potential of the agricultural sector with the major objective of accelerating the production of local staples, along the value chain of major commodities. To effectively drive this agenda, the Federal Government of Nigeria (FGN) formulated a new set of policies and a regulatory framework to complement existing rules and laws. To complement the work of the FMARD, AGRA initiated MIRA with the aim of identifying policy constraints and creating actionable points to sharpen policies and promote Nigeria's agricultural transformation agenda.

Findings from the MIRA study revealed core policy gaps that would need to be strengthened and/or reformed in order to promote agribusiness in Nigeria. For ease of implementation and tracking of progress, these have been grouped into short-term and long-term actions and policy recommendations. The long-term policy and regulation reforms and strategies can be viewed as an envelope containing both short-term policy reforms and longer-run, institutional capacity building and infrastructural investments.

Short-Run Policy and Regulatory Reforms

The National Seed Council must revisit seed laws and revise them in line with those of ECOWAS member states. Nigeria has revised national seed laws but some are not consistent with the newly ratified seed laws and regulations of ECOWAS. In addition, some seed laws have to be harmonized with other laws and regulations that may not be directly related to seeds and other inputs but are crucial for the seed law to function. *Implication for agribusiness investment in smallholder value chains*: Nigeria has an uneven track record in complying with ECOWAS regional trade agreements covering agricultural inputs and products. Seed importers (and by extension farmers) fail to benefit from a wider choice of regionally proven seed varieties if regional trade agreements are not implemented. Seed producers and prospective exporters of improved Nigerian seed varieties are also penalized in not being able to scale up production and benefit from opportunities in the larger regional market.

Policies and regulations governing seed imports need to be clarified, as stakeholders are unable to import seed even in the face of acute shortages. The National Seed Council needs to put in place clear guidelines and policies on seed trade consistent with the ECOWAS regional seed agreement. In collaboration with the National Seed Council, AGRA can help to build capacity to create awareness among stakeholders as many actors are still largely unaware of recent developments in the industry with regard to new laws and regulations. Across the ECOWAS region, there is need for awareness-raising campaigns and capacity building that will support effective implementation of regionally consistent seed laws and regulations. *Implication for agribusiness investment in smallholder value chains*: Given the dearth of locally produced and available certified seed in Nigeria, regional imports can fill the gap. But ambiguous seed regulations will limit Nigerian farmers' access to improved seed and productivity.

Approve and Implement the Fertilizer Law and Regulations. The deregulation of the fertilizer industry and the government's complete exit from the procurement and distribution of the product has stimulated the emergence of a number of rent-seeking entrepreneurs who have flooded the market with fake and adulterated products. Stakeholders contend that fake fertilizers are at an all-time high—and that Nigeria lacks functional, effective fertilizer laws, a regulatory framework, and an independent agency to effectively govern and monitor the sale and distribution of fertilizer A newly drafted bill on Fertilizer Quality Control in Nigeria is being vetted by the Ministry of Justice before forwarding it to the National Assembly for consideration; this law and regulations must urgently be approved and implemented. The government must then constitute a fertilizer board to monitor and regulate the fertilizer industry, with the authority to sanction individuals involved in fertilizer fraud and adulteration. *Implication for agribusiness investment in smallholder value chains*: Rapid deregulation, without an adequate regulatory framework and enforcement capacity, has encouraged fraudulent activity that undercuts legitimate fertilizer distributors through unfair competition and by tainting the industry in the eyes of farmers. This could lead to minimal investment and some private sector exit.

Remove Inconsistencies between Federal and State Policies on Fertilizer Subsidies. Some states in the country (Nasarawa, e.g.) still refuse to participate in the Growth Enhancement Support (GES) subsidy scheme. On the other hand, the magnitude of subsidies granted by each state varies, resulting in "cross border" trade in fertilizer, creating artificial surpluses and shortages

among different states. Inconsistent federal and state policies distort the fertilizer market and limit the use of this input, particularly among smallholders. Policy harmonization among the three tiers of government (federal, state and local) is required. AGRA can help through the Association of Governors' forum, among others, to create awareness and bring all stakeholders together to adopt a uniform policy that would not disadvantage some farmers in certain parts of the country. *Implication for agribusiness investment in smallholder value chains*: Patterns of interregional fertilizer trade are distorted by differing state policies, which could discourage private sector investment and trade in some states.

The E-wallet system needs to be expanded to cover more farmers, and fertilizer distributed under this subsidy scheme needs to be doubled—per farm and per hectare. E-wallet distribution of fertilizer and certified seed has the potential to make fertilizer available to a large number of farmers, but the percentage of farmers receiving fertilizer under this system remains low. The maximum two bags of fertilizer (100 kg) allocated to each farmer is not even enough to plant one hectare at the recommended application rate of 200 kg/ha. *Implication for agribusiness investment in smallholder value chains*: Although this presupposes the continuation of the subsidy program, E-wallet's limited farmer coverage and inadequate fertilizer quantities per farmer need to be addressed, or use of the subsidy program will be discouraged. (In other words, how effectively a government implements a subsidy program significantly affects its success in achieving its medium-term objective of increasing [sustainable] fertilizer use by farmers.

Government fiscal policy on taxes and duties on rice grain distorts both the seed and grain markets. Frequent policy changes without consultations with stakeholders continue to send the wrong signals to would-be investors in both the rice grain and seed market. AGRA, through stakeholders, could engage the FGN on the need for extensive consultations with stakeholders prior to major policy shifts (in the rice market, for example). *Implication for agribusiness investment in smallholder value chains*: Frequent, unpredictable policy shifts deter private investment. As Nigeria has been a huge importer of non-African rice in many years, import policy uncertainty is a grave disincentive to increased production of paddy as well as a brake on investment in commercial rice processing.

Longer Run Policy and Regulatory Reform and Institutional Strengthening Agenda

The **seed certification process is abnormally long and must be shortened**. Few and inadequate public resources, both human and material, constitute major handicaps, including a high ratio of land area under seed production to seed certification officers and too few seed-testing laboratories. The situation is compounded by many seed companies having recently entered the seed industry. AGRA can help to develop the necessary capacity for implementation of seed certification policy. *Implication for agribusiness investment in smallholder value chains*: Capacity to test, inspect, and monitor seed trials and production needs to reside in the public sector during early stages of seed industry development. Inadequate capacity leads to unacceptable delays that deter domestic and foreign private investment in seed varietal breeding, limiting the range of varietal alternatives to farmers in different agro-ecological zones. It all adds up to poorer-performing varieties and lower productivity.

Create an independent monitoring and regulation entity for the seed industry. The National Seed Council, an arm of the FMARD, cannot inspect and certify seed at the same time it monitors and regulates the seed industry. AGRA, working with major stakeholders, needs to establish an independent monitoring and regulatory institution to monitor seed sales for authenticity, quality and truth in labeling. *Implication for agribusiness investment in smallholder value chains*: An independent agency will reduce (or eliminate) fraudulent seed trading practices that damage the credibility of the entire seed industry and deter investment.

There is need to upgrade existing seed testing laboratories to attain international standards and get accredited by ISTA and OECD. Without seed testing accreditation and following of international standards in seed testing, certification and testing, Nigeria cannot actively engage in the international seed trade. *Implication for agribusiness investment in smallholder value chains*: Inability to export seed will reduce production of better Nigerian varieties with export potential.

Developing a private sector agro-dealer network will lead to more efficient fertilizer distribution and satisfy farmer demand better than any subsidy scheme. The E-wallet system is plagued by incorrect estimation of the number of smallholders and low connectivity of cell phones in rural areas, so the subsidy is underused. No easy solutions exist to the problem of multiple registrations by farmers and the resale of fertilizer vouchers by smallholders who cannot or do not use their vouchers. *Implication for agribusiness investment in smallholder value chains*: Only a true market system that focuses on the development of an efficient agro-dealer network can adequately address the issue of low fertilizer use in the country. A badly implemented subsidy scheme will retard the emergence of a private

sector-led fertilizer distribution system.

FGN should devise an exit strategy from the fertilizer market. Reviews of the fertilizer market in Nigeria have all concluded that promotion of a dual fertilizer market (subsidized and free-market) has hampered private sector development. The FGN should develop and implement an exit strategy from the fertilizer market while providing the framework and guidelines for an efficient agro-dealer network to ensure adequate coverage of rural areas. *Implication for agribusiness investment in smallholder value chains*: FGN intervention in the fertilizer market will continue to undermine incentives to invest in fertilizer blending, wholesale distribution and sales.

In general, government interventions in the trade of major staples have become distortionary and of major concern to most stakeholders.

Policy shifts on rice imports limit investment in both seed rice production and paddy growing and processing. The FGN has prioritized rice self-sufficiency and import substitution for rice, which has had a negative effect on producers and processors. Frequent policy changes by government have over the years damaged the rice industry, and removal of duties on imported rice has reduced rice seed production. The relationship between seed and grain policies is not well understood, illustrating the need for rigorous empirical analysis before such measures are implemented. AGRA can help to initiate these studies. *Implication for agribusiness investment in smallholder value chains*: Frequent policy changes undercut farmer production of paddy, the ability of processors to source local paddy, and the incentive for seed growers to multiply certified rice seed.

There is still no clear policy on warehouse receipts though a very good model exists in Ethiopia from which Nigeria can learn. The Abuja Securities and Commodity Exchange (ASCE), created with warehouses in 1998, has no viable warehouse receipt system. But such a system could be made operational if AGRA in collaboration with the Central Bank put in a place an effective set of policies and regulations for this purpose. *Implication for agribusiness investment in smallholder value chains*: Without a regulatory framework for warehouse receipts, high-quality storage of food staples will not be encouraged and producer access to agricultural credit, using agricultural products in storage as collateral, will not emerge.

Tariffs on the import of wheat and wheat flour were raised, and the export of cassava and cassava products has been banned. These policy actions come from the local content directive under the Cassava Bread Initiative, part of the Agricultural Transformation Agenda of the government under the Import Substitution Policy. This initiative focuses on reducing the wheat content of bread through inclusion of 40% cassava flour. To support this, the government put in place a number of fiscal policies, including raising tariffs on the import of wheat and wheat flour and banning export of cassava and cassava products. The net effect has been to raise both the costs to processors of both imported wheat and cassava, and created supply problems for other users of cassava raw materials. The FGN should abandon these policy measures and initiate a comprehensive study to quantify the effects. *Implication for agribusiness investment in smallholder value chains*: A well-intentioned initiative may be implemented in ways that unintentionally harm other value chains and increase the cost of a basic staple for poor consumers. The FGN needs to reconsider the policies.

Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Nigeria

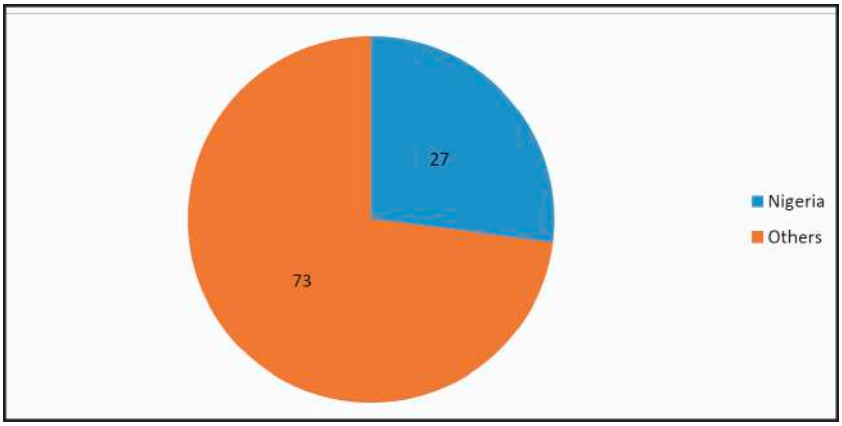
Background: the Agricultural Sector of Nigeria

The agricultural sector is central to the Nigeria's economy, accounting for about 40% of the country's gross domestic product (GDP) and providing 60% of employment. It is also a major source of raw materials for agro-based industries, and second to the oil sector in generating foreign exchange for the economy. Between 2001 and 2007, the agricultural sector accounted for 51% of job creation in the country. In the 1960s, before the advent of the oil boom, Nigeria had over 60% of the global palm oil exports; 30% of global groundnut exports (in what used to be known as the groundnut pyramids); 20% to 30% of global groundnut oil exports; and 15% of global cocoa exports (Presidential Brief Agricultural Transformation Agenda 2011).

Since the 1970s, Nigeria has lost its dominant position in the export of key crops such as cocoa, groundnuts, and palm oil. By the year 2000, Nigeria's global share of exports of each of these major crops was 5% or less. The advent of the oil boom in the early 1970s made the country highly dependent on oil revenue. Thus, instead of leveraging the agricultural sector, the oil sector has depressed the sector to the extent that food insecurity

and poverty have increased. Rural dwellers who had been dependent on the agricultural sector have been highly marginalized and pushed to the brink of desperation. The agricultural sector has continued to make a very modest contribution to the economy's overall growth rate, and Nigeria' food security situation has continued to decline (Adeoti 2002).

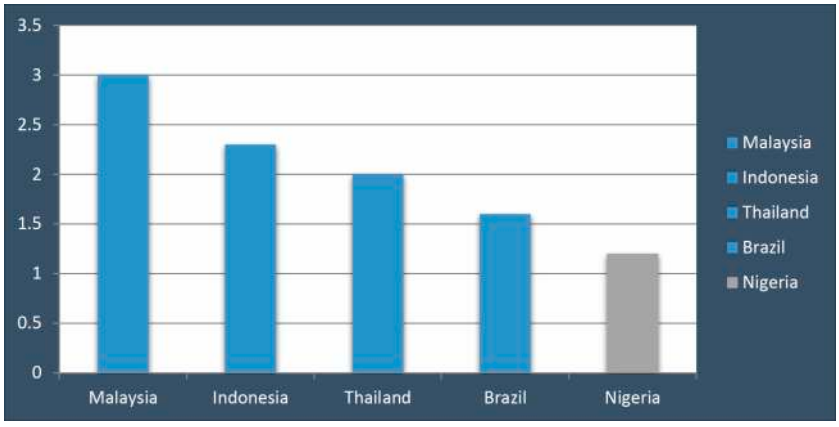
Figure 7: Share of world's palm oil exports in 1961 measure: percent of world trade



Source: Presidential Brief on Agricultural Transformation Agenda 2011

In comparison to other developing countries, Nigeria's agricultural performance has declined steadily since the 1960s. Countries that were at the same level of economic development as Nigeria in the 1960s (such as Malaysia and Indonesia) have continued to register progress. For example, yield per hectare, which is a major driver of agricultural competitiveness, has stagnated in Nigeria in the last decades. Today, Nigeria's yield per hectare is 20% to 50% of that obtained in similar developing countries. In 1961, Indonesia's yields were lower than Nigeria's. Today Indonesia's yields are about three times higher than Nigeria's, where actual yields of major crops are well below their potential yields.

Figure 8: Average annual growth rates of major cereals (percent) in yield (1961–2008)



Source: Presidential Brief on Agricultural Transformation Agenda 2011

Figure 9: Average cereal yield in Nigeria compared to other countries in Africa

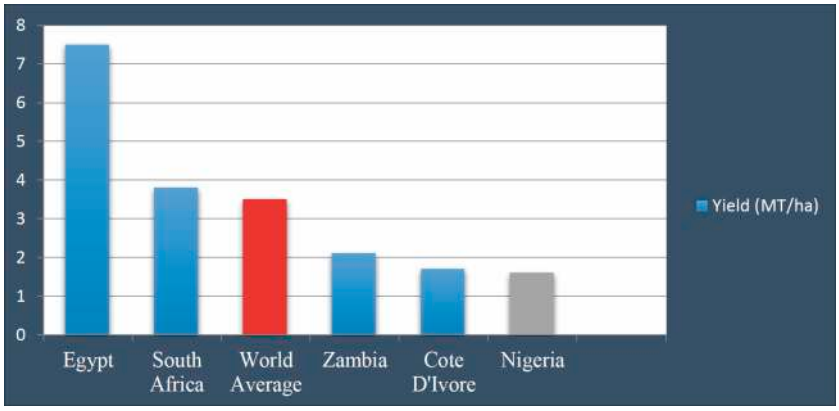
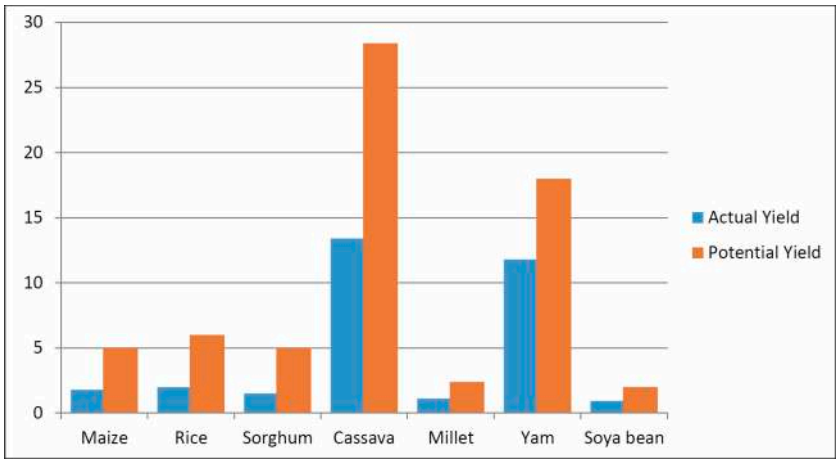


Figure 10: Actual versus potential yields for major staples in Nigeria: 2011/2012



Source: NAERLS and NPAFS, 2011

The stellar performance of the agricultural sectors in some similar developing countries was a result of good policies and an enabling environment that attracted much-needed investment. These policies leveraged critical factors of production and promoted strong marketing organizations that linked farmers to markets. In turn, due to increases in production and the need for export, the countries were able to meet strict new international sanitary and phytosanitary requirements and rules and regulations in other areas of food safety and standards.

Constraints to Agricultural Production

Agriculturally, Nigeria has huge potential that is largely unharnessed. With over 84 million hectares of arable land (of which only 40% is cultivated), a population of 167 million (Africa's largest market), and 230 billion cubic meters of water, Nigeria has one of the richest endowments for agricultural growth in the world. Given Nigeria's abundant natural resources, it should be possible to transform the country's comparative advantage into a competitiveness advantage—if the right polices are formulated and implemented to stimulate productivity and spur economic growth.

The agricultural sector needs a structural transformation, away from its current status of producing mainly raw materials and towards an agribusiness system that adds value and creates jobs by producing processed and semi-processed goods. New policies and regulations that can spur investment seem to be the missing link needed to transform the country's abundant resources into a sector focused on food production and poverty reduction, particularly among smallholder farmers.

To unlock the potential of its agricultural sector, Nigeria embarked on a major trans-formation with the launch of the Agricultural Transformation Agenda (ATA) in 2012. The goals are to add 20 million metric tons of food to the domestic food supply by 2015 and to create 3.5 million jobs. The agenda's focus is on driving import substitution by accelerating the production of local staples, to reduce dependence on food imports and turn Nigeria into a net exporter of food.

The main question is "What is the preferred pathway for agricultural development in Nigeria?" Rural areas—where the majority of farmers reside—are heavily dependent on smallholder producers, whose primary need is household subsistence. They produce little marketable surplus and treat agriculture as a way of life rather than a business. Since 1970, when major development programs began to focus on agricultural development, these smallholder farmers have been targeted by the government and the Federal Ministry of Agriculture and Rural Development (FMARD). The programs aimed to help them raise output, productivity, and income and thus break out of a cycle of poverty.

Clearly, this approach has not worked. The failure has resulted in food insecurity and extreme poverty among rural populations and among the urban dwellers who depend on food produced by these smallholders. The new policy thrust focuses on transforming the agricultural sector to promote agribusiness along the value chains of major commodities. The new paradigm is expected to link smallholders to markets and promote backward and forward linkages, creating a multiplier effect that reduces poverty and enhances food security in the country.

Under the new dispensation, the overarching policy of the Government of Nigeria is to treat the agricultural sector as a business rather than as a development program. In evaluating the ATA, the Office of the President unequivocally stated "we will no longer manage poverty with agriculture. We will use agriculture to create the future millionaires and

billionaires of Nigeria. We are determined to change the fortunes of our farmers, for the poverty we see today must give way to wealth all across our rural areas, as we make agriculture a business that helps to lift millions of farmers out of poverty."

To leverage growth in the agricultural sector and the overall economy, the Government of Nigeria has adopted a deliberate policy of using the private sector to drive growth. The ATA's new policy framework focuses on value chains for all commodities and connects farms to mills, aggregators, storage, improved logistics, processors, and value addition. The work of the Ministry of Agriculture and Rural Development (MARD) is to no longer revolve only around farm production, but is to also involve improving processing, value addition, and market opportunities for farmers by developing integrated value chains for all agricultural commodities. Under the new approach, the government will provide guidance on regulations and policies and will provide the enabling environment for a private sector-led transformation of the agricultural sector. The government's new development agenda is consistent with the World Bank's long-held view that the private sector, rather than the public sector, must be responsible for production and distribution of goods and services.

The World Bank and many other development agencies believe that private sector development can increase the financial capital base for investment spending, which is responsible for much of a country's economic output. An increase in output stimulates employment, particularly in countries such as those in sub-Saharan Africa (SSA) where unemployment is high and poverty is endemic. In addition, an inflow of foreign direct investment (FDI) comes with additional benefits—technology and knowledge transfers across international boundaries (Javorcik 2004; 2008). Policy analysts think that knowledge brought by foreign affiliates spills over to domestic firms, increases their competitiveness, and accelerates overall economic growth by enabling domestic firms to extend their production and efficiency frontiers.

In effect, the Nigerian government has decided to focus on improving the enabling environment, including formulating policy and establishing a legal and regulatory framework that engenders private sector-led agricultural and economic development.

Methodology

Based on its general objective: "to identify 'problem' policies and regulations and assess the extent to which they may be limiting investment in local SME agribusinesses, and the consequent impact on smallholders' access to inputs and markets," the study used a snowball research technique to identify key stakeholders in order to collect relevant information and data.

With the help of a local consultant, the Abt team compiled a comprehensive list of key informants from a very broad range of stakeholders representing different stages in the production, processing, and marketing of key agricultural commodities in Nigeria. The team conducted an extensive review of scientific publications and policy research papers to identify important policy issues in Nigerian agriculture. This was necessary because agricultural policies have changed frequently and because of the ad-hoc way in which the government has introduced or amended important policies affecting small to medium enterprises (SMEs) and smallholder farmers. The information we gathered from secondary and primary sources formed the basis for further interviews and meetings with directors, managers, technocrats, policy analysts, and researchers, as well as with civil organization and advocacy groups.

Our team collected information from the Federal Ministry of Agriculture; the Agricultural Transformation Agency Coordinating Office; the Food Security Department; the International Food Policy Research Institute (IFPRI); the Department of Agriculture; the National Seed Council; the German Society for International Cooperation (GIZ); the Global Alliance for Improved Nutrition (GAIN); the Nigerian Association of Small and Medium Enterprises (NASME); the Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA); the Value Chain Adviser for the GIZ's Pro-Poor Growth and Promotion of Employment in Nigeria Program (SEDIN); and a host of other public officials who have requested anonymity.

Other sources included international researchers, development partners, local institutions and NGOs, and policymakers. We conducted face-to face interviews with key informants to complement and validate the information we obtained from literature, and to ensure data quality and consistency through data triangulation and reconciliation.

In effect, the methodology combined literature search and review with interviews. We used interview guidelines to generate data and information, following a participatory approach that brought the relevant stakeholders on board through discourse and dialogue. The hope is that AGRA would use the empirical findings from this study to nudge the government into policy reforms that could improve the efficiency and performance of the agribusiness sector.

Review of Major Agricultural Policies and Regulations in Nigeria

This section summarizes the policies specified by the FMARD for effective transformation of the agricultural sector, as well as the key legislation and regulatory framework needed to facilitate that transformation. For clarity and ease of understanding, we emphasize the conventional broad categories of fiscal and monetary policies. The main policies of the FMARD are as follows:

- Fiscal policies
- Domestic content for food (enabling legislation)
- Industrial policies, particularly affecting fertilizer production
- Financial service policies
- Agricultural policies

Fiscal Policies

The main thrust of fiscal policies zero tariffs (custom, excise, and value-added) for import of agricultural inputs and equipment (fertilizer, machinery, irrigation pumps) and agro-processing equipment. There is also an unspecified (not yet quantified) tax holiday for investors putting processing plants in staple crop processing zones. There is, however, a "controversial" increase in tariff on any commodity that Nigeria can produce (including food items such as rice, starch, sugar, wheat, etc.) with the aim of promoting domestic production and local content. The policy is to increase the current import levies of 5% for brown rice, 30% for polished milled rice, 5% for raw sugar, and 10% for starches. The government hopes to use revenue from the tariffs and duties to leverage domestic production of the basic raw materials needed to replace imports. The intent is also to promote job creation along the value chains of major commodities and to support incentives for investors in blending plants for ethanol.

Domestic Content for Food Policy

The Domestic Content for Food Policy, in what is best described as enabling legislation, emphasizes the use of locally produced or sourced raw materials to substitute, to the extent possible, for imported raw materials or inputs in the production of major goods that are consumed within Nigeria. Two main components of this import content substitution policy are 1) the use of 10% cassava flour to substitute for bread wheat flour, and 2) the use of locally sourced materials to produce ethanol for blending 10% ethanol with petrol.[45]

Industrial Policies

In terms of agriculture-related industrial policies, the government is moving gradually away from fertilizer consumption subsidies to support for local fertilizer manufacturing, leveraging the gas industrialization policy. The government has started to privatize and divest publicly owned fertilizer companies, with the aim of making them effectively respond to the needs of the country and contribute significantly to fertilizer availability and consumption.

Financial Service Policies

The government's plan is to remove the National Agricultural Insurance Company's current monopoly on agricultural insurance and liberalize to allow private sector insurance companies.

Agricultural Policies

Key elements of the FMARD's agricultural policies involve 1) liberalizing the production of foundation seed to allow the private sector to commercialize seeds, 2) eliminating government distribution of fertilizers and replacing them with private sector distribution, and 3) moving away from a flat fertilizer price subsidy toward targeted support to smallholder farmers.

The policies also provide incentives to engage young commercial farmers in farming as a business, promote the development of Agribusiness Entrepreneurship Centers and farm skill acquisition centers, and aim to increase the ability of stallholders in particular to access land and finance. In addition, the government as a matter of priority intends to create institutions to support the ATA, launch marketing corporations, and replace marketing boards.

The government intends to use the policy of guaranteed minimum prices for food crops to stabilize prices; it also plans to revise the Land Use Act to provide investors with easier access to land. Furthermore, it is the policy of the government to rapidly expand irrigation facilities while revamping existing ones, in order to expand dry season crop production. This core strategy for year-round agricultural production is seen as crucial for accelerating poverty reduction and enhancing food security.

Policy, Strategy, and Institutional Gap Analysis

This section provides a diagnostic review of the constraints and gaps in agricultural policies and strategies, and looks at associated institutional

45 The ethanol content in petrol is expected to be not less than 10%.

constraints that limit efficient agricultural production in Nigeria. It highlights areas of omission or oversight that, if addressed, could help the FMARD achieve the main goals of reducing hunger and enhancing food security.

We focus on the core policy areas in the agricultural value chain that are paramount for enhancing productivity but if not well implemented (either by omission or commission) could constrain smallholders' ability to access improved factors of production or could constitute a bottleneck in the marketing of agricultural produce. First, we explore the general policy framework and how it affects the production environment, looking at the government's stated and desired objectives. Secondly, we isolate and review the main policy instruments influencing procurement and usage of the major factors of production—fertilizer, seed, and mechanization. We also examine the general macroeconomic policies (fiscal and, to a limited extent, monetary policies, particularly the conditions for credit) that directly impinge on smallholders' ability to maximize opportunities while also managing risk and uncertainties. Finally, for each of the isolated factors of production and for the enabling environment, we identify policy gaps and offer suggestions and recommendations that could engender policy reforms that could leverage agricultural production by smallholders.

The Input Sub-sector: Fertilizer, Improved Seed, and Mechanization

The policy framework of ATA addresses agriculture along the value chains of priority crops—17 of them at present. It calls for the government to provide a platform through the Growth Enhancement Scheme (GES) under the E-wallet system for this purpose. Under this program, the government pays a 50% subsidy (25% federal and 25% state) while the farmer pays the remaining 50% for each bag of fertilizer. Seeds are currently given to farmers for free, although they are expected to pay a certain percentage of cost of seed in the coming year.

Improved seeds have been described as the engine of any agricultural revolution and fertilizer the fuel. Therefore, farmers' access to these modern agricultural inputs is the backbone of ATA. The GES program was launched in 2011 to provide targeted support for seeds and fertilizer to five million farmers in the first year and 20 million farmers within four years. The GES program is based upon technological, institutional, and financial support and "subsidies" that are needed to transform agriculture into a viable commercial enterprise in Nigeria.

This subsidy program is to be time-specific and farmers should expect gradual government withdrawal in the long run. Despite the progress made by the FMARD in privatizing the input sub-sector—mainly in the procurement and distribution of fertilizer and seed—many policy issues remain unresolved, presenting some worrisome challenges. These concerns and problems need answers and policies need to be changed if the government's objectives are to be met.

Fertilizers and Fertilizer Policy in Nigeria

Government policy is to increase fertilizer procurement (through imports and manufacturing and blending) and usage by smallholder farmers. The government wants to bring fertilizers to the doorstep of farmers. This is consistent with the aims of the Abuja Food Security Summit of African Heads of State on Food Security, which sought to increase the level of fertilizer nutrient use from the current average of 8 kg/ha to an average of 50 kg/ha by 2015. The success of this policy objective will be determined by the way the GES is implemented.

The National Agricultural Investment Plan (NAIP) sets a target to increase fertilizer use by 30% from 2010 to 2015, with overall demand expected to grow from 2.6 to 3.4 million tons by 2015. There are three main initiatives within the NAIP that actively target the increase in fertilizer use: 1) the Organic Fertilizer Development Program (OFDP), promotes the use of organic fertilizer though public-private partnerships (PPPs); 2) the Fertilizer Quality Control (FQC) project, which aims to increase the quality of the fertilizer used and distributed; and 3) the National Foundation Seed Multiplication program (NFSM), which aims to release high-quality foundation seeds to certified seed producers. In addition, the government is committed to promoting the domestic manufacturing and blending of fertilizer using the country's abundant raw materials. Local fertilizer manufacturing and blending capacity has significantly expanded, with $5 billion in new investments, according to FMARD official statistics.

Like most government-administered projects and programs, the traditional system of government procurement and distribution of subsidized fertilizer in Nigeria has been fraught with persistent problems. These include late delivery and diversion of fertilizer from the intended beneficiaries (Nagy and Edun 2002). Leakages of the product into the regular market were common, distorting the market price and providing arbitrage opportunities. The impact of this government-managed program has led to varying degrees of failure and underperformance. Despite many years of fertilizer subsidy programs, only half or less of households in two key agricultural production zones in the north used fertilizer—about 50 percent in Kano State and 40 percent in Taraba State (Nigerian National Bureau of

Statistics 2010). Studies have shown that policy inconsistencies, timely access to fertilizer, price, and poor fertilizer quality are major constraints to fertilizer use (Banful et al. 2010; Liverpool-Tasie, Banful, and Olaniyan 2010). The use of vouchers through the E-wallet program has been proffered as a potential solution to the shortcomings of subsidized fertilizer distribution by the government (IFDC 2010).

Although the use of the private sector to procure and distribute inputs seems to be getting traction, E-wallet systems have some flaws that tend to adversely affect fertilizer consumption by smallholder farmers. The government's fertilizer policy envisages a quadrupling in fertilizer use to 50 kg/ha (compared to 13 kg/ha), which is in line with the Maputo Declaration of Food Security of the African Union Heads of State of Government. This is to be done through a competitive and efficient importation and marketing system. Private importers, distributors, and agro-dealers are expected to play a key role in the GES program and in the importation and distribution system. The expectation is that over time competition between traders and agro-dealers will bring down prices to farmers. Further gains could be made through private investment in local manufacturing and production of fertilizer in the country.

The E-wallet system for distributing fertilizer

According to a recent evaluation report, the E-wallet system has the following characteristics and has achieved these specific objectives:

- It involves an electronic wallet system developed using mobile phones to deliver seeds at no cost and a 50% subsidy on fertilizers, for a maximum of two bags, to farmers. Electronic vouchers for seeds and subsidized fertilizers are usually sent to farmers on their mobile phones. The vouchers are then used as cash to redeem farm inputs from registered agro-dealers across the country.

- A database of 4.5 million farmers was developed in 2012 for GES; the number of farmers in the database has now been updated to 10 million farmers (as of 2013).

- A total of Naira 30 billion (equivalent to approximately $187.5 million) was leveraged from commercial banks, using government guarantees, to finance the seed and fertilizer supply in the country, without spending one Naira from the Federal Ministry of Agriculture and Rural Development. This is the first time this will be done in Nigeria.

- A total of 16 seed companies were able to draw down the sum of N 1,527,335,000 from the N30-billion facility made available by the government. The policy has spurred private sector activity to build supply chains that reach farmers in ways that have not been done before. The GES program stimulates demand for fertilizer by putting cash directly into the hands of the farmers via e-wallets.

The official review of the GES suggests that the government has succeeded to some extent in sanitizing the system by restoring transparency and accountability. The old corrupt system of direct government procurement and distribution of fertilizers seems to be highly reduced according to stakeholders interviewed in the study.

The new system seems to be working relatively better compared to the old system. In the past two years, the government claims that the system has reached 6.4 million smallholder farmers and enhanced food security for 30 million persons in rural farm households. Women farmers in particular—who never got fertilizers for decades under the old government system—now have access to fertilizer and are very likely to realize better yields. Hard data are difficult to come by, so a well-designed evaluation method would have to be implemented to verify these assertions. The current study seems to be very timely in shedding light where donor support could help improve the fertilizer supply system in Nigeria.

Interviews with stakeholders show mixed reactions. There is still a huge amount of leakage of government-subsidized fertilizer into the market, which depresses prices and tends to undercut the private fertilizer companies. There is also high adulteration, as rent-seeking entrepreneurs buy the fertilizers and reconstitute them into lower-quality fertilizers. There is an absence of an independent regulatory and legal framework to monitor the market in terms of quality and standards. Frequent delays in effecting payments to the agro-dealers and importers—up to six months, according to stakeholders—results in delays in importing and distributing fertilizers for the next season, which leads to late fertilizer applications and large amounts of carry-over in some years. A paucity of agro-dealers means long queues in some redemption centers,[46] where frustrated farmers may abandon redeeming their vouchers.

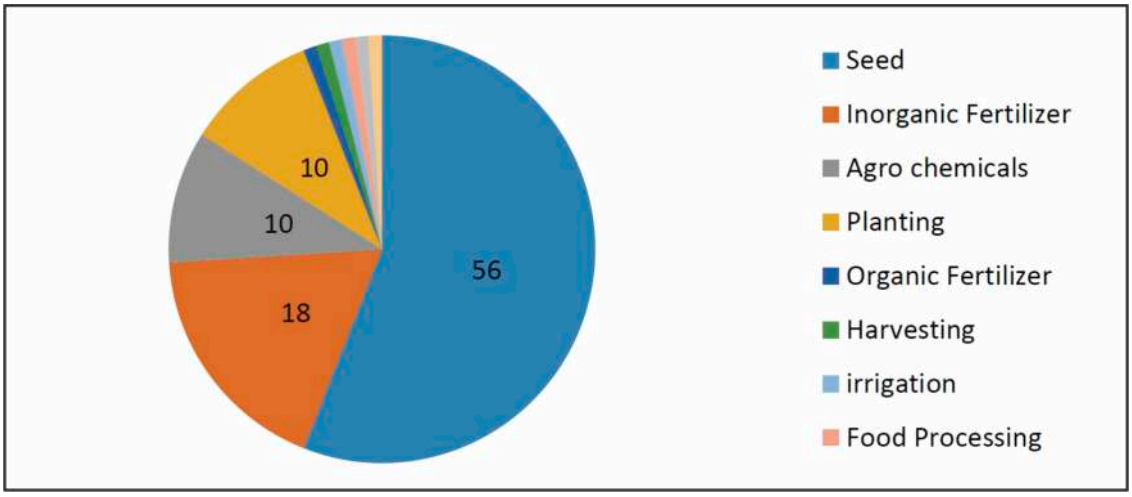
46 Redemption Centers are where farmers go to agro-dealers to redeem their E-wallet voucher. The centers are selected based on proximity to the main road and reasonable level of security and should be centrally located.

Impact of the new fertilizer policy on smallholder farmers

The fertilizer policy in the country is based on the rationale and assumption that smallholder farmers in particular do not have the ability to afford the high free market fertilizer price. Despite the government's huge budgetary expenditure on fertilizer subsidy, non-subsidized prices remain high and are rising in Nigeria. Although initial findings suggest that more farmers can now access the government-subsidized fertilizers as compared to only 11% before the GES program, their numbers are still limited. Also, the quantity available to farmers has not increased substantially given that the 100 kg that farmers can purchase through the GES is not enough for cultivating the typical range of 1-3 ha of farm land owned by smallholders in the country.

The evaluation report of GES shows that only 65% of farmers interviewed said they had purchased fertilizer through the scheme. The states of Kaduna (85%), Jigawa (84%), Gombe (68%) and Abia (48%) had the highest proportions of farmers who had not purchased fertilizer through the scheme at the time of the survey. The main reasons for this were the late launch of the scheme in the states, non-availability of inputs, and non-receipt of E-wallets. However, most farmers (68%) said they were unable to purchase the quantity of fertilizer required for their farms under the scheme. This impediment cut across farmers with different farm sizes, even those with 1 hectare and below. In fact, 82% of farmers said they require one to 10 50-kg bags of fertilizer and urged the government to increase the quantity of fertilizer to 10 bags per farmer. Many poor farmers find it difficult to pay for the 50-kg bags of fertilizer and either opt to buy fertilizer in small units from open bags, which often contain degraded or adulterated product, or wait in the vain hope of receiving subsidized fertilizer, thus missing out on applying it at the optimum time, if at all. One thing is clear though: The system has effectively raised awareness and sensitized farmers about the need to apply fertilizer to replenish soil badly depleted due to poor farm systems and management practices adopted by majority of the farmers over the years. Figure 11 shows that fertilizer is next to seed in technologies transmitted to farmers.

Figure 11: Rates of Technology Transfer in Nigeria



Source: Banful et al; 2010; Note: Unlabeled are: organic fertilizer, harvesting, irrigation, food processing, erosion control, livestock technology, all 1%.

Fertilizer laws and regulations

Numerous fertilizer regulatory bodies and activities concurrently exist in Nigeria although efforts are now underway to harmonize them. Key \ agencies mandated to participate in fertilizer regulation include the Standards Organization of Nigeria (SON), the National Agency for Food and Drug Administration and Control (NAFDAC), the Federal Fertilizer Department (FFD) of FMARD, States' Ministries of Agriculture (SMAs) and agricultural research institutes under the national university system. Though these numerous agencies provide oversight, fertilizer quality issues remain a challenge (Liverpool-Tasie, Banful, and Olaniyan 2010).

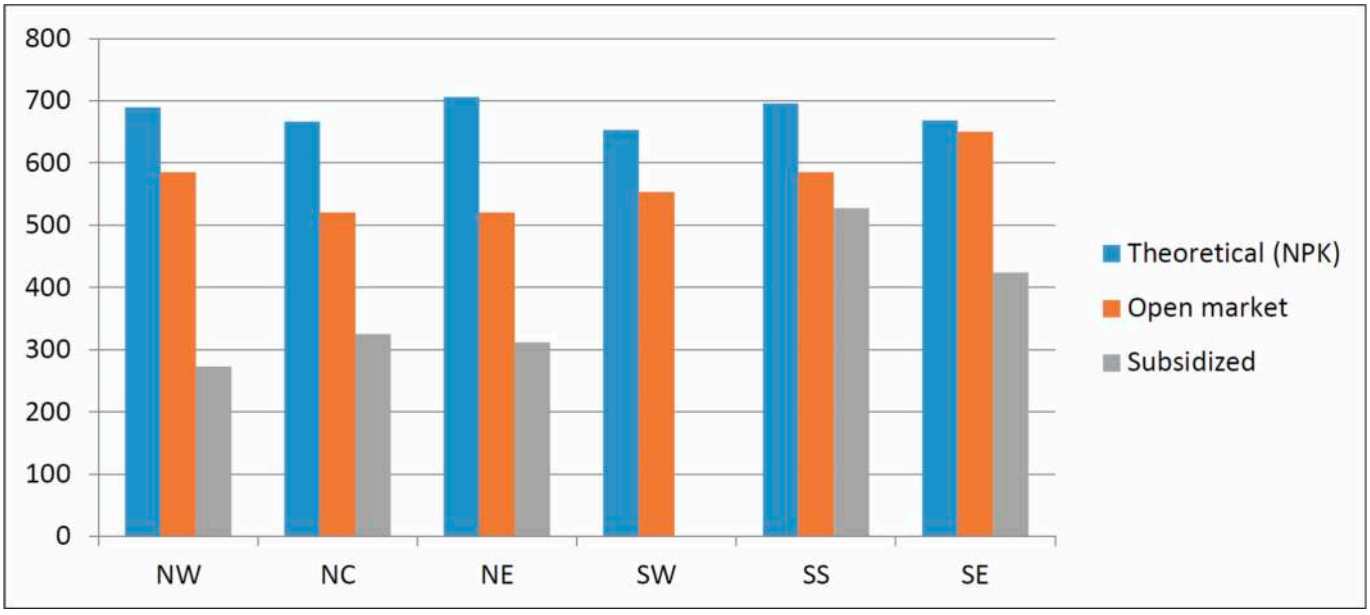
The absence of functional, effective fertilizer laws and a regulatory framework and independent agency to effectively govern and monitor the sale and distribution of fertilizer is a major policy constraint in the fertilizer industry. Lack of skilled human resources and adequately equipped laboratories constitute major handicaps and bottlenecks, as does limited capacity for effective monitoring and regulation of the fertilizer industry. The newly drafted bill on Fertilizer Quality Control is presently with the Ministry of Justice for vetting prior to its being forwarded to the National Assembly for consideration. There is an urgent need for the fertilizer law and regulations to be approved and more importantly implemented in an efficient manner.

Private sector and the E-wallet fertilizer market

Stakeholders complained of lack of credit and the untimely payment by the government of fertilizers already distributed and sold via E-wallet. It is imperative that the government puts in place a mechanism to make timely payments for smooth implementation of GES. This would also improve timely delivery of fertilizer and applications to farms and sustain the momentum and enthusiasm already created in the private sector.

The fertilizer companies also have issues with leakages of subsidized fertilizers into the markets, as shown by the fact that fertilizers are cheaper in northern regions far from ports compared to areas near the ports of Lagos and Port-Harcourt. There is evidence of "crowding in" as more importers seem to be entering the market (see Figure 12). It is, however, difficult to see whether this actually encourages competition or is the case of unscrupulous individuals taking advantage of the market and perpetuating adulteration and fake fertilizers.

Figure 12: Fertilizer Price (US$/ton) in 2010: Theoretical import parity, open market and subsidized prices



NW = North West; NC = North Central; NE = North East; SW = South West; SS = South South; SE = South East

Source: Takeshima et al 2012.

Lack of credit continues to impede the ability of the private sector to effectively deliver fertilizers to farmers at the right time and in the right amount. The GES program requires an agro-dealer to be able to finance at least two trucks of agro-inputs to avoid out-of-stock problems at the voucher redemption points. Two trucks of fertilizer cost at least N 6 million. Most agro-dealers participating in GES are unable to finance this level of inventory. The GES program provides a lending opportunity for the financial sector, but unfortunately the banks did not respond. This policy area needs to be strengthened, and banks sensitized to the potential of the program, so as to significantly increase lending to the upstream agro-dealer sector.

Meanwhile, agro-dealer networks in most of the LGA should be expanded and leveraged. Most upstream suppliers of agro-inputs do not have a national network of agro-dealers that can be relied upon for effective delivery of agro-inputs to every LGA/ward in Nigeria. Their network is concentrated in major state capitals and urban centers with little coverage in the rural areas where most smallholders reside. Although the number of registered agro-dealers has increased from about 2,500 to about 4000, agro-dealer density is still very low to service millions of smallholders. Ghana, a much smaller country, has more agro-dealers than Nigeria.

Unsurprisingly then, shortages persist in some redemption centers, compounded by limited coverage of the rural areas by mobile phone networks: Over 30% of farmers at the redemption centers were unable to redeem their vouchers due to poor mobile phone network coverage.

All in all, stakeholders agree that the government E-wallet policy appears to be the right one given the present low level of fertilizer usage by smallholders in Nigeria. However, as described above, many constraints and policy gaps exist. Indeed, many stakeholders contend that the subsidy may have already achieved its objective of stimulating interest and creating awareness

among farmers for the need to use fertilizers. The government now needs to design an exit strategy and allow the private sector to fully take control of the fertilizer market. The government can probably not do much more as the cost implications (direct and indirect) are too cumbersome for it to sustain,. In addition, complete elimination of corruption from the system is probably an illusion given the history of subsidies in Nigeria and the prevalence of rent-seeking individuals.

Independent reviews of the fertilizer market in Nigeria have all come to the same conclusions: Frequent changes in fertilizer policies and the promotion of a dual fertilizer market (subsidized and free-market) have hampered private sector development, undermining government's policy pronouncements and its good intentions to leverage fertilizer usage in the country.

Seed Sub-Sector

Policies on the production and marketing of certified seed

Seed, the basic input in crop production, sets the limits to the effectiveness of all other inputs, such as fertilizer, agro-chemicals, irrigation, and even management. The attributes of high-quality seeds include high genetic and physical purity, high rate of germination, vigor, and uncontaminated by pests and diseases. Seed is a living material and hence requires special care in multiplication, processing and storage—unlike grain, which is used essentially for consumption.

The National Seed Council (NASC) is the specialized government agency responsible for overseeing the development of the Nigerian seed industry for improved quality seed production availability, access and affordability to farmers. The establishment of the Council is backed by the National Agricultural Seeds Decree No 72 of 1992 published in the Supplementary Official Gazette Extraordinary No 71 Vol.79, 31st December 1992.

Use of commercial maize seeds in Nigeria has been described as abysmally low even when compared to other countries in SSA and certainly much lower than countries such as Zimbabwe, Zambia and Kenya, where commercial maize seed use exceeds 70% of total maize seeds.

It is estimated that Nigerian farmers would require about 1,000,000 mt of improved seeds each year to grow cereals and pulses. Currently, the commercial formal seed sector supplies about 20,000 to 50,000 tons of seed per year across all crops. This represents only 2-5% of farmers' actual seed needs and indicates a significant shortage in the supply of certified seeds that could be responsible for the poor yields.

National seed policy and private sector participation

The existing National Seed Policy was formulated in 1990 and revised a couple of times. It stresses the importance of ensuring an adequate supply of good quality seed and provides a framework for future development of the seed sub-sector, including these key objectives:

- support varietal improvement, registration, release and multiplication of released varieties;
- improve quality of seed sold to farmers;
- reorient the operation of public sector agencies, along commercial lines; and encourage private sector participation in seed operations through appropriate policies and promotional activities.

The implementation of this seed policy led to a seed development plan with the following components: Varietal development; variety evaluation, testing, registration and release; and seed multiplication. It also defined and categorized the different types—breeder seed, foundation seed and certified seed—as they are known today. The Seed Policy identified and defined the processes and stages in the production of quality seeds, including seed processing, seed certification and quality control, and emphasized the need to integrate the private sector to develop the seed industry in the country. Under this plan the federal government made specific policy changes:

- Pricing policy for the public sector agencies aimed at full cost recovery;
- Public sector to deal only in open pollinated varieties, leaving hybrid seed production for the private sector, as it requires intensive cultural practices and is more remunerative;
- Public sector withdraws from the production and marketing of certified seed in favor of Farmers Supply Companies (FASCOMs) and private seed enterprises, as they develop;
- Representatives of private enterprise on the national seed council and their involvement in policy making on seed issues;
- Private seed companies have access to breeder and foundation seeds of publicly bred varieties to enable establishment of seed enterprises without independent research capability;
- Assist private seed enterprises in importation of breeding material to develop own varieties and hybrids.

These policy revisions are shaping the seed industry in the country. Interviews with major stakeholders, including the private seed companies, indicate that the National Seed Company is making efforts to assist and cooperate with private seed companies in the provision of foundation and breeder seed from public bred varieties. However, the private sector still faces very unfair competition with state agencies, particularly the Agricultural Development project (ADPs), as well as a debt load created by government seed procurement programs that delay payments for seeds supplied or in some cases do not honor commitments. The government urgently needs to divest the ADPs or bring them in line to operate as private seed companies.

Seed law and harmonization

The seed laws have been identified as a major policy instrument that govern the production, marketing and distribution of seeds in the country and if well implemented can leverage the production and use of certified and improved seeds. Until recently seed could be sold without being certified in Nigeria, as long as it was truthfully labeled. The ECOWAS agreement and seed harmonization policies and laws now make uncertified, truthfully labeled seed illegal for 11 major crops. As a result, the National Seed Council can no longer tolerate companies selling uncertified seed. Farmers, however, may continue selling seed to other farmers but in small amounts done previously, which may undermine the seed harmonization policy of ECOWAS.

Interviews with major seed stakeholders in Nigeria confirmed that ministers of agriculture from the ECOWAS region ratified the harmonized laws at the end of 2013. The harmonized law was gazetted and released with the support of FAO. This important landmark reform would need to be carefully monitored and evaluated to ascertain its workability and effectiveness. In addition, for the full benefits of the seed law harmonization to be realized, some factors need to be addressed and resolved. The seed laws have to be harmonized with other laws and regulations that may not be directly related to seeds and other inputs but are necessary for the seed law to function. Under Article 10 of ECOWAS Protocol A/P1/1/03, "a certificate of origin shall not be required for agricultural or livestock products." However, in practice, traders of agricultural goods within West Africa are routinely asked by customs authorities to produce a certificate of origin. Also people from the ECOWAS member states are supposed to enjoy free movement across borders, but this is also not fully implemented, and under-the-table payments are common, especially for people crossing the borders by road.

Non-compliance of the ECOWAS Regional Agreement on Harmonized Seed Legislation has already been noted in Ghana. In the agreement, signed in 2008, any variety of seed registered in one ECOWAS country would be eligible for production and commercial sale in any other ECOWAS country without further certification or testing. Six years later, however, the reality is that regional governments still only recognize their own test results. In Ghana, for example, the new Plants and Fertilizer Act of 2010 specifically requires all varieties of seed to be tested domestically for a minimum of three years regardless of whether the variety has been approved in another ECOWAS country. Seed companies pay the full cost of this service equal to a minimum of USD 3,500 per year for expression of interest and seed entry, plus the full cost of all materials used in on-station and farmer field trials agreed with the Plant Protection and Regulatory Services Directorate (PPRSD). In effect, this act contradicts the 2008 ECOWAS Agreement (Keyser, 2013).

Currently, it is difficult to quantify how this new seed harmonization policy would affect smallholder producer. If well implemented, it may help redress the problem of acute shortage of commercial seed in the country. However, before the benefits can be harnessed, stakeholders must close their apparent knowledge gap with regards to seed law harmonization. National and regional workshops and seminars could acquaint all stakeholders of the newly harmonized seed laws, their implications and expectations from all concerned.

Production of breeder, foundation and certified seed in Nigeria

Production of breeder and foundation seed is still mainly in the hands of public research institutes, government agencies and parastatals under the strict supervision of the Nigeria National Seed Council, which also tests and evaluates new varieties submitted by public breeders. Despite the desire of the FMARD to open up these processes to private seed companies and actors, there are no private seed breeding institutions in the country. This core problem is the main reason for the shortage of foundation and certified seeds in the country. Smallholders have no access to certified seeds, so they resort to farmer-to-farmer transfer and farmer-saved seeds.

Interviews with the National Seed Council confirmed that the council has seen the need and is willing to involve private seed companies in the production of foundation seed.

This process is at the inception phase, and there is need to support the National Seed Council to get this project

underway. The council will need logistical support in terms of infrastructure (laboratories and seed testing equipment) and trained field inspectors to oversee this project, as plant breeders are generally scarce in Nigeria.

Seed trade and seed imports

Nigeria has virtually no international trade in seed. Except for inbred lines and new varieties for seed development purposes, importation of large quantities of seed is subjected to multi-locational trials by officials of the National Coordinated Research Project (NCRP). This lengthy variety testing and registration, which on average takes about two years, is responsible for the limited international trade in seed in Nigeria.

Lack of clear-cut import procedures and a cumbersome clearing process with the relevant authorities were identified as the major issues in seed import. Restrictions on imports to supplement domestic supply continue to exacerbate the problems of certified seed shortages in Nigeria. In theory, there is a duty of 5% on all seed imports. The National Seed Council in collaboration with the department of customs and excise is supposed to monitor and regulate the import of seeds of all types into the country. Streamlining seed import procedures and making them clear and easily available to prospective importers is much needed.

Interviews with key stakeholders and NGOs cited many cases where attempts to import vines of potatoes and other seedlings in short supply have been frustrated at the last minute in closing deals with foreign seed companies and donor organizations. Between 2005 and 2010, as reported by the Nigeria Bureau of Statistics, seed imports as a percent of total certified seed in the country were: 10% (for rice, maize and wheat combined); maize (16%); rice (2%) and wheat (2%). It was not possible to ascertain whether the National Seed Council actually authorized and cleared these imports as the council was insistent that the only imports usually allowed are genetic and parent materials for the purpose of developing new varieties. This again highlights the need for proper coordination of the various ministries and departments for implementing and enforcing national and regional seed laws and regulations.

Nigeria does not belong to ISTA or to OECD and as such cannot actively engage in international seed trade. Ineffective seed legal and regulatory systems among the ECOWAS countries also seriously impede regional seed trade. Interviews with stakeholders revealed that most public officials responsible for implementing the newly ratified ECOWAS seed laws and regulations lack a clear understanding of how the laws are supposed to be enforced, pointing to the clear need for awareness-raising campaigns and capacity building in the ECOWAS region for effective implementation of the seed laws and regulations.

Nigeria should endeavor to upgrade existing seed testing laboratories, attain international standards and get accredited by international bodies like ISTA and OECD, which will leverage seed imports and or export by Nigeria within the region.

Impact of government fiscal policy on seed- the case of rice seed and seed grain.

Government fiscal policy on taxes and duties on rice grain invariably affects the rice seed, a relationship that most policy analysts seem to overlook or are unaware of. It is important to analyze both rice seed and product market interventions and controls by government.

Self-sufficiency and import substitution in the rice industry are current priorities of the Nigerian government in terms of rice production and consumption in the country. However, recent studies by FAO (2013) show that such policies could be a source of disincentives to farmers as well as processors at different levels as they tend to destabilize the market. Government shifts and interventions in import tariffs on rice grain have an overwhelming consequence in the seed market for rice. FGN fiscal policies on rice grain indirectly regulate the seed market, an unintended consequence or what economists refer to as "a secondary effect" that is usually not the primary motive of a government.

For example, in 2004, the FGN imposed a 130% levy on rice imports to protect farmers. Rice imports declined, while seed production surged in response to rising grain prices. This stimulated rice seed production and purchases by farmers trying to take advantage of the rice ban to grow rice commercially. The high import tariff was lifted suddenly during the 2008 food crisis for six months. After the crisis, the tariff was replaced with a much lower one of 32.5% (Cadoni and Angelucci, 2013). Tariff changes undercut private rice processors and grower incentives. Current policy on import levy of 5% for brown rice and 30% for polished milled rice tend to distort the market for both the rice seed and the rice grain

Inconsistent tariffs are a major bottleneck to private sector development in the rice subsector, as it distorts the market and makes business planning very difficult for rice seed producers. Paddy producers had less incentive to produce once import barriers to rice were lowered. A promising PPP in rice production and milling among OLAM (rice mill), producer coops, and First Bank also collapsed in the recent past due to these discretionary, mostly ad-hoc policies. A recent interview

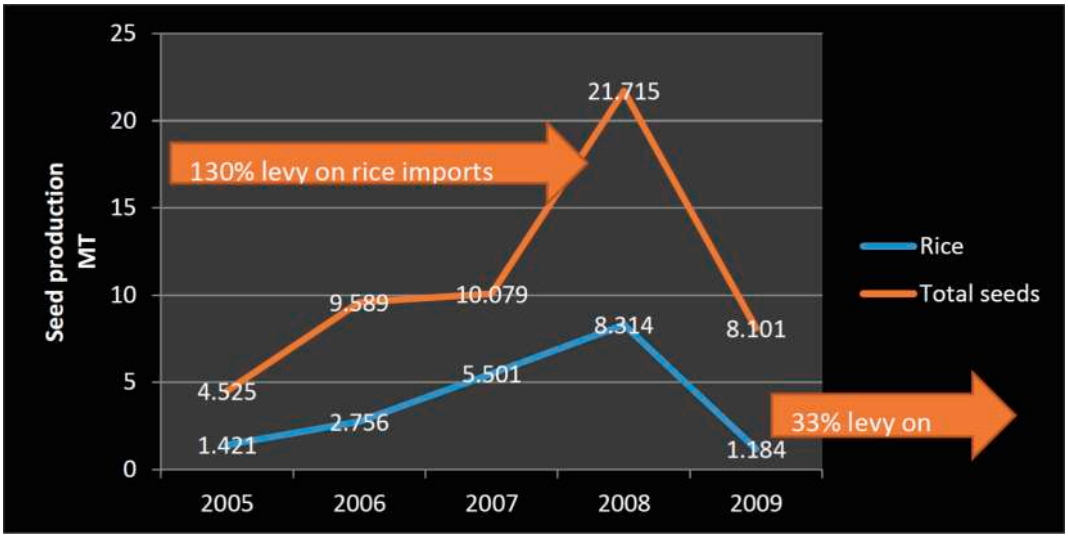
with stakeholders shows the rice market as fragmented, uncertain and confused due to frequent government policy changes. Currently, there are a number of large rice processing mills in the country operating at less than 10% capacity due to a shortage of paddy rice. Smallholder productivity has not increased and production is hardly able to satisfy the very large commercial rice processing mills. Strong relationships do not exist between processors, outgrowers and smallholders, and this disconnect limits the capabilities of smallholders.

Nigeria should focus on small-to medium rice processing mills rather than establishing large rice mills with no strong backward linkages to the smallholders who could supply the paddy. Strong linkages between out-growers, processors and distributors are crucial to the success of the value chain development approach adopted by the government. Import restrictions alone will be ineffective in stimulating a large supply response in production and milling.

Achieving self-sufficiency in rice will mean making use of the country's abundant biophysical and human resources, gaining access to modern technologies, expanding the choice of quality rice varieties grown (such as long-grain), and boosting the ability to process and bag premium-quality domestic rice during postharvest among others (Johnson et al, 2013)

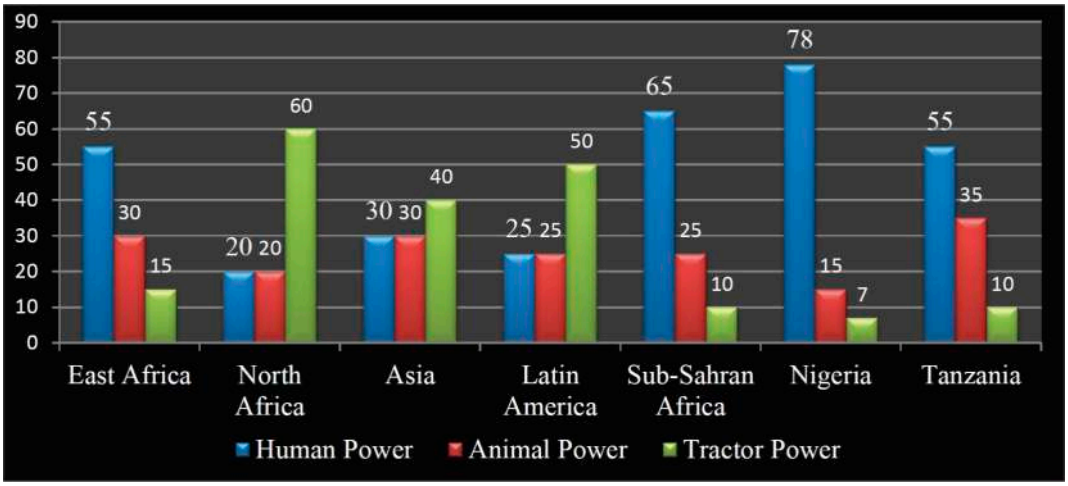
Focusing more attention on technology change and market improvement is more promising and would be more beneficial. With a modest increase in rice yields, the expansion of high quality varieties to replace low quality ones, and improved processing technologies, the competitiveness of domestic rice can increase. Favoring the large milling sector to the detriment of the small mills is not likely to improve the rice supply situation in the country, at least not in the short run. Instead the government should encourage growth and technology up-grading among all milling types, in line with the ATA strategy (Johnson et al, 2013) as well as the inclusive growth and shared prosperity strategy of the government.

Figure 13: Effects of Tariffs on rice import on rice seed production



Source: Van Mele, P and R.G. Guéi, (2011)

Figure 14: Farm Power Sources (percentages) in Nigeria and other developing countries



Agricultural Mechanization

Farm power in most parts of Africa, including Nigeria (especially among small-scale farmers who account for a significant proportion of the total farm output), is largely human-or animal-driven and is based on operations that depend on the hoe and other hand tools. However, it has been estimated that using simple hand tools, a farmer can only prepare about 0.5 ha for planting per season for most staples. This farm size is uneconomical and cannot sustain adequate livelihood. For farmers to earn a living from agriculture, they cannot count only on hand-tool technologies. This is because man as a power unit produces only about 0.01 horsepower of continuous output and is therefore not worth much as a primary source of power (FAO, 2010a).

Nigeria's policy on agricultural mechanization has been driven mainly by technology imports despite the establishment of the National Centre for Agricultural Mechanization (NCAM) in the Federal Ministry of Agriculture in 1974. NCAM's objective—to develop "home grown" mechanization technologies (tools, equipment, and systems) which improve agricultural production and productivity, relieve increasing labor constraints, enhance farmer income, reduce food imports, increase food exports and save foreign exchange— remains a mirage.

Over the last decade, daily rates of casual labor have doubled from N 200/day (USD 1.50) to N 500 (USD 3.50) in response to adjustments by the federal government to the national minium wage. Rural and urban wages are very closely related, and any policy change that increases the minimum wage in the formal sector usually directed towards urban dwellers increases rural-urban migration, thus causing huge drains in rural labor. The migration accelerates a dearth in rural labor, causing rural labor wages to rise. Thus, human labor has become very uneconomical, despite the high rate of unemployment, due to labor shortage in rural areas.

There are currently an estimated 45,000 tractors with implements in Nigeria, 3,500 power tillers and about 200,000 irrigation pumps. This number is far below the projected number of 1 million tractors needed in Nigeria for effective mechanization (NAERLS, 2010). It is further estimated that there are about 6 tractors per 100 square kilometers in Nigeria and that at any point in time only about 50% (20,000-30,000 tractors) are in full working condition. The total annual demand for tractors in Nigeria has been put at about 81,000 tractors with an annual import average of 1,000 tractors a year. In order to attain the mechanization level recommended by FAO, experts believe that an annual total requirement of about 100,000 tractors is needed in the agricultural sector. Based on this projection and estimated demand, it would be very difficult if not impossible to close the demand gap for tractors in the country unless urgent steps are taken by the country in a public-private partnership to increase the number of tractors.

The low level of farm mechanization in the country has been attributed in part to the government's program of tractor procurement which has prevented the development of a private tractor market for smallholders. The federal and state governments procure from tractor suppliers and then give them out at subsidized rates to farmers with close political connections, or employed by state agricultural services. Alternatively, these tractors can be purchased through a government scheme with banking financing at prices substantially higher than market value, due to over-invoicing. However, tractors purchased under this scheme have no service contracts with the suppliers, nor are spare parts available for them since no direct relationship exists between the purchaser and the tractor supplier. As a result it is estimated that only 50% of Nigeria's tractors are functional. Extension services to train farmers on tractor use and tillage techniques are provided by neither the government nor the tractor suppliers (PrOpCom, 2011).

The current system of tractor procurement and importation leaves the private sector completely crowded out by the government and unable to compete with the government program on tractor imports and distribution.

Current fiscal policies to increase mechanization in the country include a tax-free import facility for tractors and other imported agricultural implements and machines. Thus like all agricultural and farm inputs, agricultural machineries are zero rated; that is, if imported as fully assembled ready to use tractors. However, importation of completely knocked down parts (CDKs) attracts a duty of 5% currently, down from 25% about a year ago. Tariffs are at 5% for tractor spare parts.

Apart from the direct incentives such as low or no tariffs on the import of tractors and tractor spare parts, the government has also introduced other "indirect" incentives such as the liberalization of land acquisition for large scale farming In addition, the agricultural mechanization is expected to benefit from the newly formed Nigerian Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL).

However the high duties charged on the imports of tractor spare parts and CKD parts do not seem to conform to the government strategy to increase and promote mechanization. Tractor parts are needed to maximize the national tractor fleet's operational life. This policy conflicts between tractor imports being zero-rated and tractor spare parts attracting (sometimes

quite high) duties and seems to contribute to the relatively short lifespan of tractors in the country as reported by the stakeholders.

Unfortunately, no comprehensive functional mechanization policy has been adopted—just a draft prepared in 2011 and still waiting for adoption by the government and House of Assembly.

Because agricultural machines are the largest piece of equipment in farming operations, wide individual ownership is largely uneconomic in a country like Nigeria with a predominance of smallholder agriculture. The lumpiness of this investment makes ownership by a single farmer very risky and too expensive. Thus, it is only appropriate that empirical studies be undertaken before any effective policy strategy can be put in place to promote large-scale mechanization in the country. Such studies should include the identification of (1) the types of agricultural mechanization strategy appropriate for different production environments and farm activities for Nigerian smallholder farmers and farmer groups; (2) the role and extent of private sector involvement in mechanization and (3) the capacity for existing organizations to fabricate and manufacture spare parts and tractor coupling implements and the need to upgrade and close any capacity gaps that can promote efficiency.

Above all, stakeholders are concerned about the inconsistency in the way the tariff exemption facility for new machinery is applied by the different public departments charged with the responsibility of implementing this incentive. There is need therefore to harmonize policies of tariffs and taxes across the different tiers of government and among the main public departments with functions and duties that overlap. Lack of coordination implies that the private sector actors get conflicting and sometimes contradictory signals as to the benefits/incentives and costs associated with import of agricultural machinery. This makes planning difficult for businesses.

Agricultural Finance and Credit: Government Expenditure and the Role of Financial Institutions

Financial services have been identified as a critical enabler for sustainable economic growth and for private sector participation in the agricultural sector (FAO, 2008). Access to finance is significantly more difficult for entrepreneurs in the agricultural sector and more so for smaller agro-based firms, as they are presumed to be significantly less productive, representing a higher credit risk to banks. Policymakers must promote agricultural finance through legislation and regulations to encourage formal financial institutions to extend credit to the agricultural sector.

Government Budget and Expenditures on Agriculture

Government fiscal policy on expenditure is the main source of funding for the development and promotion of agribusiness in the country. Unfortunately, government expenditure on agriculture (federal and state) is dismally low and very disproportionate with the contribution of agriculture to the nation's economy. The government should reconsider federal budget percentages allocated to the agricultural sector, which have run as follows: 2001-2005 (1.67%); 2006 (4.1%); 2007 (4.4%); 2008 (4.6%); 2009 (1.9%); 2010 (2.0%) 2011 (1.7%); 2012 (2.3%). There is no appreciable increase in the last decade as the allocation to the sector between 2006 and 2012 is still very low and averages 3.0 percent. Allocations by state governments were even lower, an indication of the low priority accorded to the sector—and in dramatic contrast with the sector's importance in the Nigerian economy, which ranges from 30-40% of total GDP.

Nigeria falls far behind in agricultural expenditure by international standards, even when accounting for its level of income. Normally, there is an inverse relationship between income per capita and agricultural expenditure share in the economy. Nigeria, however, does not conform to this general pattern: GDP per capita is very low, but so too is the share of agricultural expenditure in relation to the rest of the economy. This trend indicates a structural misalignment between agricultural expenditure and the budget execution.

Hence, there is a general lack of agribusiness infrastructural facilities in the country, lack of a good network of roads, and a lack of refrigerated trucks and other essential facilities for the development of the agribusiness sector. Interviews with respondents show that transport cost is a major cause of the high rate of produce perishability in the country, while many losses at the farm level are due to limited rural roads access and other infrastructure. The federal government must significantly boost agricultural expenditure if it is to be taken seriously on the issues of food security and poverty alleviation.

The Nigerian Incentive-based Risk Sharing System for Agricultural Lending (NIRSAL)

The failure of commercial banks and the banking sector to respond to the credit needs of the agricultural sector led the federal government to establish NIRSAL to promote economic development by acting as a catalyst for financing and closing the finance gaps in agribusiness supply chains. In addition to its purely commercial role, CBN intends for NIRSAL to become

the primary platform for implementing its ongoing financing and related support policies for agribusiness in particular.

Funding available to the agricultural sector is very low. Lending by the commercial banks, the main source of investment lending to businesses, stands at about 2% of total lending as opposed to 6% in Kenya. Reasons include lack of understanding of the agricultural sector, perceived high risks, complex credit assessment processes/procedures and high transaction costs of lending to smaller borrowers, particularly small farms and enterprises. Addressing these issues requires an innovative approach, hence the introduction of NIRSAL (FMARD, 2013).

NIRSAL's holistic approach tackles financing both upstream and downstream along the agricultural value chain of major staples in the country. It is structured to do two things that are mutually reinforcing: fixing the agricultural value chain, so that banks can lend with confidence to the sector and, encouraging banks to lend to the agricultural value chain by offering them strong incentives and technical assistance (CBN, 2013).

The scheme is expected to generate an additional $3 billion of bank lending within 10 years to increase agricultural lending to 7% of total bank lending. It will increase lending to the "pooled" small farmer segment or cooperatives to 50% of the total loanable amount in the aggregate.

In order to succeed, NIRSAL is supposed to engender policy reforms in areas as:

- Deregulation of the agricultural insurance industry to open access to private insurance companies and pave the way for innovation.
- Shift the fertilizer subsidy from a focus on consumption subsidies to production subsidies and a private sector-led fertilizer import system.
- Increased liberalization and competition in foundation seed production and marketing.
- Establishment of staple crop-processing zones to drive import substitution, buoyed by tax breaks and stoppage of imposition of import tariffs for agricultural equipment.
- Functional, effective and efficient implementation arrangements and institutions.
- Comprehensive stakeholder buy–in and support. (CBN, 2013)

In addition, NIRSAL is designed to share risks with banks ranging from 30% to 75% of loss depending on the segment in the value chains of the selected commodities. The following terms would be offered to farmers in the states and FCT Abuja: 75% guarantees on all input, working capital and limited cost loans to plant the crop, and loan duration of 24-28 months.

Through NIRSAL, it is expected many private sector actors would enter the market along the value chains of the 17 crops identified as "core" (high priority) and promoted using the value chain approach. The expectation is that with many private sector participants in the input and output market there would be greater competition that would lower prices, particularly of inputs, and guarantee the right quantities and qualities in the market at the right time and place.

For most stakeholders, this policy still only exists on paper. Credits are still unavailable to investors, and some interviewees claimed no money has been made available yet to the banks participating in this program. None of the policy reforms have been implemented. There is therefore the need for the FMARD and the CBN to work out the modalities of implementing this program. An independent body should study why NIRSAL is being delayed and how it can be fast-tracked. ATA is highly dependent on the successful implementation of this program.

Financial Instruments for Leveraging

Evidence abounds of the facilitative function of some financial instruments in leveraging the ability of small agribusinesses and farmers to obtain credit from formal financial institutions and commercial banks. Instruments and institutions like a warehouse receipt system, a well-functioning and comprehensive private credit bureau as well as the use of movable property and assets as collateral for all types of loans, short, medium and long term loans are generally lacking or largely undeveloped in Nigeria.

Warehouse receipt system (WRS)

There is still no system of warehouse receipts despite a very good model in Ethiopia from which the country can learn. The Abuja Securities and Commodity Exchange (ASCE) established in June 1998 with warehouses, has very limited trade and no viable warehouse receipt system. Recently however, the federal government has entered into an agreement with African Exchange (AFEX) Holdings to create Nigeria's pioneering warehouse receipt system. The system will enable Nigerian farmers and cooperatives to store their produce at accredited warehouses while the produce in the warehouses can be used as collateral to get loans. The aim when fully established is to have 800 warehouses across the country, with at least one warehouse in the 774 local government areas in Nigeria.

In addition, the federal government will create an Agriculture Information System to help gather data for farmers and recruit managers for the warehouses.

The WRS can help ensure grains standards, guarantee collateral for farmers and secure and link farmers to the market to guarantee maximum income for the farmers while regularizing their flow of income and operating capital. WRS can also help to control price volatility due to the availability of buffer stocks and enable farmers to sell produce at better price points. At the time of the interview, the management of ASCE was expecting a working visit from the Ethiopian Commodity Exchange (ECX) management to share ideas and good practices of the ECX. This policy area needs to be established urgently and should be given top priority as it will serve a dual function of reducing post-harvest losses due to pest infestation and aflatoxin contamination in maize and groundnuts in Nigeria.

Leasing arrangements and movable property as collateral

When lenders can take economically useful collateral, they make larger loans for longer periods of time at lower interest rates. Thus, the use of movable assets and property as collateral for loans is very helpful in order to access loans from formal credit granting institutions, particularly in the case of smallholder farmers who typically cannot offer real estate as collateral or get the co-signature of someone who can.

In Nigeria, no policy or law on leasing arrangements allows the use of movable property to be used as collateral for loans and particularly for agricultural loans. However, there is a draft law under consideration that would permit broader use of movable property as collateral for loans. The proposed Law on Security Interests in Movable Property will apply to tangible goods such as inventories, machinery, and livestock and intangible property such as accounts receivable, mortgages, and chattel paper in movable property or fixtures. This policy reform, when implemented, will therefore benefit Nigeria's manufacturers, farmers, and business operators that borrow and sell on credit. It will particularly improve the terms of access to credit by operators of small agribusinesses, farms, and processors, such as the small rice mills.

Existence of collateral registry and credit reference bureau (CRB)

There is no Private Credit Bureau (PCB) that is unified geographically and by asset, as set type, as well as indexed by the grantor's name of a security right (although there was the Public Credit Registry [PCR] maintained by the CBN). This despite the enormous risk that lenders face in Nigeria due to the high level of unscrupulous individuals and "serial defaulters." Financial institutions confirmed that there was a limited informal exchange of information on delinquent clients among lenders in the country. However, three reference companies awaiting licenses from the CBN, including Credit Reference Company (in association with Dun & Bradstreet) and XDS Credit Bureau were expected to be granted licenses in early 2013. Implementing and licensing these PCB with effective supervision and regulation by an independent body would help improve the ability of small businesses and farms to access credit.

Overall Trade Policy of Major Staples in Nigeria

The government's overall policy objective in agriculture is to achieve self-sufficiency and limit the amount of food imported, particularly in maize, rice and wheat. To achieve this, the country uses a combination of fiscal policies that including government expenditures and taxes and tariffs. Self-sufficiency is easier said but very difficult to accomplish because it negates the economic theory of comparative advantage that is the basis for trade and growth. It appears to be shaping the agricultural trade policy of Nigeria in the foreseeable future.

Nigeria's trade policy is linked to the recently revised Common External Tariff Regime (CET) of the ECOWAS community. The CET was first adopted by the ECOWAS states in 2005 and subsequently revised in 2009 to include a fifth band of 35%, in addition to the four tariff bands on which the ECOWAS member states agreed upon, to meet Nigeria's request to protect its nascent and infant industries and sub-sectors (FAO, 2013). Currently, Nigeria is applying the 35% tariff line on 167 tariff line items. The country's average MFN (Most Favored Nation) tariff stands now at 12%, while the average tariff, for agricultural products, is 16.5%.

However, there seems to be a lot of confusion in West Africa over the requirements to move food staples from one country to another. Very often, border control officials and even trade consultants and advisers do not know the correct procedures and will quote different rules depending on who is on duty. Use of certificates of origin to achieve duty-free status under the ECOWAS Trade Liberalization Scheme (ETLS) appears to be the major problematic area.

The restrictive trade policy adopted by Nigeria has created a lot of informal and illegal trade at borders. It is not uncommon for traders in international grain and commodities to import items through neighboring countries where there are no import bans and transport

them by road into Nigeria. Given the high tariffs and import prohibitions for most of the years under review, the incentive and disincentive analysis could strongly benefit from an in-depth study of informal trade and its pathways.

The restrictions on imports and prohibitive tariffs need to be carefully studies, although some of these are currently under review by the Ministry of Agriculture. It would be necessary for all stakeholders including policy analysts to re-evaluate some of these measures and quantify their benefits and costs

Nigeria Fiscal Policies for Major Staples

Historically, Nigeria has employed various trade policy instruments such as tariffs, import restrictions, exchange rate regulations and outright bans on "important" staples in an effort to regulate the domestic market and protect smallholder producers as well as low-income consumers. During the 1970s and early 1980s, increased export earnings coupled with the highly overvalued Naira made it possible for Nigeria to finance huge food imports. The strong Naira cheapened food imports and consequently helped to depress domestic prices. Large importation of food items, especially rice and maize, was allowed into the country at relatively low prices, which eroded the competitiveness of domestically produced staples (rice and maize) and served as a major disincentive to smallholder farmers.

Today, we still see a couple of policy instruments in place with the same basic arguments of protecting the domestic producer with the overarching goal of achieving food self-sufficiency and reducing huge import bills on food. Some of these policies are discussed below in the light of the discussions and interviews with key stakeholders directly affected by these policies.

The Guaranteed Minimum Price (GMP) Program

The Guaranteed Minimum Price (GMP) Program is the follow-up to the Buyer of Last Resort Grain Program, formerly run by the Food Reserves Agency. The Buyer of Last Resort Grain Program's main goal was to develop a buffer stock in response to shortages of cereals, as well as to influence prices by purchasing cereals when markets prices are below a minimum threshold (WTO Review, 2011). In 2008, in response to the high food prices crisis, the Government established a guaranteed minimum price system for purchasing excess produce (FAO/GIEWS 2008), along with procuring 650,000 tons of fertilizer and releasing 65,000 metric tons of grains. Although the GMP policy involved only maize, its impact on the specific cereal and on other cereals that could be substitutes to maize is largely unknown. This policy has cross-cutting issues and needs to be further investigated.

Use of Fiscal Policies to Stabilize Maize Production in Nigeria

There has been occasional use of import and/or export bans between 2008 and 2011 to protect and regulate the domestic market for maize in Nigeria. However, a 5% tariff on maize imports into the country has been the most prevalent measure used by the government to regulate and control the maize market in the country. In addition, there has been an export prohibition on maize since 2009. Various other regulations like the government being the buyer of the last resort and the purchases by the Nigerian Cereal and Produce Board (NCPB) tend to distort the market and create market failures. Instances of high price variations and shortages have been observed because of the wrong signals that these policies present to the agribusiness actors.

Specific Policy Conflicts in Maize Support System in Nigeria

Studies have quantified distortions at the farm level of the various trade policies adopted by the federal government in an attempt to protect the domestic production of maize in the country (FAO, 2013). The domestic farm gate price for rice output has been found to be consistently lower than the international price, and policies have decreased the market prices to levels up to 50% of the international price for rice and maize ecologies respectively. This suggests that production in the various ecologies is not protected by policy and that rather substantial indirect taxes are imposed on the output.

Price gap and nominal rate of protection at farm gate for maize reached their maximum in 2010, with a peak observed of 6,899 Naira/ton and 22% respectively (FAO, 2013). The increase of the gap between 2007 and 2010 shows that the disincentive for farmers is growing, despite the policies in place during those years to support production. This implies many market inefficiencies along the value chain of this important commodity, which should be revaluated. Invariably, indirect taxes not intended for a sub-sector end up affecting the same sector that the government wants to protect and support, which be the case in maize in Nigeria.

Policy inconsistences and the lack of policy evaluation on maize seem to be harming the maize industry rather than promoting it. Rigorous study should measure the real effects of the various levels of policy instruments.

Although some of these policies are currently under review, it is important that policies on trade are well aligned.

Import Substitution Policy and Enabling Legislation of FGN

The cassava value chain is one of the most important value chains in Nigeria and has benefited from a presidential campaign for cassava and its products, including cassava chips, flour, etc. The expectation is that this would boost yield and production by smallholders, who are the major producers of this particular crop. With minimal investment in research, provision of market information, access to subsidized fertilizer, and links to international markets, cassava received a major boost in the country. The aim is to increase cassava production so as to satisfy the domestic demand due to the new government policy that requires bakers to significantly increase the use of cassava flour in the production of bread in the country.

The Cassava Bread Initiative

The Cassava Bread Initiative is part of the Agricultural Transformation Agenda of the government under the Import Substitution Policy and Enabling Legislation of FGN which seeks to promote major agricultural crops (cassava inclusive) through value addition programs and create a market for farmers among others. The initiative focuses on reducing the wheat content of bread through the inclusion of 40% of cassava flour in the paste for baking bread. According to the government, this initiative, which was launched in 2012, will save Nigeria about Naira 250 billion in foreign exchange from reduced imports of wheat and wheat flour (which enrich foreign farmers). Nigerian farmers' and processors' income will be highly improved (Adesina 2012).

To support the use of cassava flour substitution in bread, the government put in place a number of fiscal policies. The tariff on the import of wheat and wheat flour was raised. A ban on the export of cassava was also introduced. Effective July 20, 2012, the Federal Government of Nigeria (FGN) introduced a 15-percent levy on wheat grain imports resulting in an increase of the effective duty from 5 percent to 20 percent. The Federal Government of Nigeria (FGN) also introduced a 65-percent levy on wheat flour imports to increase the effective duty from 35 percent to 100 percent, beginning July 1, 2012.

Implementation of the Import Substitution Policy

However, the new government policy requiring local bakeries to use at least 40% of cassava flour in the bread and allied industry continue to receive mixed criticisms. Implementation of the import substitution program and raising the cassava content of bread involved some fiscal measures, particularly raising the tariff on the import of wheat and wheat flour. The duty on the import of enzymes for the production of cassava bread was eliminated. Equipment and machinery for the production of cassava bread now attracts zero duty. Furthermore, government established the Cassava Bread Development Fund (CBDF), funded through the increased tariff on wheat flour. The CBDF will be used to support the cassava bread value-chain, including training of master bakers and (financial??) support for master bakers. Cassava enhancing enzymes duty rate will be reduced from 10% to 0%. As much of this enzyme is imported, it therefore forms a good part of the cost of the production of this bread. The import duty rate for these enzymes has been eliminated and there is a ban on the importation of bread.

Effects of Import Substitution Policy on the Agribusiness Industry and Smallholders

Some entrepreneurs who use cassava for purposes like industrial starch have complained about the proposed complete ban on wheat imports, as this would further raise the price of cassava and create additional cassava shortages, as not enough wheat is produced to satisfy local demand. The federal government has concluded plans to stop importation of wheat to create markets for Nigeria's wheat farmers. During the inaugural meeting of the Nigeria Agribusiness Group in July 2013, the Minister referred to the FMARD in saying Nigeria would have met about 68% wheat needs through domestic production. Government efforts to encourage substituting wheat with high quality cassava flour is already yielding positive results, as wheat imports to Nigeria declined from an all-time high of 4,051,000 MT in 2010 to 3,700,000 MT in 2012. (http://www.nigeriatradehub.gov.ng/News/tabid/98/entryid/13/fg-to-save-n431bn-from-ban-on-wheat-importation.aspx).

Although formal trade numbers on cassava are very hard to obtain, it is well known that a lot of informal trade, mainly exports from Nigeria, exists with its neighbors (particularly Mali, Burkina Faso, Cameroon, and Benin). About 90% of cassava production is in the hands of smallholders, who will tend to receive lower prices compared what they could get if exports were allowed. A ban on cassava exports will also limit potential opportunities smallholders have to sell raw produce to regional traders and/or processing companies.

Policy Gaps in Areas of Trade and Suggestions/Recommendations for Consideration

The policy of import substitution seems to be negatively affecting those in the commercial starch industry, who complain of a new type of demand for their major raw materials as they compete with bakers for the limited cassava produced in the country. Productions costs have soared so much that domestic cassava flour has become more expensive than imported flour.

Additionally, Nigeria formally exports dried/fresh cassava and starch to other African countries (such as Niger, Togo, Côte d'Ivoire), Europe (Netherlands, Norway, and Belgium), the US and Canada. Therefore, although estimates of volumes exported (both formal and informal) are not available, Nigeria is well known as a net-exporting country of cassava. This trend may well be reversed in the near future. There is need to seriously evaluate and examine the pros and cons of fast-tracking the policy of 40% cassava flour in bread. The fabrication and production of locally made drying machines for industrial production of cassava flour may limit imports and conserve foreign exchange, which would enhance the benefits from this policy of substituting cassava flour for wheat flour in the economy. However, the net benefits—winners and losers—in this new policy directive need to be carefully studied and quantified.

Conclusion

This study has reviewed how micro reforms affect the agribusiness industry in Nigeria, highlighted policy constraints and gaps, and recommended improvements where possible.

Since the current administration came to office, the overarching policy of the FMARD has been to treat agriculture as a business and to link the smallholders into the market economy along the value chain of 17 core agricultural crops in the country. The main economic goal is to add 20 million MT of food to the domestic food supply by 2015 and to create 3.5 million jobs.

Among all the policies adopted by the FGN to achieve the objective of food self-sufficiency, the most robust are the government expenditure policy of Growth Enhancement Scheme (GES) under the Agricultural Transformation Agenda. This is supported by other policy measures such as the fiscal policy of import substitution and the use of tariffs and duties to protect domestic production. GES focuses on increasing use of improved farm inputs of fertilizer and seed to leverage productivity. Boosting productivity is seen as the first step in promoting household food security and incomes and supplying raw materials for processing zones identified for job creation along the value chain of the most important staples as defined in the GES. Within the GES framework, the FMARD seeks to abolish direct government involvement in the procurement of fertilizer and seed but rather encourages use the electronic voucher system (E-wallet) to make fertilizer available to farmers. While this approach seems to have considerably reduced corruption in the procurement and distribution of fertilizer, many questions have been raised in terms of the credit facilities for the agro-dealers, the use of mobile devices for notifying and processing allocations to farmers in a country where connectivity is a problem, and the subsequent late payment to agro-dealers which invariably affects the timeliness in the availability and application of fertilizer at farm levels.

The policy of concentrating foundation seed production in the hands of the National Seed Council and the undue privilege enjoyed by the Agricultural Development Projects (ADP) continue to undermine active involvement of the private sector, which could leverage Nigeria's seed production and distribution. Except for a few crops, most varieties being planted are from informal farmer-to-farmer transfer or farmer-saved seeds. Supporting the informal seed sector to establish standards and some form of certification process may be one way to improve seed quality from this source that currently supplies more than 90% of the seed.

Another reason for the gross under-performance of the seed industry is the absence of functional national seed laws and non-harmonization of regional laws and regulations that could allow seed trade among ECOWAS countries. Now that the ministers of agriculture from the ECOWAS region have ratified and gazetted the harmonized laws, the Member States need to comply with these rules and allow cross-border trade among countries. Capacity building and raising awareness will be crucial for the successful implementation of the seed harmonization scheme.

Use of tariffs to promote domestic production, particularly of maize, is not only protectionist in approach but distortionary, without adding value along the value chain of local staples. The focus is on driving import substitution by accelerating the production of local staples, to reduce dependence on food imports and turn Nigeria into a net exporter of food. The use of tariffs and duties creates inherent uncertainties in the business environment and has been criticized as a bane to private sector development. Frequent tariff changes tend to destabilize the production plan of entrepreneurs and make output regularization and holding inventories very risky. Business prefers a stable, predictable environment for long-term projection and

investment.

Import substitution and high tariff rates for wheat and wheat flour appear to be the most controversial policies as they affect traditional international trading partners, like the US, that export wheat to Nigeria. In addition, industrial users of cassava, like the starch industry, have raised concerns about higher prices of this raw material due to the increase in demand without corresponding short-term increase in production.

The government of Nigeria has embarked on an elaborate plan to revive the agricultural sector and restore the sector to its pre-independence glory. This plan is driven mainly by the Agricultural Transformation Agenda of the FMARD. The government has laid out a comprehensive ambitious path to achieve this agenda through fiscal policy and institutional reforms. Aside from import tariffs, the government is also introducing other policy reforms and changes in laws and regulations that include the deregulation of seed and fertilizer sectors. Others involve marketing reforms that would promote the setup of private market corporations to help coordinate the market, set grades and standards, and develop innovative financing mechanisms for supplying credit. Additionally, interstate barriers to paddy trade, such as interstate taxes, are expected to be eliminated to reduce market transaction costs and increase free movement of staples from areas of relative surplus to deficit zones. However, these policies and reforms have created additional burdens that might limit the success of the ATA process. It is suggested that the government undertake empirical analysis to comprehensively identify—and if possible quantify—some policy gaps identified herein to minimize hidden costs and risks that could jeopardize ATA's success.

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TANZANIA

Summary of Priority Policies and Regulations to Address

As a major recipient of donor funding, Tanzania's policy and regulatory reform efforts have received significant attention over the past decade. An AGRA-sponsored Policy Hub and Nodes have been partially funded by a Bill & Melinda Gates Foundation grant since 2011. Policy analyses have been produced by domestic research organizations including REPOA (Policy Research for Development), ESRF (Economic and Social Research Foundation), the University of Dar es Salaam, Sokoine University of Agriculture, and various NGOs, as well as by international organizations such as IFPRI, the World Bank, the Monitoring African Food and Agricultural Policies (MAFAP), and numerous bilateral projects and programs. This initial constraints analysis for MIRA draws on that work, literature review, and interviews carried out in March 2014.

As in many sub-Saharan countries, slower agricultural sector growth and agribusiness investment are due to many factors other than policy and regulatory constraints. The capacity of public sector institutions to support the agricultural sector and agribusiness development is limited, as government agencies face shortfalls in infrastructure, management, organizational and human capacity. Limited public sector budgets leave little for investment and operating funds. Nor is demand for improved policy analysis always evident, despite increasing reference by senior Ministry of Agriculture, Food Security and Cooperatives (MAFC) managers to the need for "evidence-based" policy-making.

These caveats aside, MIRA's point of departure is that a set of policy and regulatory issues can be addressed by the government in concert with private sector stakeholders over a four-to-five year time frame. This report raises many such issues, but we shall identify below what we view as priority constraints that can and should be addressed, which are in the manageable interest of the Government of Tanzania. There are two lists of bullet points; the first one is for short-run, near-immediate actions that could be undertaken to relieve constraints to agribusiness investment. The second list is for policy, institutional and public investment issues that could be addressed over the medium to longer run.

Short-Run Policy and Regulatory Actions

1) Obtain ISTA accreditation as quickly as possible to enable Tanzania to export seed, particularly rice, to regional buyers. As a regional center of excellence for rice, Tanzania's seed varieties have great potential to generate demand for exports. *Implication for agribusiness investment in smallholder value chains*: Seed company sales will be limited without access to the regional market. This will be a disincentive for investment and expansion in high quality certified seed.

2) Remove import duties on seed, VAT applied to packaging materials, and cess charged on locally produced seed by local government authorities. Such measures need to be balanced against chronic budget deficits at all levels of government, however. *Implication for agribusiness investment in smallholder value chains*: Taxes on packaging materials and cesses reduce the competitiveness

of domestic seed companies in the domestic seed market vis-à-vis regional suppliers. Duties on imported seed make imports more expensive, however, which provides some protection to domestic producers but makes improved seed costs higher for farmers.

3) Eliminate the unreasonable **requirement that three seasons of tests** be carried out under Tanzania Fertilizer Regulatory Authority supervision at a cost of $10,000 per season **for each new fertilizer product**, paid by the importer or blender. *Implication for agribusiness investment in smallholder value chains*: This is a serious barrier to entry to blenders capable of formulating fertilizer to meet specific crop needs and soil deficiencies. Hence, investment in blending and importing of fertilizer ingredients for local blending will be deterred.

4) Abandon the 18% VAT charged on bags (produced locally), **services rendered at the port** (e.g. bagging of bulk fertilizer), and **on transport services**. *Implication for agribusiness investment in smallholder value chains*: These taxes increase operating costs for fertilizer importers and distributors and reduce fertilizer sales.

5) Imports of tractors are not subject to duties, but spare parts are charged duties ranging from 0% to 25%, and 18% VAT is applied. This policy inconsistency likely leads to suboptimal maintenance and repair of agricultural machinery. Duties and taxes on imports of spare parts should be zero, aligned with imports of tractors. *Implication for agribusiness investment in smallholder value chains*: Taxes on imports of agricultural machinery spare parts dampen incentives to invest in tractor importation, servicing, and custom hire operations.

Longer Run Policy, Institutional, and Public Investment

Actions to Support the Emergence of a Competitive Agribusiness System

1) Invest in upgrading public sector laboratories and promote the creation of private labs to improve the accuracy of laboratory testing results of soil samples, seed properties, fertilizer content and efficacy, and food safety parameters (moisture, filth, contaminants, mycotoxins, pesticide residues, etc.). A prior action is to clarify whether it is legal, and whether a regulatory framework is in place, for private firms to establish seed, fertilizer, pesticide and plant testing laboratories, as well as inspection services, and whether government is encouraging a sharing of whether are typically thought as of public sector responsibilities. *Implication for agribusiness investment in smallholder value chains*: The absence of accredited laboratories is a brake on the development of effective seed and fertilizer industries, as well as the emergence of scientific agriculture. It also increases laboratory testing costs if samples must be sent to foreign countries' labs. Inadequate testing facilities also have negative implications for food safety (and health) within Tanzania, and the competitiveness of agricultural exports (of horticultural products, cashews, etc.) that must meet exacting international standards.

2) Strengthen the capacity of MAFC and TOSCI to implement seed legislation and regulations, particularly inspection of foundation and certified seed production, laboratory testing of improved seed, seed sales by agro-dealers (monitoring quality and truth-in-labeling), and enforcement of seed trademarks. *Implication for agribusiness investment in smallholder value chains*: Inadequate public sector capacity to implement seed sector regulations will reduce the supply of quality seed, provide incentives for fraudulent seed sales, and provide disincentives for investment in production (and sales) of high quality seed.

3) Given implementation problems with both the fertilizer and seed subsidy programs, consider dropping **the seed subsidy program and changing the fertilizer subsidy program** from a voucher-based program to a credit guarantee scheme targeted to farmer organizations under close monitoring. *Implication for agribusiness investment in smallholder value chains*: This change is underway and needs to be carefully monitored and evaluated. Subsidy program implementation must be improved to eliminate disincentives to private sector participation and investment in input production (seed) and distribution.

4) The recent government decision to **increase land taxes tenfold in rural areas** to the same level as urban land taxes is ill-advised and does not appear to have been preceded by adequate private sector consultation. This **will negatively affect the profitability of farm operations,** and it is under protest by the Agriculture Council of Tanzania, farmer organizations, and agricultural investors. This issue should be addressed openly and transparently and engage all key stakeholders, with the objective of creating a reasonable and equitable tax structure. *Implication for agribusiness investment in smallholder value chains*: While the GoT needs to raise revenue, a dramatic rise in land taxes reduces the incentive to invest in commercial agricultural production and downstream processing and export. (Smallholders are indirectly affected as outgrowers).

5) Cesses (or locally levied taxes) on sales of food crops, applied at municipal and district levels, raise marketing costs. These taxes are applied inconsistently (ranging from 2-5%) and at multiple stages of the marketing chain (when crossing district boundaries). MAFC, the Access to Markets Node of the Policy Hub, and other research entities are carefully studying these cesses and their impact on the staple food crop trade. Once research findings are released, the issue of cesses should be addressed in an open and nuanced way that takes local revenue generation needs into account. While eliminating cesses altogether is unrealistic, these taxes need to be consistently applied, predictable and not duplicative (i.e. imposed at multiple levels of the marketing chain). *Implication for agribusiness investment in smallholder value chains*: Inconsistently applied local taxes on agricultural trade raises transactions costs and discourages private sector participation in interregional food crop trade.

6) The **mandate, desired role, and recent performance of the National Food Reserve Agency (NFRA) merit careful assessment**, given complaints of market disruptions and disincentives to the private grain trade. Consultations between the NFRA and representatives of maize producers, traders and processors are strongly recommended. *Implication for agribusiness investment in smallholder value chains*: Clearly defining the role of the NFRA will minimize disincentives to private sector investment in grain storage and trade. Current NFRA operations discourage entry in grain trading and storage and undercut incentives to establish warehouse receipt systems.

7) Periodic imposition of bans on food crop exports, particularly maize (but also rice and beans), goes against regional trade agreements, fosters rent-seeking behavior, and ultimately harms producers, who are affected by lower demand for their crops and dampened price incentives. While the GoT claims to defend the interests of Tanzanian consumers, its actions hurt producers. Export bans have supposedly been lifted, but the GoT should now raise the awareness of government implementing agents and the private

sector as to the status of agricultural trade controls. Any change in the current situation (of no export bans in place) needs to be signaled clearly and widely and preferably publicly debated prior to imposition of new bans. Barring that, clear rules need to be established for the conditions under which a staple crop export ban would be re-instituted. *Implication for agribusiness investment in smallholder value chains*: Export bans provide strong disincentives to participating and investing in the private grain trade, as well as indirectly make processor access to raw material supplies less certain.

8) There is a **lack of transparency in rice import policy**, with central government decisions to grant import permits and lower duties on rice imports not made on the basis of well-defined rules or solid information on domestic market conditions. This needs to be changed so that rice import decisions become rule-based and transparent, as opposed to arbitrary, often mid-season surprises to producers and domestic rice traders. *Implication for agribusiness investment in smallholder value chains*: The current unpredictability of rice imports provides serious disincentives to rice production, assembly, and storage. Rice traders reportedly lost money by buying paddy in 2013 and storing it in the 2013/14 marketing season, during which large volumes of rice were imported from the international market.

Assessment of Agricultural Policy and Regulatory Constraints to Agribusiness Investment in Tanzania

Seed Issues

Main Constraint Identified: The Agricultural Seed Agency (ASA) is charged with foundation seed production for many crops, yet its capacity is limited and most users of its seed think that it does not fulfill this mandate well, offering uneven quality foundation seed to seed companies for multiplication. The problems are reported to be largely institutional capacity and financial ones, as well as a too broad mandate.

Secondary Constraint: Tanzania is not ISTA-accredited, which means it cannot export certified seed to other countries, and it is a large-volume importer of hybrid maize seed, although some private firms are beginning to produce seed locally (which is permitted). Tanzania could produce much of its own certified seed, as well as eventually export to the ETA and COMESA subregion.

Important Success: Unlike West Africa, regional agreements to speed up registration of improved seed, particularly hybrid maize developed and used in neighboring countries, are working. Certified seed approved in a SADC or EAC country requires only one season of testing, as opposed to three for locally developed varieties, or for varieties imported from outside SADC or EAC.

Discussion:

Seed Regulatory Framework. The Tanzania Seed Act No. 18 of 2003 enabled private firms to enter the seed trade. Seed Regulations of 2007 (GN NO. 37/2007) were also put in place. In 2013-14, there were 55 private firms in the seed trade.[47] Tanzania imports seed, particularly hybrid maize from Kenya Seed Corporation, Seed Co, PANNAR, the East African Seed Company, and Kibo Seed; imports averaged 12,906 mt per annum from 2010 to 2012 but rose to a reported 27,109 mt in 2013 (source: COMTRADE). Although a few firms are beginning to produce foundation seed in Tanzania, the perception is that seed imports have been steadily rising. There is also a Plant Breeders' Protection and Rights Act that enables breeders to patent varieties and earn royalties. This Act encourages breeders to adequately maintain varieties that they have developed. In the past, this incentive was absent, leading to breeder seed with some impurities.

Some varieties are designated as "protected" (8-10) and most as "unprotected" (> 50). A circular authorizes licensing of some public sector germplasm for protected varieties.

The Seed Policy Action Node has reviewed the Seed Act and Regulations and concludes that the regulations need to be revised. The head of the Seed Policy Node[48], Dr. Susan Nchimbi-Msolla, observed that:

- Seed policy requires a separate document, not brief mention in the National Agricultural Policy of 2013.
- TOSCI's role is not sufficiently well defined. Other functions need to be added.
- Issues such as vegetatively propagated crops and GMOs are not covered.

47 The source was Tanzania Seed Trade Association, interviewed in March 2014. The ABI Tanzania Country Study, 2012 reported 52 registered private companies.
48 Dr. Msolla is at Sokoine University of Agriculture. Canuth Komba in MAFC, is also an active member. Komba is Acting Director of the Inputs Dept. in the Ministry, but he was the lead seed specialist in MAFC prior to taking that position.

- is also reported that local governments charge a crop cess on seed sales.

TOSCI (Tanzania Official Seed Certification Agency) has a testing laboratory at Morogoro that is not ISTA-accredited but "close to meeting" ISTA standards. The lab is under renovation, and new equipment needs to be bought and analysts trained. The lab will be required to do "proficiency tests" of seed samples that will be evaluated by ISTA. Typical tests are for varietal purity, germination rates, and contamination (foreign matter and weed seed percentages, etc.).

TOSCI reports that it receives inadequate funding, which leads to fewer than needed field inspections. For example, TOSCI does only two field inspections of hybrid maize when four are needed. QDS varieties are supposed to be monitored and inspected at the district level, but local governments lack the resources to fund this. Staffing of TOSCI (20 professionals at four stations) is also not adequate to keep pace with the expansion of private seed multiplication. TOSCI's field inspection fees of 2,050 TSh/ha are way too low.

The GoT has three seed specialists per district, including two agronomists (one for cereals, one for vegetables) and one seed inspector. Employed by District Agricultural and Livestock Development Offices (DALDO), these field staff lack transport and adequate funding to perform their seed production supervisory and inspection responsibilities. Government officials allege that there are sales of fake or counterfeit seed by "briefcase" salesmen. Inspection is spotty and penalties are not high enough to deter counterfeit seed sales.

Local seed companies and seed importers are required to register with MAFC. TOSCI inspectors are supposed to monitor the market for seed but resources are inadequate to do this properly. The World Bank through the EAAPP (Eastern Africa Agricultural Productivity Project) provides some support in the form of training and strengthening of a regional center of agricultural research excellence for rice in Tanzania.

Foundation Seed Production Problems. As in many SSA countries, foundation seed production is problematic in Tanzania. The agricultural research system produces mainly open-pollinated (OPV) varieties for many crops, along with some hybrid maize. A public agency created in 2006, the Agricultural Seed Agency (ASA), produces nearly all the foundation seed in Tanzania.[49] Private seed multiplying companies are required to obtain 'lots' of foundation seed from ASA for multiplication, but in actual practice they often substitute basic seed from Consultative Group (CGIAR) centers or other sources. The reason for this is that the public sector produced foundation seed is judged to be of variable quality (purity, germination rates, trueness to type), so using it can lead to heterogeneous production of certified seed (in other words, mixed varieties rather than pure stands). ASA is considered "overwhelmed" and unable to fulfill its mandate to supply high-quality foundation seed for a wide range of crops, including cereals, legumes, oilseeds, and tubers. One informant also noted that ASA lacks a seed breeder, which contributes to uneven quality control. However, few local private seed-producing firms are considered qualified to produce foundation seed.

According to a former cereal seed breeder, the MAFC allows other firms to produce foundation seed, but there is not a framework for operationalizing this. Multipliers buy ASA seed to get a "lot number" allowing them to do multiplication, but they multiply higher quality seed acquired elsewhere. This breeder reports that the seed regulatory framework in Tanzania is good but that its implementation has been weak.

Two private companies, TANSEED and AMINATA, have developed their own varieties of maize and sorghum seed. ASA dominates production of rice foundation seed, all OPVs, growing 800 to 1,500 mt per year, but several private companies are producing some 300 mt of rice seed per annum. ASA has expanded sunflower seed production from 50 mt in 2006 to 400-500 mt in recent years.

Use of Certified Maize Seed. According to FAOSTAT data, maize area harvested averaged 3.48 million hectares from 2008 to 2012, with a high of 4.1 million ha in 2012. Estimated maize seed requirements for the entire crop were 70,144 mt at an average seeding rate of 20.2 kg/ha. Using an informal estimate of 18,000 mt of certified maize seed planted in Tanzania, approximately 26% of maize area is sown to improved seed.[50] Based on COMTRADE data, 12,906 mt of maize seed was imported from 2010 to 2012 (on average). If all this seed was certified, fully 72% of the estimated certified maize seed supply in Tanzania was from imported sources. The World Bank's Agribusiness Indicator Study for Tanzania (2012) reports that 56% of the certified seed used in Tanzania in 2011 was imported, and that the ratio increased from 2008 to 2011. Over the five year period (2007-2011), imports averaged 48% of the certified maize seed supplied in the country. Another informant estimates that 9,000 to 10,000 mt of maize seed sown in Tanzania is hybrid seed, largely imported, and 8,000-9,000 mt is locally multiplied OPV maize seed.

49 A Seed Unit in the MAFC oversees seed production. The Tanzania Seed Company predated ASA.
50 Another informal estimate by Dr. Susan Nchimbi-Msolla, Seed Policy Action Node coordinator, is that approximately 35% of the maize seed used in Tanzania is certified seed. The Seed Co Marketing Manager stated that about 50% of the maize seed planted in Tanzania is imported. Another estimate of certified seed use in Tanzania is 25,000 mt, of which 80% or 20,000 mt is maize seed.

Seed Imports. As Tanzania is a member of both SADC and EAC, it has benefitted from regional regulations that enable firms to bring in improved varieties released in other countries in Eastern and Southern Africa and do only one season of seed testing, in contrast to the three-season requirement for locally developed seed or seed imported from non-regional suppliers. One informant cited the successful case of a Tanzanian company[51] bringing in a new potato variety from Kenya, as he claimed no new Tanzanian potato variety had been developed for some 30 years. For imported hybrid maize seed, it takes three seasons of tests—two on experiment stations and a third nationwide to see how the variety does in farmers' fields. This informant thinks that three seasons of trials were excessive with hybrid maize, as there are many good varieties in the region that should be imported sooner or produced from imported foundation seed in Tanzania.

Tanzania lacks ISTA (International Seed Testing Authority) accreditation, without which Tanzanian seed firms cannot export certified seed to ISTA-accredited African countries (Kenya, Zambia, Zimbabwe) or other neighbors. A 2012/13 Rwanda study (World Bank, 2013) notes that Rwanda imports certified maize seed from Tanzania from Seed Co, though Seed Co does not do multiplication in Tanzania, and from Kenya (KSC supplied) and Uganda. Dr. Joseph Rusike notes from a recent interview with a Seed Co representative in Tanzania,

> "Because of failure to implement regulations, some companies can multiply and sell proprietary inbred lines and varieties. For example the Seed Co variety SC513, which is very popular with farmers, has been registered under the same name by two companies and is being produced in Tanzania. Seed Co has appealed the case to Tanzania Seed Traders Association because of lack of enforcement of regulations by the MAFC."

Quality Declared Seed. About 10 years ago, Tanzania was an innovator in quality declared seed (QDS), but this experience has not been formally evaluated and QDS concepts do not appear to be recognized elsewhere in East Africa. QDS falls between formally certified seed and informally retained or traded seed. Purity and germination rates are lower than for certified seed. Over time, with advances in certified seed production and use, QDS use should drop. Under a QDS system, seed is supposedly used only in the locality (ward) where it is produced and not traded to other regions of a country. This rule has been relaxed.

According to some observers, production of QDS is not carried out with sufficient isolation from other crop varieties. QDS is supposed to be field inspected by inspectors paid by local governments and laboratory tested, but field inspection of QDS is considered by most informants in Tanzania to be inadequate. Local government funding is not in place. QDS groups of 10-20 farmers each are supposed to process and package QDS seed, but the extent of compliance is uncertain. There are 18 QDS farmer groups scattered throughout Tanzania. MAFC acquired processing machinery to provide to these groups, but most of the movable processing units were sitting unutilized at the MAFC compound in Dar es Salaam in late March 2014. Critics of QDS claim that some quality declared seed is of low quality yet sometimes mislabeled as certified seed. They note that QDS is heterogeneous, and not produced in isolation or according to specified procedures. In the final analysis, there are no data, however, with which to evaluate the QDS experience in Tanzania.[52] (QDS has not been applied in West Africa).

Subsidized Seed. MAFC subsidizes seed purchases by farmers, but the implementation of this program is highly flawed and fraught with abuses. Very little seed is obtained by farmers under this system. In many cases farmers fail to benefit, as noted by Dr. Joseph Rusike of AGRA below.

> Agro-dealers offer farmers cash for as little as Tanzanian Shillings 5,000 in exchange of a voucher worth as much as Tanzanian Shillings 20,000. Farmers are cash strapped so they accept this uneven exchange. The agro-dealers take the voucher to the bank and obtain its full value. Farmers do not get seed and end up not benefitting. If the government properly implemented the voucher program, farmers' welfare could be improved through better access to seed. The government announced that this year (2014) it will replace the voucher system with a credit scheme through farmers' groups, but most farmers' groups do not exist. Those that exist do not have a formal structure consisting of a chairman and secretary and bank accounts. The elite farmer group members can sign with government officials and defraud the system with unfaithful bank tellers. The problem is that there is lack of supervision. This results in unscrupulous behavior between the District Agricultural and Livestock Development Officers (DALDOs) and agro-dealers. All vouchers start with DALDOs, who distribute them to farmers.

51 This firm evidently benefitted from Africa Enterprise Challenge Fund (AECF) support.
52 The World Bank Country Office in Tanzania has offered at several points to fund an evaluation of the QDS experience in Tanzania; the MAFC has not taken up this offer.

Farmers then go to agro-dealers to exchange vouchers for inputs. Agro-dealers go to DALDOs for verification and to the bank for encashment. Agro-dealers can abuse the system by buying vouchers from farmers using fake identification cards and then redeeming the vouchers at the bank.

Rice Seed. Unlike Ghana where demand for expensive, jasmine rice is high in urban areas, Tanzanian consumers prefer local rice, which is long grain, translucent and aromatic. Some local varieties are informally disseminated and not officially released. Improved varieties (all self-pollinating) are based on IRRI or NERICA germplasm. Rice is still a secondary dish in the Tanzanian diet, common at dinner for urban consumers and served during special occasions, but it is not consumed at nearly the same high levels per capita as in Ghana (which imports over 500,000 mt of largely high-quality, jasmine rice that has become an urban staple). Rice imported into Tanzania is considered inferior by consumers, dubbed "plastic rice" lacking aroma and texture. Most imported rice is labeled as basmati type rice, but some think it is mislabeled and either adulterated or lower grade. It is likely lower grades of Pakistani rice, where imports from Pakistan represented 86% of rice imports in 2013 (based on COMTRADE data). Price-sensitive urban consumers with binding budget constraints buy the cheaper imported rice, although it is less preferred.

Rice seed sales have allegedly declined in 2013/14 in response to the lowering of rice import tariffs and issuance of import permits to a handful of large-volume rice importers in 2013. COMTRADE data show that rice imports increased from an average of 37,468 mt (in three of four years) between 2009 and 2012 to 121,122 mt in 2013. Since demand for rice seed is a derived demand, demand for locally produced rice strongly influences seed demand. This is consistent with the Nigerian experience, where abrupt changes in rice tariffs across years have negatively affected import levels and demand for rice seed (see Nigeria Country Study, 2014).

Private firms are interested in exporting rice seed, but ISTA accreditation is required for legal exports. There is strong demand for Tanzanian rice varieties in Kenya, Ethiopia and Uganda, which partner with Tanzania under the EAAPP (Eastern Africa Agricultural Productivity Project of the World Bank). Under EAAPP, ASA is producing rice seed under irrigation; improved seed storage facilities have also been constructed. ASA hopes to own and manage seed storage and processing facilities in all seven agro-ecological zones, but only two zones have seed processing facilities to date.

AGRA Seed Program in Tanzania. AGRA has implemented an active program of grants under its *Program for Africa's Seed Systems* (PASS)[53], including grants to seed companies (8), a couple projects to strengthen agro-dealer networks in Tanzania, the Division of Research and Training of the Ministry of Agriculture (7), and to other organizations, including **Sokoine University of Agriculture for training of seed researchers. The largest single grant has been to Citizens Network for Foreign Affairs (CNFA) for $**4,310,615 in 2007-2010. A Tanzanian manager of that program reported that the country has 3,885 registered (and licensed) agro-dealers. CNFA's project, the Tanzania Agro-dealer Strengthening Program (TASP), developed a a database of dealers and a Tanzania soil map, and it also had a matching grant component. Work on agro- dealers continues under the Tanzania Agricultural Market Development Trust (TAGMART) by various NGOs and through USAID's NAFAKA project.

Tanzania Seed Trade Association (TASTA). Registered in 2002, TASTA now claims 55 registered members, including key public sector agencies. It costs $300 to register with TASTA and $1,500 per year in subscription fees. TASTA claims that most seed (>80%) is imported into Tanzania. Priority policy problems identified by TASTA include import duties on seed, application of VAT to packaging materials, cess charged on locally produced seed by local government authorities, corruption in the implementation of the input subsidy system, and fraudulent practices in seed sale by unscrupulous business people. In response to false labeling and misrepresentation by some seed dealers, the GoT has created a national task force.

Fertilizer Policies and Regulations

Main Regulatory Constraint Identified: The Fertilizer Law of Tanzania requires fertilizer suppliers to carry out one season of testing of fertilizer, other than for the most common internationally traded types (urea, CAN, DAP, and ammonium nitrate and sulfate), before fertilizer can be sold in Tanzania. This discourages investment in fertilizer blending, where a firm could provide NPK blends with added micronutrients suited to particular crops and agricultural production zones with particular nutrient deficiencies.

53 See http://www.agra.org/AGRA/en/grants/program-for-africa-seed-systems/pass-tanzania/

Secondary Constraint: Laboratory testing results of soil samples are reported to be highly variable across labs and hence unreliable. (*Labs are not ISO accredited*). Soil testing is too expensive for small farmers, but it is the only reliable way to determine nutrient deficiencies, which vary significantly across production zones and could be addressed through tailored fertilizer formulations (blends).

Fundamental Policy Issue: The fertilizer subsidy was conceived as a way to put a high-cost input, inorganic fertilizer, in the hands of small farmers who could greatly increase their productivity. It has been targeted at maize and rice production. In practice, the subsidy program has faced big implementation challenges. There are many allegations of improprieties in fertilizer distribution at the local level and lower than anticipated use of subsidized fertilizer by maize and rice growers. Others have evaluated the subsidy program in depth[54], but we note that it remains a serious policy problem area for the Government of the United Republic of Tanzania (GoT).

Discussion:

Fertilizer Legal and Regulatory Framework. The Fertilizers Act of 2009 and Fertilizer Regulations of 2011 replaced the outdated Fertilizers and Animal Foodstuffs Act of 1962. The Act created the Tanzania Fertilizer Regulatory Authority (TFRA) with a broad range of responsibilities, including the following (among a long list):

- Regulate fertilizer quality
- Register all fertilizer and supplement dealers
- License fertilizer dealers
- Issue permits for importation (and exportation) of fertilizer
- Maintain a register of fertilizers, supplements and "sterilizing plants"[55]
- Regulate and control importation, production, transportation, trading, storage, and disposal of fertilizer
- Publish fertilizer statistics and a list of registered dealers
- Promote safe and effective use of fertilizer (public and stakeholder awareness)

This agency is under-funded with few professional staff, and its leading scientist recently retired. TFRA depends on 100 "inspectors" in the districts whose salaries are paid by the Ministry of Local Government and who report to local district governments. These inspectors do not provide reliable inspection (and testing) services to TFRA, as they have multiple responsibilities and lack the resources (transport, testing equipment) to do their job properly. TFRA has to pay supplemental allowances for these inspectors to do site inspections. What should be an important regulatory body is, therefore, quite weak due to a lack of institutional and human resource capacity. AGRA reportedly is training fertilizer inspectors at Mlingano, where there is a soil testing facility.[56]

Some fertilizer industry participants point out that laboratory testing is another weak link in fertilizer regulation. As the labs are under-funded public institutions—government-run labs or universities[57], their test results are believed to be inaccurate. One private firm manager noted that test results from three different labs in Tanzania varied significantly. He quoted a laboratory testing fee of 200,000 TSh (approximately $125) to test for both macro- and micro-nutrients, which may not be excessive for an importer but is too much for most farmers to pay. Soil testing is rarely done in Tanzania, although there is a GoT soil map, though not at high resolution.[58]

The Fertilizer Regulations specify that for any new (imported or blended) fertilizer or fertilizer supplement that samples need to be submitted for laboratory tests and *the fertilizer needs to be tested under field conditions for at least three consecutive seasons to determine the suitability for use of said fertilizer.* This requirement is excessive, even for large-volume importers who bring in full vessels of fertilizer. It also deters investment in smaller-batch fertilizer blending, where blenders create (and modify) formulations to meet specific crop requirements and offset soil deficiencies in various agro-ecological zones. Providing fertilizers with the right mix of macro and micro nutrients, which will vary across production areas, is the wave of future scientific agriculture, rather than simply importing massive volumes of 2-3 standard, internationally bulk-traded fertilizer types such as urea, DAP, CAN and ammonium sulfate.

54 The most recent evaluation, funded by AGRA, is Performance Evaluation of the National Inputs Subsidy, Francis Mwaijande, for MAFC, 2014. The World Bank carried out the Tanzania: National Agricultural Input Voucher Scheme Public Expenditure Review, Strengthening National Comprehensive Public Agricultural Expenditure in Sub-Saharan Africa, February 2014.
55 Sterilizing plants apply to fertilizer production, blending, storage and sales facilities.
56 TFRA alluded to an AGRA grant to train inspectors who work with TFRA. This does not appear on the grants database of AGRA.
57 Labs for fertilizer testing are found at the Agricultural Inputs Section of the MAFC Crop Development Department, Mlingano Research Institute in Tanga, and Sokoine University of Agriculture. Samples are quite often sent to Nairobi or South Africa for testing.
58 According to M. Kilasara (2010), soil mapping in Tanzania is at a relatively low resolution and hence not usable by individual farms. He also notes that "Existing databases in Sub-Saharan Africa are weakly developed, with scanty and outdated soil characteristic information." From Selection and use of soil characteristics in digital soil mapping in Tanzania, 2010 19th World Congress of Soil Science, Soil Solutions for a Changing World, 1 – 6 August 2010, Brisbane, Australia.

While the standard fertilizers may be quasi-satisfactory for widely grown field crops (grains, legumes, oilseeds), they are unlikely to fully meet the nutrient requirements of other crops, which are either niche products or emerging crop diversification opportunities (an important dimension of ongoing commercialization of agriculture in Tanzania). The standard fertilizers may also need to be replaced by complex NPK fertilizers tailored to specific production zones and soil conditions.

Another regulation requires solid fertilizer to be packed in bags of 50, 25, 10 and 5 kilograms. Bulk imports are allowed, however, and a few large importers such as YARA and the Export Trading Group (ETG) do import sometimes in bulk and bag the fertilizer in their warehouses or use a port-based service. Importers are instructed to specify source of supply, volumes shipped, expected arrival date of the consignment, and port of entry. Hence, import approvals are granted on a shipment by shipment basis, not for an estimated volume that could be imported over a defined period, such as a several month span prior to the growing season. Fees for most TFRA services are not onerous, but the charge for field and laboratory tests per season for a new fertilizer or fertilizer supplement is $10,000. This fee is considered exorbitant by the private sector and not required in other SSA countries. It is certainly a barrier to entry for smaller firms or new entrants wishing to import or blend more specialized products, such as Greenbelt of Zambia.

An important regulatory role of the TFRA is to carry out inspections at warehouses and sales points of fertilizer products to ensure that they are properly labeled, not adulterated and true-to-type. There are allegations of fraudulent fertilizer sales by opportunistic businesses[59], and TFRA can serve an important function by doing spot inspections and fining violators or barring them from input trading. The Tanzania Bureau of Standards (TBS) issued bagging and labeling instructions before TFRA was created that call for product identification, macro-nutrient percentages, the producer/importer, weight, the manufacturer's expiration date, the batch number, and the country of origin. As much fertilizer is imported in bulk, bagging is usually done at the port by a private firm (the Dar es Salaam Corridor Group), whose bagging machinery is calibrated to fill 50 kg bags. For smaller fertilizer bags, importers do re-bagging at their warehouses, though typically in units of no less than 25 kg. Bags of 5 kg or less are offered by some retailers, who break bulk and bag in small plastic bags.

Fertilizer Blending. Minjingu Mines & Fertilizer Ltd (MMF) near Arusha installed a blending fertilizer plant using "beneficiated" phosphate from the phosphate rock it mines to produce complete fertilizers consisting of major nutrients (N, P, and K) and micro-nutrients such as sulphur, calcium, zinc, copper and boron. Their blends are referred to as Minjingu Mazao.[60] Minjingu states that it "produces under special request for specific crops and locations." Hence, the blending plant is being used flexibly to produce several different formulations for different crops and soil types. According to the General Manager of MMF, various agricultural research institutes in Tanzania conducted field testing of Minjingu Mazao with AGRA financial support and under MAFC supervision. The results showed that Minjingu Mazao performs well as a basal fertilizer on almost all tropical crops. (Top dressing is necessary, of course). Despite this claim, it is unlikely TFRA or the agricultural research system has tested every blend for three seasons. The biggest importers, YARA and ETG, also do some blending of fertilizer to produce NPK mixes.

In contrast, Greenbelt, a Zambian blender, was producing tailored blends in Tanzania based on soil testing in 2012 and was shut down by TFRA for not meeting the three season testing requirement. Greenbelt was told it could blend fertilizer to meet individual buyer specifications, which would generally only come from large commercial farms or plantations (e.g. sugarcane producers) with knowledge of soil deficiencies and crop nutrient requirements. Greenbelt was discouraged from producing different blends for different production zones for sale to small farmers on the grounds that the farmers would not have the technical knowledge to judge whether the Greenbelt blends were appropriate for their crops and soils.

Expanded Fertilizer Distribution Networks and Volumes. AGRA has supported CNFA and the MAFC to register, license, and train fertilizer dealers in business management and record-keeping, fertilizer characteristics and applications to different crops, fertilizer handling and storage, and how to offer extension information on fertilizer use (timing and volume of application, application techniques, etc.). The AGRA-supported programs have increased the number and density of agro-input dealers[61] and fertilizer sales and use by farmers. Most agro-dealers are not able to obtain credit, however, unless they have a strong relationship of trust with an importer or large wholesale trader. This likely constrains fertilizer volumes sold to farmers.

In the aggregate, fertilizer use rates per hectare are quite low in Tanzania (only 19.3 kg/ha of *fertilizer*

59 One informant noted that unscrupulous entrepreneurs have been able to obtain fertilizer bags from bag manufacturers—either 'rejects' or through theft—and fill them with sea salt instead of ammonium sulfate. They then offer bags labeled as containing ammonium sulfate at discounts to farmers. Other 'fake' agro-dealers mix sand or cement in with fertilizer.
60 There is a reference to MRP, or molybdate reactive phosphorus
61 Note that agro-dealers typically sell fertilizer, some types of seed, and agri-chemicals (pesticides and herbicides). There are very few retail fertilizer specialists in rural areas.

products as of 2011), well below the Abuja Fertilizer Declaration target of 60 kg/ha of *fertilizer nutrients*. Fertilizer application on maize is low, well below recommended levels, while it is higher on crops such as tobacco and sugarcane. MAFC data on fertilizer imports show that fertilizer use exceeded 200,000 mt per annum in three recent agricultural years: 208,229 MT (2008/09); 263,390 MT (2009/10); 221,899 MT (2010/11) (ABI Country Study, 2012). Large importers confirm these figures (with estimates of fertilizer imports going to the domestic market as high as 250,000 mt). Overall imports moving through the Dar es Salaam port are much larger, perhaps double the level going to the domestic market, given re-export overland of approximately half of what arrives at the port of Dar to landlocked countries (Zambia, Rwanda, Burundi, and Uganda).

According to the ABI Country Study (2012), the National Panel Survey found that only 12 percent of farmers had access to chemical fertilizer (NPS, 2008).This has definitely increased since 2008 as a result of the Government's subsidy program, though in both the 2009/10 and 2010/11 seasons some farmers noted that they did not redeem subsidy vouchers because they could not afford the purchase of fertilizer, even with the average 50 percent subsidy. Late arrival of vouchers was also raised as an issue though distribution reportedly improved in 2010/11. The Government plans to phase out the voucher program and change it to a credit guarantee scheme targeted to farmer organizations (FOs). The CNFA project evidently had a small credit guarantee program targeted to agro-dealers (AD's).

The seed and fertilizer subsidy program makes up nearly one-third of the MAFC budget, according to a 2012 presentation by D. Rohrbach of the World Bank ("Opportunities and Risks of Fertilizer Voucher Programs," USAID Agricultural Sector Council Daybreak Seminar).

Rohrbach cited an annual cost of $75 million or about 23% of the Ministry budget for 2008/09 and 2009/10. More recent figures (World Bank, 2014) of the total cost of the subsidy program are $86.5 million for 2010/11, $69.3 million for 2011-12, and $55.8 million for 2012-13.

Characteristics and Challenges of the Subsidy Program. The current subsidy program, implemented beginning in 2008/09, targets each eligible small farm household with seed and fertilizer for 0.5 hectares of land. It is called the National Agricultural Input Voucher Scheme (NAIVS). The subsidy level is about 50% of the respective input market price, with farmers paying the remaining 50% of the cost. Eligible farms are those cultivating maize/rice on not more than one hectare of land. A village voucher committee identifies and selects beneficiaries. As the potential list of beneficiaries exceeds the number of vouchers available, vetting and approvals of the most qualified beneficiaries are done by the village assembly, government and extension agents. Each beneficiary receives a set of three input vouchers: a nitrogen (N) voucher for one 50-kg bag of urea; a phosphate (P) voucher for one 50-kg bag of DAP or two bags of locally produced MRP+10N; and a seed voucher for 10 kg of maize seed (OPV or hybrid) or 15 kg of rice seed—sufficient to plant 0.5 hectare of either crop.[62] Inputs are sold by agro-dealers at market prices, with farmers paying using vouchers and cash.

An assessment of the program reports that the number of voucher recipients rose from 735,000 farms in 2008-09 to two million in 2010-11 ("Experience of the Inputs Subsidy Program in Tanzania", PowerPoint presentation, 2011), out of an estimated 2.5 million eligible farmers. It also noted that fertilizer use increased from 77,557 mt in 2002/2003 to 302,000 mt in 2009/10. Over the same period, certified seed consumption expanded from a mere 700 mt to approximately 18,000 mt in 2009/10. A more recent evaluation of the NAIVS (*Performance Evaluation of the National Inputs Subsidy,* MAFC, 2014*)* confirms that some 2.0 million farmers were reached by the subsidy program in 2010/11. Among "graduates" of the NAIVS program, only 37% of the farmers were able to buy fertilizer using their own resources (World Bank, 2014)

The subsidy program is managed at four administrative levels, going from a National Agricultural Inputs Voucher Committee at the MAFC to regional, district and village committees. According to the same 2011 assessment, challenges facing the subsidy program are:

- Input requirements are higher than what the subsidy covers
- Some farmers lack cash for the 50% of the fertilizer cost they must pay (approx. 80,000 TSH farmer contribution)
- Late distribution of vouchers
- Lack of finance available to agro-dealers
- Delay in redemption of vouchers by banks
- Inadequate number of trained agro-dealers
- Dishonesty of some agro-dealers and government employees

62 Most small farms in Tanzania are below two hectares in size, although a national average of 2.4 hectares is cited by Derksen-Schrock and Gugerty (2011).

- Inadequate number of extension staff to supervise the program

Key private sector informants note that the fertilizer volume estimates attributable to the subsidy program are exaggerated, and that a certain percentage (unknown) of fertilizer supposedly delivered under the voucher program is not supplied to farmers due to collusive, fraudulent practices among district and village committees and certain agro-dealers. The 2014 MAFC evaluation revealed that farmers applied only 8 kg of the 50 recommended kg of fertilizer per farm. However, half the 693 farmers in this study thought that NAIVS had benefited smallholder farmers, with a third "strongly agreeing."

Private participants in the fertilizer subsidy scheme point out that repayment of vouchers can take 4-5 months, as the banks handling the vouchers lack the liquidity and have to wait for GoT approval and funds.

Taxation of Fertilizer and Import-Related Problems. There is no import duty on fertilizer, but 18% VAT is charged on bags (produced locally), services rendered at the port (e.g. bagging), and on transport. Importers point out that ultimately farmers bear these charges in increased fertilizer costs. Importers point out that the port operations at Dar es Salaam and handling procedures create problems. Inspections of fertilizer and taking of samples are not done on board ships, for example, despite limited port capacity and high demurrage charges of $20,000 per day or more (with typical payments by importers for 3-4 days of delay). Port off-loading is slow at 3,000 mt per 24 hour period, due to slow loading of trucks (100 trucks/day * 30 mt/truck = 3,000 mt), which means it can take a week to unload a 20,000 mt vessel. Furthermore, many trucks do not use tarpaulins to cover the fertilizer that goes out of the port in bulk; the port should but does not enforce the use of tarpaulins, so any damage to fertilizer becomes the importer's liability. In addition, storage capacity at the port is only 10,000 mt, of which 5-6,000 mt are warehouses in poor condition. Moreover, transit cargo for landlocked neighbors is stored at the port, which creates congestion and slows movement of goods out of the port. Last, unloading and bagging of fertilizer typically results in leakages of up to 100 mt per 2,500 mt imported (4 percent); this could be sold as second grade fertilizer but this is not permitted.

Input Credit Guarantees. AGRA also has implemented a credit guarantee programme, described as follows:

AGRA and the Financial Sector Deepening Trust (FSDT, funded by DFID in 2008) provided $1.1 million for a loan guarantee fund securing a $5 million line of credit from the National Microfinance Bank (NMB), aimed at farmers, agro-dealers and other agricultural businesses. NMB agreed to lend to agro-dealers at rates of 18%, compared to the typical rate of 46% (annualized) charged by microfinance institutions.[63] So far, loan applications of nearly 2.9 billion Tanzania Shillings have been received from agro-dealers, and about 2 billion TSh have been approved (about $1.25 million). FSDT increased its share of the loan guarantee from $100,000 to $1 million, and the bank has expanded its dedicated lending to $10 million. http://www.agra.org/AGRA/en/grants/innovative-finance/if-tanzania/)

Most reports of the change from a voucher system to a credit-based system working through farmer organizations are that it is not working well. SACCOs are not able to do input lending.

Access to Finance

Titles to traditional land are not accepted by commercial banks as collateral. Moveable collateral, particularly vehicles and agricultural machinery, can be accepted if registered. Individual borrowers need to provide collateral, while group lending or a SACCO guarantee offers a sufficient guarantee for some agricultural loans. Tanzania has two licensed credit bureaus.

Sources of Agricultural Finance

National Microfinance Bank (NMB) and CRDB provide some loans to agriculture, as does a Tanzanian Investment Bank (TIB) Agricultural Loan Window, which has provided subsidized credit to commercial producers. This facility has provided 42 billion TSh of loans out of 250 billion in loan applications. This window will be spun off to become an Agricultural Credit Bank in 2014, though few details were provided by TIB.

The Agricultural Input Trust Fund (AITF) is a government agency that lends to producers interested in acquiring agricultural machinery and implements, pumps and irrigation equipment, and other inputs. The loans have very 'soft' terms—6-8% interest per year, as compared to 19-20% rates applied by commercial banks. Loans are accorded often to farmer groups, which typically cannot

63 Interest rates charged by commercial banks on shorter term loans are quoted to be as high as 25-30% per annum by some, but 18-20% by others.

offer collateral (lacking legal title to land). They can offer, however, group discipline/solidarity and may be backed by a 'guarantee' by district councils. The AITF provides credit for tractors, including larger four-wheel models and two-wheel power tillers, suitable for smallholdings and smaller irrigated plots. Tractor credit tends to go to farmer organizations of at least 45-50 members. From 2003/04 to the end of 2013, AITF provided funding for 906 new tractors, for rehabilitation of 273 tractors, and for purchase of 244 power tillers.

NMB and both CRDB participate in the input voucher scheme. NMB, with Rabobank as a major shareholder (35%), works with the following groups of farmers:

- smallholders through group lending on two products—cashew nut and coffee,
- outgrowers of cash crops such as tobacco and sugarcane, and
- emerging farmers with 10 or more hectares of land.

While loans targeted to the first two groups are for 12 months maximum, NMB can provide credit for up to 36 months[64] to emerging farms. Group lending lowers NMB transactions costs in working with smallholders and increases loan security.

NMB has found that loans to rice growers are characterized by low repayment. This may be a temporary phenomenon, however, due to the increased rice imports in 2013, which led to some farmer defaults. Sugar imports are also subject to political interference and uncertainty, affecting profitability of sugarcane production.

Policy Issues affecting Agricultural Lending

NMB identified two policy problem areas. One is access to agricultural land to use as loan collateral. The other is the recent government decision to increase land taxes ten-fold in rural areas to the same level as urban land taxes. This will greatly affect the profitability of farm operations. Government monetary policy also influences interest rates, as the Central Bank "base rate" is 10% and Treasury bills offer 14-15% interest rates on an annualized basis. At a minimum, banks require a 2-3% margin, leading to minimum interest rates on loans of 17-19%. Inflation (implicit GDP deflator) in Tanzania is moderate by African standards at 9.2% in 2011, 11.5% in 2012, and 11.2% in 2013[65], so commercial bank interest rates do not seem high in real terms (especially as compared to Ghana, where they are 25-30%).

Agricultural Mechanization

According to the Mechanization Department of MAFC, 14% of cropped land is prepared using tractors, 24% uses animal traction, and 62% is cultivated by hand hoe.

Accessing finance is problematic for producers wishing to acquire agricultural machinery. Most borrowers cannot meet commercial banks' collateral requirements. And as most agricultural machinery is used only part-time, financial institutions do not consider it a viable investment. Tractors are used off-season, however, in rural transport.

The AITF was created to help farmers acquire machinery, but its loans at interest rates of 6-8% are subsidized. PASS (Private Agricultural Sector Support) Trust, with support from DANIDA and the GoT, offers loan guarantees to borrowers who cannot meet customary commercial bank collateral requirements of 125% of a loan's value. PASS provides partial loan guarantees, covering 50 to 75% of the collateral requirements demanded by commercial banks (as borrowers usually lack adequate collateral). Although Tanzania has a leasing law, there is limited evidence that agricultural machinery is being leased.

All tractors are imported from abroad, and various manufacturers have sales outlets in Dar es Salaam—with John Deere, New Holland, Mahindra, and Farmtrac being major suppliers. There are some importers from China, but they have not penetrated the market effectively and export sub-standard equipment to Tanzania. Tractor imports range from 700 to 800 units in most years.

There was a $40 million Indian Government to Tanzanian Government soft loan scheme to import 1,846 Farmtrac tractors and 400 power tillers in 2009/10 on concessional terms. Buyers are required to provide a 20% deposit, with the remaining 80% financed at 5%, well below typical loans for agricultural equipment.

Despite the existence of an Agricultural Training Institute for Agricultural Mechanization in Mlingano of Tanga Region, MAFC's Mechanization Department claims that many tractor operators and dealers are poorly trained. Department managers also argue for an agricultural mechanization law. There is no national mechanization strategy, although MAFC's National Agriculture Policy (October 2013) devotes a page and a half to mechanization.

Imports of tractors are not subject to duties, but spare parts are charged duties ranging from 0% to 25%, and 18% VAT is applied to imports of spares. This policy inconsistency likely leads to suboptimal maintenance

64 36 months is the productive lifespan of sugarcane.
65 Using the consumer price index as the inflation measure results in higher rates of inflation of 12.7% for 2011 and 16.0% for 2012. Note, however, that the 2013 CPI increase was lower at 7.9%.

and repair of agricultural machinery.

Access to Markets

Analytically sound work has been done and more is underway on staple food crop markets. The Policy Action Node (PAN) on Markets, with support from AGRA, has looked carefully at the disincentive effects of crop export bans, unpredictable import policies, and local taxes on crop sales (see PAN, 2013). USAID's Feed the Future program, which has funded the NAFAKA Project in Tanzania, also undertook an excellent study of maize trade and export barriers (Stryker, 2012). MAFC, with support from USAID and the BMGF, is conducting a field study of crop cesses levied by local governments. The issues are well known and have been brought to the attention of government and donors.

The GoT's justification for export bans and periodic relaxing of (rice) import barriers is defense of poor consumers in both cities and in rural areas, where some small farmers are net buyers of food and hence food insecure. Empirical work in Tanzania and throughout SSA has shown that protection of poor consumers is best achieved by providing farmers with incentives to grow more food, rather than by manipulating trade policies. Transparent and competitive markets are an empirically proven way to spur agricultural productivity and expand marketed surpluses of staple food crops. Higher productivity per hectare enables farmers to obtain higher net returns, even if unit food prices do not rise or actually fall with the overall increase in marketed surplus. Open and competitive markets provide farmers with multiple sales outlets and opportunities, which help ensure that farmers receive the best possible prices for their crop surpluses.

Fundamental Policy Issue: The government's tendency to intervene in staple food crop markets without a strong empirical basis for adjustments in trade policy is not conducive to the emergence of commercially viable agriculture. AGRA can contribute to ongoing efforts to strengthen analytical capacity to:

- Collect, process, interpret, and disseminate agricultural market (price, volume, stocks, trade) information.
- Provide periodic, timely reports and policy briefs that can influence government decision making on market and trade policy.
- Stimulate evidence-based policy dialogue and transparently made (and vetted) policy decisions.

Main Constraints Identified: Export bans on maize and periodic relaxing of import controls (permits, tariff levels) are unpredictable and damaging to farmers and private agricultural trade. Permission to export food crops must be obtained shipment by shipment. This is an arduous, transaction cost laden process that should be abandoned or streamlined, perhaps by allowing traders to export a certain volume over an entire crop marketing season.

Rice import policies vary and have recently hurt producers and traders of domestic rice. Any GoT decisions to lower rice import tariffs and permit high-volume imports need to be made based on empirical data on production, prices, marketed volume and estimates of paddy in storage, and with transparent consultation with private firms.

Secondary Constraint: Local government taxes (cesses) on food crop sales should be applied consistently and once only, not at markets along value chains and in different jurisdictions (districts or regions). Note that this will be very difficult to operationalize in a fiscal environment of very scarce resources for all levels of government in Tanzania.

Unpredictable Trade Policies

USAID's SERA Project advocates "rule-based decision-making on (agricultural) policies." The unpredictability of the major trade decisions affecting maize exports (i.e. bans) and rice imports undermines producers and traders in these VCs.

The periodic **imposition of maize export bans** has been an ongoing saga that has had multiple negative impacts. The recent PAN study (2013) concluded that stakeholders across the maize value chain concur that barriers to cross-border trade need to be eliminated. This study and others have identified negative impacts of the bans:[66]

- Dampen incentives to grow maize, which undercuts national food security.
- Lead to greater price volatility, which dissuades farmers and other private sector actors from investing in agricultural production, storage, warehousing and transport.
- Reduce overall farmer income and induce producers to shift to other (cash) crops such as sunflower,

66 This analysis follows very closely what is presented in Tanzania Markets Policy Action Node (PAN). Impact of tariff and non-tariff trade barriers for staple foods on the livelihood of small scale farmers. 2013.

because of the higher, more predictable revenues.

- Fail to exploit Tanzania's comparative advantage in producing and exporting staple grains. (And making it difficult to export rice undercuts production incentives and invites rice imports, when Tanzania has potential to export significant volumes of rice to the subregion).

According to the USAID study (Stryker, 2012), "Tanzania is the only country in East Africa that formally restricts trade other than on an occasional *ad hoc* basis. Export bans have been imposed particularly following a poor harvest (or perceived poor harvest) or when consumer prices are unusually high. There is often great confusion about when a ban is or is not in place." One key informant noted that some parts of Tanzania don't even know until months later that bans have been removed, and government officials continue to enforce the ban after its removal. Even during years of good rainfall and high maize production, when exports have been allowed, a Tanzanian exporter has to obtain five different letters of authorization to export staple foods (taken directly from the Stryker report):

1. Letter of request by the District Administrative Secretary for an exporter to be issued a National Food Export Permit

2. Forwarding letter by the Regional Administrative Secretary for the exporter to be issued a National Food Export Permit

3. National Export Permit issued by MAFC

4. Letter of validation of National Food Export Permit by the Regional Administrative Secretary

5. Letter of validation of National Food Export Permit by the District Administrative Secretary

This process raises transaction costs for Tanzanian exporters to a very high level and makes it very difficult for them to conduct business and trade foodstuffs within the EAC and SADC. One impact of these requirements has been decreased numbers of exporters.

Government interference in the domestic rice market stems from periodic relaxing of import tariffs and granting a handful of large-volume importers permits to import rice. Believing that the 2013 rice harvest was poor and citing rising rice prices in urban areas, the GoT permitted importers to bring in Asian rice, mainly of Pakistani origin. Many observers argue that this action was premature, that there was not going to be a shortage of domestically grown rice in 2013, and that significant paddy and rice stocks were in storage, particularly in rural areas.[67] The high volume of rice imports in 2013, which increased four-fold over the average level of the previous four years, undercut the market for domestic rice. This lowered prices and allegedly forced certain traders, who had bought paddy after harvest and were storing it to benefit from cross-season arbitrage, to sell their stocks at a loss.

Role of the National Food Reserve Agency (NFRA)

The National Food Reserve Agency (NFRA) is a public sector organization that can shape markets. The NFRA deals primarily with maize through purchases from farmers for roughly six months out of the year at higher prices than the market clearing price. NFRA's main function is to maintain a national grain reserve, but it announces high purchase prices that disrupt the private sector maize trade. Ostensibly, high buying prices provide producers with attractive returns, though an underlying agenda appears to be that NFRA is able to buy grain that is potentially exportable.

Critics of NFRA point out that its setting of a minimum purchase price disrupts markets, as NFRA does not have the capacity to buy all the maize offered at the support price (Stryker, 2012). Stryker argues that NFRA should buy maize at unannounced market prices through a public tender and not at a pre-announced minimum price, as currently practiced. Supplies would become available to the extent that NFRA becomes known as a transparent and dependable customer. According to the PAN policy brief (2013), "bureaucratic procedures, political interference, poor budget allocations, underutilization of capacity, and chronic inefficiency" make NFRA highly ineffective.[68] Farmers queue for long periods to sell their maize, and there are allegations of preferential treatment of larger, politically connected producers. Small maize farmers and traders also report having to wait for weeks before getting paid after delivering their commodity at NFRA collection points.

In an April 2014 interview with the chief executive of NFRA, we learned that the agency plans to build 275 warehouses at the village level—some new and some refurbished—with some (30) funded by the BMGF, most of the others funded by the World Bank, and some paid for by the GoT. This capacity will come fully on line by 2017. NFRA's goal during the 2013-14 maize marketing season was to buy 200,000 MT, but it ended up buying 220,000 MT to stand by its commitment to buy from all farmers who offered maize. NFRA's longer-run objective is to own and operate 700,000 MT of storage capability within 10 years. Concentrating

67 An alternative view is that private rice traders colluded to hold rice off the market and raise prices. If the domestic rice trade is dispersed and not concentrated in the hands of a few large traders, this explanation seems implausible.

68 Market PAN consultants observed piles of maize waiting to be weighed due to limited staff, equipment, and receiving procedures. They forecast that "it will take four to five months to clear the deliveries. This puts farmers in a precarious situation since they have immediate cash obligations and have to start buying inputs for the next season."

storage of the primary staple in a not very efficient GoT agency raises questions about why such large, publicly held stocks are needed and what is the role of the private grain trade. **Market Cess on Food Crops Traded Domestically**

Traders allege that different localities charge different rates. There is supposed to be a cap on the cess of 3 percent, which used to be 5 percent. There may be an argument for applying the crop cess on cash crops that are mainly exported, such as cashews, coffee, and tobacco, though any measure that increases export costs will affect export competitiveness.

As the GoT has devolved certain functions (and fund raising) to local government, the market cess generates significant revenue for municipalities and district councils. Local governments have to raise funds to cover most of their operating costs; if they fail to do so, they cannot define a (local) development agenda. Removing the cess entirely, in a fiscal environment of devolution, is infeasible. Dropping the cess so that it is consistently applied at the 2%, for example, is feasible. While it might decrease revenue to local governments in the short run, this might be partly compensated by increased revenue collection (less evasion, bribery) in the medium to longer term. One key informant pointed out that for 14 LGAs, 70% or more of their revenue comes from the cess.

The market cess on agricultural products is linked, however, to broader issues of fiscal accountability, leakages, and rent-seeking behavior. Police put up roadblocks between localities that impede free trade of rice and maize, adding both time and cost to movement of agricultural products. With BMGF funding, MAFC is doing empirical research on the magnitude of the cess, its impact on LGA budgets and intraregional trade, and whether the cess can be set at transparent levels that help LGAs meet their fiscal requirements yet do not suppress trade.

Building Capacity to do Strong Policy Analysis. The BMGF and USAID are co-funding a grant to Michigan State University under which a Policy Research Center has been created in MAFC. This center will become a "one-stop shop" for policy analysis, policy briefs and reports, and data sets, as well as provide an e-library. It will offer training in basic policy analysis techniques done well and clearly—using descriptive statistics (including breakdowns and cross-tabs) and time-series data to analyze trends and do simple forecasts. Furthermore, analysts will be trained in how to prepare concise and compelling policy briefs that have a higher probability of being read and influencing policy-makers than long, dense technical reports.

USAID is also funding a capacity building program at Sokoine University of Agriculture (SUA) and the national agricultural research system (NARS) called the Innovative Agricultural Research Initiative (iAGRI) that is a partnership with six U.S. Land Grant universities, led by The Ohio State University. iAGRI has launched a program of collaborative agriculture research with Sokoine University and the NARS, trained 120 Tanzanian students in advanced degree programs in various fields of agriculture, and strengthened the capacity of SUA to develop and implement instructional, internship, and outreach programs.

Standards, Weights and Measures in Staple Food Crop Marketing. This topic has been well covered by the Policy Action Node for Markets (see Policy Brief No. 2, 2013) and is only treated cursorily here. Tanzania has a skeletal regulatory structure, comprised of three agencies that oversee trade in food products—the Tanzania Bureau of Standards, the Tanzania Food and Drugs Authority, and the Weights and Measures Agency. They are understaffed, underequipped and underfunded, so they cannot effectively regulate the food crop trade. As noted by the PAN, crop cesses, market fees and transport charges are assessed on a 'per-bag' basis rather than on the basis of weight. Hence, traders and intermediaries have strong incentives to overload bags well beyond standard weights. The PAN observes that "Due to limited market information and *lack of knowledge* on standards for weights and measures, farmers find themselves in a weak negotiating position. Traders take advantage of this situation and pay low prices for densely packed volumes of produce."

In the course of the PAN field study the following practices were observed:

- Rice was sold by volume, not by weight.
- Maize was sold by weight but traders supplied scales and often cheated farmers.
- Sacks of grain were, on average, 8% heavier than indicated (hence over-packed).
- Farmers are unaware of regulations on standards and no explanatory materials are available in Kiswahili.
- Farmers' returns are estimated to be 40% lower to maize and paddy cropping enterprises than they would be if correct weights and measures were used.

While the policy and regulatory framework is largely in place, the Markets PAN concludes that:

> "Policies alone are not adequate to enforce and guarantee adherence. Next to the existence of laws and regulations, public education, knowledge, awareness and legal enforcement are equally important to effectively implement a fair and efficient trade and marketing system in the country."

This prescient observation can be generalized to the entire food system, including both input and output markets. A major theme of our country policy briefs is that relatively straightforward adjustments to policies and regulations may have a marginal, short-run positive impact. These adjustments are unlikely to lead to significant changes in underlying behavior, however, or be effective if the institutions that monitor and enforce regulations are weak, under-funded, or faced with conflicting or inadequate incentives.

Beyond the legal and regulatory environment for trade in food crops, significant resources need to be provided to upgrade physical marketplaces, install scales that are properly calibrated and managed/tested by impartial market officials, and spot check weights of bags in transit. Standardization of weights and measures is also a *sine qua non* to establishment of any system of grades that would allow higher quality produce to capture price premia.

To conclude, the Markets PAN brief is an excellent treatment of a complex issue and it correctly notes that legal, regulatory and policy reform will only take a country so far. First, reform must be widely publicized, implemented by knowledgeable and public-spirited officials, and enforced. Second, the policy and regulatory superstructure is just that—the obvious and visible part of a set of issues that can be modified to address symptoms of problems but not deep-seated issues of institutional capacity and incentives, behavioral factors, inertia in traditional marketing practices, and farmer illiteracy and innumeracy. Strong institutions, particularly representing farmer interests, are needed as a countervailing power against both predatory trade practices and rent-seeking behavior by public agents.

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PROMOTING A STRONG SEED SECTOR IN SUB-SAHARAN AFRICA

Nicholas Minot

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Given that Sub-Saharan Africa has the highest incidence of poverty and malnutrition in the world, the stagnation in per capita grain production there is worrisome. Since 1970, per capita grain production in Sub-Saharan Africa has declined more than 10 percent. Increasing the productivity of staple foodcrops will help poor farmers and consumers, and one of the most sustainable ways to expand food production in Sub Saharan Africa is to generate new technologies—including staple seed varieties—that are adapted to the constraints of the continent's small-scale farmers. The region thus requires a cost-effective system of seed production and distribution to ensure that appropriate seeds are delivered to farmers.

Both the private and public sectors have a role to play in developing the seed sector in Sub-Saharan Africa. Although the private sector can effectively carry out many seed production and distribution activities, for reasons discussed in this brief, private companies acting on their own will not develop and produce optimal amounts of appropriate seeds for Sub-Saharan Africa. Thus the public sector also has a role to play.

The Public-Sector Role in Developing Seed Systems

The seed industry has several economic characteristics that justify selective government involvement. First, developing new seed varieties involves large fixed costs in terms of fields, equipment, and scientific expertise, and the development process can take up to 20 years. The payoff for these investments is uncertain, especially given that many types of seed are easy for farmers to reproduce. Only a large private company or a subsidized public entity can afford to invest in an activity with such uncertain, long-term payoffs, and the private sector will supply less than the socially optimal amount. The difficulty of capturing the benefits of improved seed varieties provides a public-good rationale for government support for plant breeding, particularly for crops that are easy to recycle and for crops that are important to small farmers. This does not imply that the public sector must be involved in all stages of seed production or in plant breeding for all crops. Nor does it imply that breeding must be carried out by scientists at government-funded research institutes. Rather, it implies that there is some social value in subsidizing plant breeding and other agronomic work that generates new and improved varieties of important crops, particularly those produced and consumed by the poor.

Second, seed quality varies widely, depending on the genetically determined performance potential, varietal purity, physical cleanliness, and viability. Yet quality is difficult for farmers to observe until after the seed has been purchased and planted. Public intervention is thus needed to provide farmers with information about seed quality. A range of policies and regulations has been adopted to protect farmers from low-quality seed, including minimum standards, voluntary or mandatory seed certification, import restrictions, licensing and registration of seed companies, and legal protocols for testing seed quality. Overly strict quality controls, however, will impede international flows of seed technology and slow the diffusion of new technologies from the research station to the farmers.

Third, most seed consumers in Sub-Saharan Africa are poor and risk averse. Cash constraints often limit their ability to make investments—even profitable ones. The fact that small-scale agriculture is the main source of income for the majority of the poor in most African countries suggests that there is a strong equity argument for public investments to strengthen the system of developing new crop varieties and delivering them to farmers.

Yet many of the individual functions within the seed supply system, such as seed multiplication, processing, and distribution, do not have significant externalities or public-good characteristics. Thus, an efficient seed system is likely to involve a complex combination of public-sector support and private-sector commercial activities. The public sector must play a bigger role in plant breeding and some aspects of quality control, whereas the private sector has better incentives in the area of seed multiplication, processing, and distribution. Moreover, the private sector has adequate incentives to play a major role in producing and distributing seed of hybrids (particularly maize) and

other crops (such as vegetables) for which farmers tend to rely on external supply. On the other hand, the public sector generally needs to play a bigger role in seed systems for open-pollinated varieties of staple foodcrops, as well as the seeds of minor crops for which the scale of production is relatively small. These crops include sorghum, millet, cassava, and cowpeas. In addition, the state may need to play a larger role in poor countries where the private sector is not sufficiently developed to assume the risks associated with seed production and distribution.

Developing New Varieties

Farmers have been creating new and improved varieties of crops for thousands of years, but in the 20th century, advances in knowledge about genetics led to more scientific approaches to plant breeding. Studies show that plant breeding has generated high rates of return to public investments, thanks to improvements in yield, disease resistance, and other characteristics. In spite of this fact, public funding for plant breeding and crop improvement in developing countries has been variable and on a downward trend in recent years. Given that agricultural research is a cumulative, long-term endeavor, adequate and stable funding is crucial.

When the research institutes of the Consultative Group on International Agricultural Research (CGIAR) were established in the 1970s, breeding for global adaptation was a commonly accepted paradigm, but the resulting traits did not always improve performance in the variety of agroecological conditions in which the crops were actually grown. More recently, CGIAR centers and national agricultural research systems (NARSs) working on crop im-provement have made efforts to define cross-national regions with common agroclimatic features. Neither regional (cross-national) nor local (national and subnational) breeding strategies alone are likely to be as successful as a judicious blend of regional and local breeding strategies. In general, however, it is better to start with a decentralized approach, to promote communication and interaction within a region, and to build a regional strategy from the ground up than to use a top-down approach.

Although the allocation of resources between conventional breeding and biotechnology is a contentious issue, well-targeted objectives and effective field testing and selection are essential for success under either approach. The first priority should therefore be to provide training, infrastructure, and operational funds to support core breeding activities.

In addition, new varieties will be adopted only if they possess agronomic and postharvest characteristics that are acceptable to farmers and consumers in the target production environments. Farmer participation in selecting the best experimental varieties for commercial production is thus highly desirable.

Finally, in many countries, the procedures for releasing new crop varieties need to be clarified, simplified, and accelerated. Excessive regulations slow the diffusion of new technology to farmers without providing offsetting benefits in terms of protecting farmers from underperforming varieties.

Producing Seeds

Since the mid-1980s, seed programs have turned away from supporting state seed enterprises and toward the development of a more diverse and competitive seed sector, including private seed companies, nongovernmental organizations (NGOs), and farmer organizations. The number of private firms involved in seed production has increased, although not as much as hoped for, and private firms are reluctant to provide seed for minor crops. In some cases, it may simply not be profitable to produce seed for minor crops or crops that are easily recycled. It is likely, however, that the private sector could play a larger role in seed production given a more favorable policy environment, including the following conditions: (1) a clear regulatory framework; (2) fair competition, including assurance that private seed companies will not be forced to compete with a heavily subsidized state-owned seed enterprise; (3) access to germplasm from national or international research centers; and (4) limits on the distribution of free emergency seed.

Whereas early programs ignored the informal seed sector, there is now greater interest in understanding and learning from it, including attempts to combine the strengths of the formal and informal seed sectors. Community seed production projects have become quite common in Sub-Saharan African countries to provide emergency seed relief, to develop the seed sector, or simply to generate income, but they often require external support.

Marketing Seeds

The government has a role in supporting agricultural research and extension activities related to seed development, as well as in setting standards, testing, and requiring labels to inform buyers. But the economic justification for direct government involvement in seed marketing per se is not strong; rather, the government should facilitate the development of private marketing channels. For example, governments can facilitate international trade in seed by promoting regional harmonization of seed regulations and reciprocal recognition of new varieties. By expanding the potential

size of the market, this policy creates stronger incentives for investments by private seed companies, both local and international. In addition, governments can work with networks of agricultural input dealers, providing them with credit, helping them understand seed demand, and training them to provide technical information regarding seed and other inputs. Governments can also help ensure that seeds distributed by NGOs for free after emergencies do not have an adverse effect on private-sector seed companies. Private seed companies tend to focus on hybrid maize, vegetables, and industrial crops, so there is a role for government in marketing seeds of minor crops and to farmers in remote areas.

Building Effective and Sustainable Seed Systems

To help build effective and sustainable seed systems, governments need to focus on educating and training participants in the public and private sectors to increase their understanding of the technical aspects of varietal development, seed production, and seed marketing, as well as of policies and regulations related to seed development. Governments should also work to strengthen output markets so that as agricultural research generates productivity-increasing technology to farmers, countries can avoid a situation of over-supply that depresses prices and causes farmers to reject the technology.Such steps will include more coordinated and predictable government behavior and increased investment in infrastructure and regulatory frameworks to support the development of food markets. Reducing barriers to grain trade would expand markets and make them less vulnerable to local supply disturbances.

In summary, promoting the development of a strong seed sector in Sub-Saharan Africa requires a coordinated effort between the public and private sectors, where the roles may differ across activities (seed development, production, and marketing), across crops, and across countries. The public sector needs to invest more in plant breeding and the development of new varieties, particularly for open-pollinated varieties of staple foodcrops. Seed production and marketing are often more efficiently carried out by private seed companies, but they must be supported with an enabling policy environment. Such an environment would include a clear legal framework for private seed companies, access to public-sector germ-plasm, the absence of subsidized state seed companies, streamlined varietal release policies, regional harmonization of seed regulations, and limits on the distribution of free seed by NGOs in nonemergency situations. Seed policy should also help promote efficient informal seed systems, while controlling misleading sales practices. Effective and sustainable seed systems can help improve the livelihoods of Sub-Saharan Africa's small farmers and benefit consumers as well, serving as an important element in strategies for agricultural development and poverty reduction.

Nicholas Minot is a senior research fellow in the Markets, Trade, and Institutions Division of IFPRI. This brief is based on N. Minot, M. Smale, C. Eicher, T. Jayne, J. Kling, D. Horna, and R. Meyers, Seed Development Programs in Sub-Saharan Africa: A Review of Experiences, prepared for the Rockefeller Foundation (Washington, DC: IFPRI, 2007).

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In Conversation With Prof. R.R. Hanchinal, Chairperson, PPV&FR Authority, Government Of India, New Delhi



ABOUT THE CHAIRPERSON

PROF. R.R. HANCHINAL,

CHAIRPERSON, PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS AUTHORITY, GOVERNMENT OF INDIA, NEW DELHI

Prof. R.R. Hanchinal, has joined as Chairperson of Protection of Plant Varieties & Farmers' Rights Authority (Secretary rank) Government of India, on May 1, 2013. Prior to this, he served as Vice Chancellor, University of Agricultural Sciences, Dharwad and other key posts namely Director of Extension, Director of Research, Special officer Seeds, Assoc. Director of Research, Senior Wheat Breeder, Plant Scientist (Cotton) etc. He was advisor to Indonesia government for the development of Food Crop Research (2003) and also served as Senior Seed Production specialist for the USAID West Africa Seed Alliance, ICRISAT (2008) and established commercial seed industry in five countries viz., Mali, Burkina Faso, Niger, Nigeria and Ghana.

He has served as Chairman of Quinquennial Review Team (QRT)- Maize, QRT-CTRI-AICRP-Tobacco, Research Advisory Committee (RAC) – Directorate of seed Research (DSR)-ICAR-Mau, National Level Award Committees, Karnataka State seeds Negotiation Committee, etc. and as Member of QRT. DSR Mau, National Germplasm Registration Committee NBPGR, New Delhi, Central Sub-Committee on crop standards, Notifications and release of varieties for Horticultural crops, Ministry of Agriculture, Government of India, Board Member, Indian Agricultural Research Institute, Pusa, New Delhi etc.

As a Plant Breeder, Prof. Hanchinal has made significant contributions in the area of Wheat Improvement for hot to very hot dry environments. His work relates to both basic and applied aspects. In basic research, Prof. Hanchinal has identified easily measurable morphological traits as valuable selection criteria and canopy temperate depression (CTD) as a complimentary tool. Monosomic and D-genome addition lines of durum wheat were also developed to solve genetic problems.

In applied research he could develop and release 23 varieties in different crops. In wheat he developed 17 varieties which include the world's first semi-dwarf dicoccum wheat varieties DDK-1001 and DDK-1009. In addition to excellent quality, these varieties possess 30 per cent yield superiority over the local variety N-200. Semolina of DDK-1001 possesses therapeutic quality and has been suggested for the management of diabetes mellitus and cardiovascular diseases. Recently three more high yielding bold seeded leaf blight resistant varieties DDK-1025, DDK-1029 and HW-1098 (helped in development) have been released for Peninsular India. In bread wheat, var. DWR-162, DWR-225, UAS-304 (for timely sown) and DWR-195 (for late sown) developed under irrigated conditions have occupied major wheat areas of peninsular India. Recently variety UAS-347 was identified for release under rainfed conditions. Variety DWR-162 has crossed the boundary of the country and has been released in Indonesia in the name of “DEVATA”. The variety Dharwad Dry is being used by CIMMYT as check variety

in International trials. In durum wheat, varieties DWR-185 and DWR-1006, UAS-415 and UAS-428 developed for irrigated conditions and DWR-2006 and UAS -446 for falling residual moisture regimes are also popular.

Besides, Prof. Hanchinal is responsible for the development of genetic stocks in all the three cultivated wheat services viz; bread wheat; durum wheat and dicoccum wheat. In bread wheat five genetic stocks namely UAS-320, UAS-334, UAS-315 and UAS-316 possess resistance to different diseases. Two genetic stocks viz; UAS-320 (INGRI-13001, IC0590875) resistant to stem, leaf and stripe rusts, leaf blight, karnal bunt, flag smut diseases besides superiority on wet and dry gluten(%) and another genetic stock UAS-334 for root rot disease resistance are registered by plant germplasm registration committee (PGRC) of Indian Council of Agricultural Research (ICAR). In durum wheat var. DWR-174 has been identified as the source of resistance for cereal cyst nematode (CCN). In dicoccum wheat Var.DDK-1037 (INGR 12001) has been registered by PGRS of ICAR for its resistance to loose smnt and flag smnt besides resistance to stem and leaf rusts, foot rot and moderately resistance to Heterodera avena. In cotton developed two varieties (ACP-71 and AH-107), one fodder variety (DFC-1-Swada) in fodder cowpea and in mesta Var. AS-73CP-560.

Prof. Hanchinal has made significant contributions in the area of seed production by substantially increasing the quantum of quality seed production from 2,876 qtls. During 2000-01 to 45,282 qtls. during 2005-06 and supplying it to various public and private institutes. Developed unique method for the first time by selecting and adopting potential villages for seed production with “Modified Seed Village Concept” which is popularly known as “DHARWAD MODEL” which become role model for the country. This model helped to saturate Karnataka region with improved varieties in high volume low value crops viz., groundnut, soybean, pulses and cereals. Under his leadership, by the year 2012, the UAS Dharwad became first in the country among the Agricultural Universities, Institutes by producing more than 100,000 qtls. of quality seeds and 10,00,000 planting material.

Prof. Hanchinal in addition to offering courses to Under Graduate and Post Graduate students, has guided 22 students for their M.Sc (Agri) degree and 7 students for their doctorate degree program. Presently he is adjunct Professor of Indian Agricultural Research Institute (IARI), Pusa, New Delhi also.

For his outstanding work, was awarded the Fakruddin Ali Ahmed Award, 98-99, ICAR, DARE, Govt. of India, New Delhi; Rao Bahaddur Dr. Ram Dhan Singh Trust Memorial Award, CCS, Harayana Agricultural University (2007) Hisar; Sir Ekbote Prize from MACS Pune, (1998), Nagamma Dattatrey Rao Desai Award of UAS Bangalore (1999); Karnataka Rajyotsava Award 1999 and 2003 by Hubli-Dharwad Municipal Corporation; BIOVED Sangam Ratna Award 2013 by BIOVED research Institute of Agriculture & Technology Allahabad; Award for outstanding contribution in Seed Production and research, 2005 by University of Agricultural Sciences, Dharwad and recently he has been awarded with the prestigious NABS -Life Time Achievement Award by National Academy of Biological Science, Chennai (2014) Etc.

Fellow of National Academe of Biological Science and Hon'ble Fellow of many professional societies and more than 350 publications at his credit.

In Conversation With Prof. R.R. Hanchinal, Chairperson, PPV&FR Authority, Government Of India, New Delhi

INTERVIEW

1. **Please share with our readers your experience of working in Africa?**

Africa is the world's second largest and second most populous continent with 30.20 million km^2 area including nearby islands. It covers 20.40 percent of total land area with 15% of world's population. The continent has 54 countries, nine territories and two defacto independent states. Africa hosts a large diversity of ethnicities, cultures and languages. This content is endowed with rich flora and fauna and is origin to many plant species where evolution took place. The main land has between 40,000 to 60,000 plant species, of which approximately 35000 are endemic.

The population in African continent is growing rapidly. As a result in over next 40 years the population is expected to double from around one billion to almost two billion. Currently in spite of favourable environment for cultivation of different crops, food production is not in encouraging state. West Africa for example depends to 40% on imports in ensuring sufficient rice supply with Thailand as the main rice supplier. In Africa 30% of all cereals consumed are imported. Despite domestic production and import efforts, there are 239 million undernourished people living on the African continent, most of them in sub-Saharan Africa. During last two decades the number of under nourished people in Africa has increased by more than 35%. This shows that food insecurity already now is of increasingly relevant concern. In meeting the rising food demand cause by the population growth, degradation of soil and water, climate change, loss of vegetation etc., the best option to food security is to raise domestic food production. This is only possible through the benefits of modern agriculture.

2. **Comment on the Seed Industry of India and Africa?**

Indian Seed Industry travelled a long journey. The journey started during 1960s, when the National Seeds Corporation (NSC) took birth in 1963 to make available the quality seeds of improved varieties particularly semi-draft wheat and rice varieties and maize composites / hybrids that brought "Green Revolution" in the country. The Seed Act, 1966 enacted by the Government of India, helped in implementing the seed laws. In the beginning seed industry was mainly dominated by the public institutions viz., NSC and State Seed Corporations. During 1980s when liberalization started with the development of the new seed development policy (NSPD) in 1988-89 and the National Seed Policy in the year 2002, provided the appropriate climate for the seed industry to utilize available and prospective opportunities, safeguarding the interest of farmers and conservation of biodiversity. The policy raised India's share in the global seed trade by facilitating advanced scientific aspects such as biotechnology to farmers. Now the private seed industry is no more confined to just production and marketing of seed but is has well acquired technological strength to cater to the various needs of tomorrow.

Several seed players expanded their presence and reach in the domestic market. Increased marketing efforts, raising farmer awareness, higher penetration of basic irrigation, infrastructure drives by government investment and increment in farm income have all played a part in the sustained increase in the consumption of market purchased seeds. Both, government sector, comprising 20 state seeds corporations and one national level seeds corporation, as well as the private sector have played a role in the increasing availability of quality seeds in the market. The Public sector has largely been focussed in ensuring the availability of variety of seeds of food crops which are 'high volume - low value' products. Whereas, the private sector has been dominant player in the hybrid space, particularly in 'high value - low volume' crops such as Cotton, Maize, Sorghum, Millet, Rice, Sunflower and Vegetables especially in recent years.

Today, the Indian Seed Program boasts one of the biggest seed markets in the world with annual sales around Rs. 16, 000 crores. Of this, export market accounts for around US $ 67 million. In comparison to India, the seed industry in general in Africa is not well developed. Since I was working in West

Africa comprising of five countries, I have a fair idea about the seed industry status in these countries. West Africa consists of 17 countries. These countries are small in geographical area and in some cases covered by Sahara desert. Hence, agricultural activities are more concentrated in Sub-Saharan and Sudan Asian region. There are no perfect seed laws in place as in India. Hence under WASA Project, we tried to facilitate in promoting common seed laws for all the West African countries, so that there is no hindrance in the seed movement from one country to the other. This would bring agricultural enabling environment in the region. Out of five countries, seed industry in Nigeria and Ghana is little better. But in India, there are big seed companies. Foreign investment in seed industry is least in West Africa. India has well defined seed generation system (viz., Nucleus Seed, Breeder Seed, Foundation Seed and Certified Seed) exist, which is not found in systematic way in Africa. Public investment in varietal / product development is not much, while private seed industries do not have their own Research and Development (R&D) wing.

3. **What is the status of IPR in Africa?**

Intellectual Property Rights (IPR) in West Africa with respect to plant varieties is in formative Stage. The reason being lack of advanced technology, low level of education and infrastructure, lack of leadership, economic, social and political factors.

4. **What are your views on the investment opportunities in African Seed Market?**

There are ample investment opportunities in West African seed market. The Agro-climatic conditions of Nigeria, Niger, Ghana, Mali and Burkina Faso are similar to Central and Peninsular India. The varieties / hybrids developed under Indian conditions perform better in these countries. There is a great opportunity for Indian Seed Industry to perform better in these countries. Indian companies can establish infrastructure in association with local traders or small seed companies. There is great scope for popularization of hybrids in cereals (viz., Rice, Sorghum, Maize) and Pearl Millet.

5. **Do you see a role of Make in India and its impact on African seed market?**

Since the Agro-climate conditions are similar to central and peninsular Indian conditions, the varieties / hybrids developed in India perform well in West Africa. The only difference with Indian conditions is that the heat units the crops get in West African region is little more than Indian conditions. As a result the crop maturity will be about ten days earlier. Another factor which affects the crops is high humidity, which contributes for disease and pest incidence. However, multi-location field testing will certainly help the Indian Seed Companies to identify varieties / hybrids suitable to the region. During 2008-09, the hybrids / varieties developed in different crops in India were tested under Nigeria and Mali conditions. The performance of hybrids in rice, sorghum, Maize and Pearl millet were found to be excellent and the seed producers / seed companies were very much attracted to visualise the performance. Similarly the vegetable varieties bred in India performed well under Agro Climatic conditions of both the countries. These trials clearly indicated that the products developed in India through Research and Development efforts perform well in West Africa. Hence, there is a great opportunity and role of make in India to sell in the West African seed market.

6. **With the changing climate how do you see the role of Indian Seed Industry?**

India is a biodiversity rich country in the world. Indian agriculture goes back to more than 20,000 years. Indian civilization is very much associated with agriculture. Our ancestors made substantial creative efforts in developing varieties out of wild crop species. As a result presently we find numerous Farmers' varieties and their wild relatives in nature. These farmers' varieties/ and their wild relatives possess useful gene blocks which can resist/tolerate adverse climatic conditions besides resistance to pests and diseases. Some varieties have medicinal and therapeutic value, For example in rice, there are varieties tolerant to drought, flood, cold, salinity and alkalinity with maturity range from 45 days to 140 days. This range may fit in well in contingency planning. For medicinal and therapeutic purpose, our farmers have developed special varieties. This acts as a treasury of genes to develop climate resilient crop varieties.

Realizing the importance of Farmers' varieties / wild relatives, the Protection of Plant Varieties and Farmers' Rights Authority (PPV & FRA) in association with National Agricultural Research System (NARS) and Indian Seed Industry is promoting the conservation, preservation and protection of Farmers' varieties for sustainable use in agriculture. This would certainly help the Indian breeders to develop climate resilient crop varieties.

Annex 1: Matrix of Priority Policy and Regulatory Issues

Category	"Problem" Policy/Regulation	Potential impact on local agribusinesses	Consequent impact on smallholder farmers
Input Markets	New quality control mechanism for certified seed requires seed producers to deposit seeds in government-approved warehouses where they are treated and subsequently tested and bagged in 50 kg sacks without branding. Seed producers may then re-package those seeds not purchased by the government for marketing purposes. *This is a poorly implemented policy/regulation*	Forces seed producers to relinquish control of seeds and have seed stored with that of other producers. Seed producers incur costs of transport to and from warehouse and re-bagging for marketing purposes.	Prices of certified seed are likely to remain high (and higher than they could be in the absence of such regulations). This will dampen farmer demand and limit improved seed use.
Input Markets	Establishment of the *Centrale d´Approvisionnement des Intrants et Machinerie Agricole* (CAIMA) will centralize all purchases under the government´s subsidy scheme in the Ministry of Agriculture. *This is an economically flawed policy/regulation*	May retard the development of competitive markets for inputs where coverage of the subsidy scheme is significant. Also, risk of collusion among a few suppliers in the tendering process. Finally, a bureaucratically- run system may result in delays in placing inputs at farm gate.	Farmers risk receiving inputs too late. A public sector dominated procurement system could also limit competition along the input supply chain (and could lead to some farmers paying higher prices for inputs than under competitive procurement.
Market Access / Trade	Use of standard weights and measures in the trading of agricultural goods is not enforced. This is a poorly implemented policy / regulation	The lack of use of standard weights and measures leads to inconsistent pricing and complicates regional trade.	Limits transparency in pricing for smallholders, who are price-takers. Also limits potential opportunities smallholders have to sell into the regional market.
Trade Bans	Policy uncertainty regarding institution of commodity import/export bans *This is an economically flawed policy / regulation*	Import/export bans distort pricing and disrupt market access for exporters and the supply of inputs for processors. This uncertainty deters investments in production/processing expansion.	Limits the potential opportunities smallholders have to sell raw produce to exporters and/or processing companies.
Trade	Under Article 10 of ECOWAS Protocol A/P1/1/03, "a certificate of origin shall not be required for agricultural or livestock products." However, in practice, traders of agricultural goods within West Africa are routinely asked by customs authorities to produce a certificate of origin. *This is a poorly implemented policy / regulation*	Demanding unnecessary certificates of origin raises transaction costs in terms of both time and money, making products less competitive in regional export markets. For processors, the requirement increases the cost of inputs sourced from regional markets.	Limits the potential opportunities smallholders have to sell produce to regional traders.
Trade	Under bilateral technical agreements among ECOWAS countries, SPS certificates issued by the country of origin are officially valid throughout the region. However, in practice, border officials routinely require traders to obtain duplicate phytosanitary and veterinary certificates. *This is a poorly implemented policy / regulation*	Demanding unnecessary SPS certificates raises transaction costs in terms of both time and money, making products less competitive in regional export markets. For processors, the requirement increases the cost of inputs sourced from regional markets.	Limits the potential opportunities smallholders have to sell produce to regional traders.
Transport	Guarantees of the free movement of goods both within countries and across borders under the ECOWAS Trade Liberalization Scheme (ETLS) are not being honored, as drivers face numerous unjustified fees, payments to officials, and demands for unnecessary paperwork or inspections. *This is a poorly implemented policy / regulation*	Checkpoints, bribes and delays add to the cost of agricultural goods, through increased transport costs as well as increased post-harvest losses, reducing potential profit margins. They also discourage regional trade, limiting the potential size of the market into which producers and processors can sell.	Smallholders receive lower prices for their goods as a result of the squeeze on margins further along the value chain. This also limits the potential opportunities smallholders have to sell raw products to regional traders and/or processing companies.

Annex 2: Institutional Capacity to Conduct Policy/Regulatory Research in Burkina Faso

Organization	Strengths	Disadvantages
CAPES[69]	Capacity-building entity with a small cadre of well-trained staff. Support to SCADD, Stratégie de croissance accélérée et de développement durable. It also supports *Politique nationale de renforcement des capacités* (PNRC). A few sr. staff do outside consultancies (WBG, e.g.).	Publicly funded (under Présidence) so ties to private sector may be weak. Not focused on agribusiness or investment promotion. Web site does not suggest much activity on agriculture since 2011/12, though received an ACBF grant in 2010.
University of Ouagadougou, Department of Economics	A small number of researchers who carry out donor-funded research programs and are able to do some consultancies (e.g. Yiriyibin Bambio, Kimseyinga Savadogo).	Staff heavily committed to teaching and advising. Not clear if dept. is organized to obtain research grants (like a US Land Grant university).
MASA, Division for Economics and Sectoral Statistics (DGESS)[70]	Receives donor funding to do special studies, such as the MAFAP's analysis of agricultural policy incentives and distortions. MAFAP analysis was used as an input to formulation of the National Policy of Food Security and Nutrition in 2013. DGESS (formerly DGPER) receives donor support to do its *Enquête permanente*, ReSAKSS indicators, and special studies.	MAFAP approach, funded by the BMGF, FAO and USAID, is a useful prices & incentives framework. Outputs are too technical and academic for private sector to understand and use. Policy recommendations tend to be broad gauged & very different from MIRA focus. A very useful complement to MIRA, however, that AGRA needs to be well aware of.
A few private consulting firms	Can offer independent input; able to draw on short-term specialists across a wide range of organizations (including government agencies & universities). Some have worked with WBG's *Agricultural Diversification and Market Development Project* (PAFASP).	Operate as boutiques with limited staff (one principal researcher/manager, with only a couple support staff). Lack institutional capacity, and work may lack consistent thematic focus.
CEDRES[71]	In 1986 CEDRES created the *Conférence des Institutions, d'Enseignement et de Recherche Economiques et de Gestion en Afrique* (CIEREA). It also began a *Programme de Troisième Cycle Interuniversitaire* (PTCI), a PhD equivalent track. It is a center of excellence in economic and social analyses.	Publicly funded but receives some funding from private sector for specific studies. Focused on economic and development in general, not specifically agribusiness or investment promotion.
SP/CPSA[72]	SP/CPSA is a public structure that coordinates the elaboration and follows up implementation of agricultural policies, programs and projects. It undertakes forward looking analyses. SP/CPSA's mission is to strengthen partnerships between public and private actors working in rural development in order to build support for and buy-in to	Leading public agency for elaborating and implementing agricultural policy. Very competent, but several staff are near retirement). There is strong demand for their high quality work, so they are often not available for studies funded by donors such as AGRA.
IFDC	IFDC's objective is to increase agricultural productivity by developing and transferring improved plant nutrition technologies that are environmentally sound. IFDC also offers strong capability in agricultural marketing of inputs and outputs in West Africa. IFDC's *Competitive Agricultural Systems and Enterprises* approach facilitates innovations & strengthens the capacity of farmer organizations and	Strong and diverse roster of Francophone specialists in West Africa, IFDC can support MIRA with analyses and training. Core competencies are mainly in ISFM and input use and policy.
Maison de l'Entreprise du Burkina Faso	Created out of a consensus between the private sector and donors, this organization is a focal point for private sector needs and assistance by a range of supporting institutions.	Lacks experts specialized in private sector agriculture.

[69]

[70] Direction Générale de la Promotion de l´Economie Rurale (DGPER) of the Ministère de l´Agriculture et la Sécurité Alimentaire (MASA) was changed to DGESS, Direction Générale de l'Economie et des Statistiques Sectorales in late 2013.

[71] Centre d'Etudes, de Documentation et de Recherche économiques et sociales

[72] Secrétariat Permanent de la Coordination des Politiques Sectorielles Agricoles

Annex 4: Policy Matrix

Category	"Problem" Policy/Regulation	Potential impact on local agribusinesses	Consequent impact on smallholder farmers
Seed	Government dominance in the production of pre-basic and basic seeds greatly limits the participation of the private sector. *This is an economically flawed policy / regulation*	Private firms are not allowed to produce foundation seed for private sector seed multiplication.	This limits the supply of certified seed to producers and may contribute to higher seed costs.
Seed	Private seed companies are essentially contractors to the public Ethiopian Seed Enterprise and not independent firms making investment, production, sales and storage decisions based on market opportunities.*This is an economically flawed policy / regulation*	This discourages investment and competition among private seed companies, who end up not innovating and becoming risk-averse.	Farmers are able to obtain a limited range of seed varieties, which may not be tailored to their agro- ecological zones, soils and crop mixes.
Seed	UPOV regulations and laws that could protect breeders' rights are not enforced. This discourages the importation of new plant varieties by the private sector as well as local breeding efforts. *This is a poorly implemented policy / regulation*	There will be little or no private sector investment in breeding new varieties, and improved imported varieties will not be available.	There will be fewer types of improved seed developed and introduced into smallholder farming, and hence adapted to the full range of agro- ecological conditions.
Seed	GoE estimates seed "demand"by aggregating estimates from regions and cooperatives. This process does not factor in changes in prices and effective demand for different seed varieties and farmers' preferences in response to changes in weather, consumer tastes, grain prices, and other variables. *This is a poorly conceived system showing no understanding of the role of markets in regulating supply and demand.*	Administrative determination of seed demand will not enable market demand for different seed varieties, suitable to different growing conditions, to manifest itself. This will not lead to a seed price structure that reflects different levels of demand for different types of seed.	Farmers will not be able to choose among a wide range of seed types and varieties to meet different growing conditions (soil types, rainfall levels, etc.). Their choice will be limited to a narrow range of varieties which may not be best adapted to certain producers' needs or different production zones.
Fertilizer	Only one firm, the Agricultural Inputs Supply Enterprise, is able to procure and distribute fertilizer. No private importers, fertilizer wholesalers, or agro- dealers are allowed to participate. *This is an economically flawed policy / regulation (and a reversal of an earlier successful policy)*	Lack of competition leads to late arrival of fertilizer, due to the administrative requirements of procurement and transportation. It also results in likely higher delivered fertilizer costs to farmers.	High-cost fertilizer limits its use. Late delivery makes use of a costly input less effective and will reduce farmer demand.
Fertilizer	Liberalization of the fertilizer subsector in the 1990s was reversed by 2000. Private agro- dealers were operating profitably in the mid-1990s but were forced out of business by the end of the decade. *This is an economically flawed policy / regulation*	Many successful input dealers were put out of business; business opportunities created were withdrawn due to the policy shift.	Farmers have to travel farther to obtain fertilizer (and other inputs). This increases their transaction costs (and likely real costs) of obtaining inputs, as a well-functioning competitive system was removed.
Mechanization	The bonded warehouse system restricts duty-free entry of tractors and other agric. machinery to six months. This constrains imports. *This is an economically flawed policy / regulation*	This system will limit mechanization, as most tractors are imported into Ethiopia (though there is a small tractor assembly plant).	Farmers will have access to less mechanized services, which will reduce area cultivated and timeliness of operations.
Mechanization	Duties of 25% applied to agricultural machinery spare parts need to be overhauled to encourage maintenance and ensure a reasonable life span. *This is an economically flawed policy / regulation*	Duties on spares shorten machinery life and increases machinery down time. This will lead to sub- optimal use of mechanized land preparation and related operations.	Farmers will have access to less mechanized services, which will reduce area cultivated and timeliness of operations.

Land Leasing	Amhara Region has extended land lease periods & removed restrictions on the size of landholding to be leased. Land tenure and the ability to lease land remain elusive in most regions, however, and this deters financial insitutions from providing credit. *This is an an incompletely implemented policy / regulation*	Without access to credit, local agro-enterprises will have trouble obtaining sufficient working capital as well as finance for longer term investments.	Small and medium scale farmers will have trouble gaining access to credit, which will dampen increases in agricultural productivity.
Trade Bans	Export bans on staple food crops are imposed, particularly for maize, and even in years of bumper crops. *This is an economically flawed policy / regulation*	Export bans disrupt market access for farmers selling to exporters, as well as export volume. Bans also indirectly lower the supply of raw material to processors, as overall production incentives are lowered. Investment incentives in export- oriented agro-enterprises are undercut	Bans limit the potential opportunities smallholders have to sell staple food crops to exporters, which dampens staple food crop prices received by farmers.
Trade	Various agreements (EAC, COMESA, SADC) on regional trade in seed and agric. products are inconsistent and deter trade. Inconsistent, contradictory polices / regulations	Inconsistencies in technical regulations restrict regional trade in seed and staple food crops, which limit supplies in some countries and export opportunities for others.	Producers fail to benefit from trade in improved, certified seed, which limits productivity among importers & sales/income opportunities among producers in exporting countries. (Differences in regional agric. trade agreements also constrain trade in agric. products).
Transport	Government transport of agricultural inputs (and dominance of long-distance transport) crowds out, to a certain extent, private sector transport enterprises. *This is an economically flawed policy / regulation*	Government transport enterprises probably operate at higher cost than private firms. This raises costs throughout the agribusiness system and reduces competitiveness. It also reduces investment opportunities for the private sector.	Higher transport costs raise the cost of inputs delivered to rural areas and put downward pressure on agricultural product prices paid to farmers.

Annex 5: Institutional Capacity to do Policy/Regulatory Research in Ethiopia

Organization	Strengths	Disadvantages
Agricultural Transformation Agency	Point agency for doing value chain studies and action plans, as well as "system" programs covering: seed, soil fertility, household irrigation, input and output markets, extension and research, and cooperatives. Works on all the current germane topics: gender, climate adaptation, technology adoption, and M&E/knowledge management.	ATA is an entirely public sector organization so cannot exercise autonomy or do outside evaluations. A Public Private Partnerships (PPP) Management Unit is "under formation" (according to the web site), which will promote contract farming models, do investor outreach, and serve as a one-stop shop for investors in agriculture. However, no concrete achievements yet.
Ethiopian Development Research Institute (EDRI)	Semi-autonomous research think-tank engaged mainly in economic research and policy analysis. Seeks to bridge research and policy, build capacity, and disseminate knowledge. Staff are available for shorter- term consultancies. Current topics: food price trends analysis; teff production and marketing in Ethiopia; policy options for enhancing food security in Ethiopia.	EDRI undertakes economic and policy research in many areas; four analysts comprise the agriculture team. Limited capacity to do work on agribusiness enterprise. Receives major GoE funding, so considered "semi-autonomous."
Ethiopian Economics Association - Ethiopian Economic Policy Research Institute	EEPRI is the research and publication wing of the Ethiopian Economic Association. The Association promotes the study of economics in Ethiopia, economic research and assisting in dissemination and facilitating professional contacts among Ethiopian and foreign economists. Has short term training capacity; claims to inform public debate and enhance public participation in policy issues.	Professional economics research organization that is academic in orientation and focused on academic outputs. Conducts research in food security, agricultural production and productivity, natural resource managements, rural development and rural livelihoods. Produces an annual assessment of the performance of Ethiopian agriculture. Web site out of date (late 2012 economic data), which raises questions.
IFPRI	Strong country program with over a decade of high-quality research. Has carried out the Ethiopia Strategy Support Program (ESSP) since 2004 in collaboration with EDRI, ATA, MoA and the Central Statistical Agency. It is designed to improve the policy-making process in Ethiopia. Capacity building to undertake sound economic analysis and improve public information & dialogue has been a high priority.	Although an international organization, IFPRI has a large Ethiopian staff. ESSP is almost entirely donor funded, with USAID and DFID funding extending it in phase 3 to 2018. ESSP's research agenda is vast but covers relevant topics to MIRA: agricultural markets, value chains, and agroindustry; food and agricultural prices; and productivity, technology adoption, and agricultural transformation.
Addis Ababa University-Department of Economics	Leading academic institution in Ethiopia.	Academic institution more committed to teaching and advising students than doing policy research. Not clear if Dept. can accept and manage grants, or if individual researchers are hired as consultants.
Ethiopian Institute of Agricultural Research	Coordinates overall agric. research countrywide, while the regional agric. research institutes are managed by regional governments. Department of Social Sciences does relevant research (contact person: Dawit Alemu).	Two key areas of research are the supply of improved agricultural technologies and the adoption of improved technologies. As the lead agricultural research institute, it lacks core competency in agricultural policy and regulatory analysis, though this could be developed for agricultural input and productivity issues.

Annex 7: Policy Matrix

Category	"Problem" Policy/Regulation	Potential impact on local agribusinesses	Consequent impact on smallholder farmers
Seed: Regional Trade	Although ECOWAS countries signed an agreement to allow free trade in germplasm and seed approved by one or more member countries, Ghana has not yet "ratified" this "treaty." *This is a poorly implemented policy / regulation*	Seed companies could expand sales through increased imports (and exports) of certified seed. Easier access to regional germplasm could improve development of Ghanaian seed varieties.	Farmers do not have access to quality regionally produced certified seed that may be well-adapted to certain production zones. This could lower productivity increases.
Seed Inspection & Testing Services	The public sector manages and provides these services, but the private sector complains of poor quality and haphazard inspection of the seed production process. *This is a poorly implemented policy / regulation, as well as being an institutional gap.*	As public sector dominates these services, there is no private investment. Quality and service gaps suggest that testing and inspection are opportunities for private investment.	Certain varieties are neither pure nor characterized by high germination rates. Farmer crop yields suffer.
Seed Law: Implement & Fund	Public sector capacity to produce sufficient foundation seed, inspect private foundation and certified seed production, test seed varieties, and monitor the seed trade is very limited. Significant investments are needed in increasing capacity and operating funds. *This is a poorly implemented policy / regulation, as well as being an institutional gap.*	Private seed firms are producing limited foundation seed with minimal GoG support. Certified seed production has expanded though too slowly. Better public sector support to the private seed sector could expand output of certified seed significantly.	Farmers are unable to access sufficient quantities of high-quality, high yielding seed varieties. Cereal crop productivity has been relatively stagnant.
Input Sales: Registration	AD's require separate registrations to sell seed, fertilizer and pesticides. Private agro-dealers find multiple registrations cumbersome and time-consuming and have proposed a one-for-all registration procedure. *This is an excessive policy/regulation*	Multiple registrations, repeated annually, add time and cost to registration procedures and may discourage some AD's from completing all the registrations (and selling the full range of inputs).	Farmers may find that certain AD's do not carry certain agrichemicals or other inputs.
Fertilizer Subsidy Implementation	After six years of implementation, the subsidy program is fraught with delays, inefficiencies, leakages, and other problems. *This is a poorly implemented policy / regulation*	Some AD's have dropped out of the fertilizer subsidy program. Importers wait a long time to be reimbursed, which ultimately raises fertilizer prices (given the significant risk premium).	Farmers often get fertilizer late, which delays application and lowers yields.
Agribusiness Investment	Agricultural investors face a number of licensing and permitting requirements from national, regional, district and local level agencies, and there is no "one-stop shop" from which to get information up- front. *This is an excessive policy/regulation*	A lack of complete information hinders potential investors' ability to plan and increases transaction costs, ultimately deterring investments in agriculture.	Limits the potential opportunities smallholders have to link with nucleus farms to access larger markets.
International Market Access	Lack of coordination among inspection agencies at ports. Task Force created to speed up import clearance across agencies has led to additional delays. *This is an economically flawed and excessive regulation*	Separate inspections of export goods by multiple agencies increase the likelihood of damage to perishable agricultural products, limiting access to export markets.	Limits the potential opportunities smallholders have to sell produce to exporters.
Market Access (forex use restrictions)	In October 2012, the Bank of Ghana issued a public notice regarding enforcement of the provision of the Foreign Exchange Act, 2006 (Act 723), prohibiting the pricing, advertising, receiving or paying of/for goods in foreign currency (especially USD). *This is an economically flawed policy /regulation*	The inability to quote prices in hard currencies for companies that trade goods or provide services (e.g., shipping/logistics) across borders makes it more difficult to do business with other countries and increases vulnerability to foreign exchange losses, constraining access to regional and international markets.	Limits the potential opportunities smallholders have to sell produce to exporters and results in lower farm gate prices for smallholders, who get squeezed at the bottom of the value chain.
Market Access (weights and measures)	Use of standard weights and measures in the trading of agricultural goods is not enforced. *This is a poorly implemented policy / regulation*	Lack of use of standard weights and measures leads to inconsistent pricing and complicates regional trade.	Limits transparency in pricing for smallholders, who are price-takers, and limits potential opportunities smallholders have to sell into the regional market.

Category	"Problem" Policy/Regulation	Potential impact on local agribusinesses	Consequent impact on smallholder farmers
Market Access (standards)	Standards for quality and food safety are not enforced for domestic markets. *This is a poorly implemented policy / regulation*	Exporters and processors are unable to source the volumes of quality products that they need in order to be competitive on regional and international markets.	Smallholder farmers have no incentive to produce to a higher standard, as there are no penalties for non-compliance, and a lack of certification/ grading limits the ability to achieve price premiums based on quality.
Market Access (NAFCO operations)	NAFCO operations are non-transparent and reportedly inefficient. NAFCO announces minimum maize buying prices but lacks the financial resources to defend a minimum price and act as a buyer of last resort.	NAFCO's role during each marketing season is unclear, its announcements and operations introduce uncertainty into cereals markets. As NAFCO does not buy huge volumes of grain, its impact is considered minimal by some. It does supply public sector clients that the private sector trade could serve, however, so there is some crowding out.	Impact on small farmers is indeterminate. A study of NAFCO operations and their impact on farmers and traders is overdue. Some allege that NAFCO's announcement of low minimum prices discourages some farmers from selling right after harvest or forces them to sell to private buyers at low market prices influenced by NAFCO announced prices.
Regional Trade	Under Article 10 of ECOWAS Protocol A/P1/1/03, "a certificate of origin shall not be required for agricultural or livestock products." In practice, traders of agric. goods within West Africa are routinely asked by customs authorities to produce a certificate of origin. *This is a poorly implemented policy / regulation*	Demanding unnecessary certificates of origin raises transaction costs in terms of both time and money, making products less competitive in regional export markets. For processors, the requirement increases the cost of inputs sourced from regional markets.	Limits the potential opportunities smallholders have to sell produce into the regional market.
Regional Trade	Under bilateral technical agreements between ECOWAS countries, SPS certificates issued by the country of origin are officially valid throughout the region. In practice, border officials routinely require traders to obtain duplicate phytosanitary and veterinary certificates. *This is a poorly implemented policy / regulation*	Demanding unnecessary SPS certificates raises transaction costs in terms of both time and money, making products less competitive in regional export markets. For processors, the requirement increases the cost of inputs sourced from regional markets.	Limits the potential opportunities smallholders have to sell produce into the regional markets.
Regional Trade	ECOWAS countries have agreed to exempt basic staple foods and inputs from VAT on intra-regional trade through the Additional Act on VAT in 2009, which exempts all agricultural and livestock staple foods and inputs from VAT. However, the Act has not come into effect, as the countries have not yet agreed on the annex with the specific list of products. *This is a poorly implemented policy / regulation (incompletely implemented)*	The application of VAT makes products less competitive in regional export markets. For processors, it increases the cost of inputs sourced from regional markets.	Limits the potential opportunities smallholders have to sell produce into the regional market.
Regional Trade	Policy uncertainty regarding institution of commodity import/export bans. This includes export restrictions in neighboring countries. *This is an economically flawed policy / regulation*	Import/export bans distort pricing and srupt market access for exporters and importers (such as processors sourcing raw material). This uncertainty deters investments in production/processing expansion serving domestic and regional markets.	Limits the potential opportunities smallholders have to sell raw agric. products to exporters and/or processing companies.
Regional Trade	Policy uncertainty regarding institution of commodity import/export bans. This includes export restrictions in neighboring countries. *This is an economically flawed policy / regulation*	Import/export bans distort pricing and srupt market access for exporters and importers (such as processors sourcing raw material). This uncertainty deters investments in production/processing expansion serving domestic and regional markets.	Limits the potential opportunities smallholders have to sell raw agric. products to exporters and/or processing companies.
Trade (rice smuggling)	Traders smuggle rice across the border from Côte d'Ivoire, where import duties are lower (at the port of Abidjan). *This is a poorly implemented policy / regulation*	Legitimate traders and local producers are unable to compete with the lower prices of imported Asian rice that crosses into Ghana illegally (with the tacit compliance of border agents).	Limits the potential opportunities smallholders have to sell rice on the domestic market. Reduces domestic demand for locally grown rice and prices to producers.

Category	"Problem" Policy/Regulation	Potential impact on local agribusinesses	Consequent impact on smallholder farmers
Access to Finance	In response to the rapid depreciation of the cedi, the Bank of Ghana declared that all commercial bank loans must be extended in local currency. *This is an economically flawed policy / regulation*	This will effectively increase the high cost of borrowing for individuals and firms that need to purchase items in hard currencies. Interest rates for agricultural and agribusiness loans range from 25-40%, high even by SSA standards, and are affected by currency depreciation and high inflation.	Smallholders and agro-enterprise SMEs will have a more difficult time obtaining financing.
Access to Finance	The provisions of the Hire Purchase Act require leasing agents to obtain a court order to recover items in case of non- payment. *This is an economically flawed policy / regulation*	The policy deters leasing by increasing the transaction costs for lessors to enforce their security, in the process effectively removing a financial instrument that could serve the agribusiness SMEs looking for financing options to acquire machinery.	Smallholders will have a more difficult time accessing mechanization tools to expand area cultivated and improve yields.
Access to Finance	The Government of Ghana's Export Development and Agricultural Investment Fund (EDAIF), which lends money to financial institutions at very low rates for on-lending to the private sector, lacks appropriate oversight to ensure that funds are being used as designed. *This is a poorly implemented policy / regulation*	EDAIF, which is meant to provide a mechanism for low-cost loans to agribusiness, is underutilized, further constraining access to finance for these firms.	Smallholders and agro-enterprise SMEs will have a more difficult time obtaining financing.

Annex 8: Patient Capital and Agribusiness Investment Funds

Quite a few investment funds work with producer groups and agribusiness SMEs in Ghana and provide short, medium and longer-term finance—mostly with interest rates at or close to prevailing commercial bank rates. These funds typically provide more intensive technical support and oversight than a commercial bank and aim to fill a critical niche of start-up and expansion capital in the "missing middle," enabling SMEs to gain access to much-needed finance that they cannot get from commercial banks. Some of these investment funds, notably Root Capital, provide trade finance and loans for working capital.

Major agribusiness investors in Ghana, with examples of key recent investments, include: AATIF, Africa Agriculture and Trade Investment Fund. Largely funded by KfW and Deutsche

Bank, AATIF has made a $20 million investment in Wienco, a Dutch-Ghanaian joint venture

that promotes a package of high-performing inputs to maize production—PANNAR hybrid maize seed and fertilizer—to farmer groups in northern Ghana, most notably Masara N'Zariki.

Acumen Fund. As one of the co-investors in the GADCO rice farm of > 1,000 hectares near Accra, Acumen will expand smallholder participation in this irrigated rice scheme through "Copa Connect," which will take the GADCO production and irrigation model to 600 small farmers as outgrowers, who will more than triple their yields from 1.6 mt/ha to 5.6 mt/ha. GADCO will provide inputs on credit and be the sole off-taker. The eventual plan is to expand this pilot to some 7,000 farms.

AgDevCo: the UK-based patient capital fund has invested in three irrigated rice schemes, two with significant government stakes and the third with a half dozen investors, including other social investment funds. All three schemes work with contract smallholder outgrowers.

Injaro Investments has invested in a seed multiplying firm, M&B Seeds and Agricultural Services in Volta Region. The investment has included seed processing and cleaning machinery—badly needed given aging, dilapidated seed machinery at government installations (Ghana Grain and Legumes Board, MoFA, and agricultural research institutes). This puts some processing capability in the private sector, which is multiplying all certified seed produced in Ghana.

Root Capital has provided trade finance to a shea butter enterprise and exporter, Savannah Fruits Company, which buys and exports shea butter produced by northern Ghanaian women, and to Kuapa Kokoo farmers' co-operative, comprised of nearly 80,000 small-scale cocoa farmers near Kumasi.

Although the patient capital investors' reach is limited so far, their strategically important investments should encourage commercial banks to follow suit. These early-stage agribusiness investors are showing that proper screening, technical support, and monitoring of equity and debt to agribusiness SMEs can reduce risks of agribusiness lending and generate positive returns for both banks and their clients.

These agribusiness investors have identified common problems, addressed elsewhere in this report, including:

- Controls on foreign exchange and forcing all financial transactions to be in Ghana cedis.
- Government inconsistency and changes in applying tariffs to imported rice and frozen poultry products.
- Rural road network is poor; some areas cut off completely during rainy season.
- Post-harvest management is poor and storage facilities inadequate, leading to high losses.
- Bank of Ghana/Treasury bill rates of 23-25% translate into commercial interest rates of
- 25-30% or higher. These are very high loan rates, even in a macroeconomic environment of high inflation and steady currency depreciation. Patient capital funds have to "follow the market" and price their loans at or near these very high interest rate levels.

Annex 9: Institutional Capacity to do Policy/Regulatory Research in Ghana

Organization	Strengths	Disadvantages
ISSER, Univ. of Ghana (Legon)	Formal survey research capacity and data processing capability; experienced senior researchers; decentralized network of supervisors/ enumerators to do field surveys (incl. some former students); produce *State of Ghanaian Economy* (highly visible). Policy analysis training capacity.	Limited capacity for agric. policy outreach/extension. Researchers not well linked to private sector; focus more on rural /farm and urban households (hence more micro than meso/VC or private sector). Sr. staff overcommitted, though most seem to have limited teaching commitments.
Agricultural Economics Dept., Univ. of Ghana (Legon)	Some strong faculty with advanced degrees from prestigious foreign universities. Able to take occasional consulting assignments as individuals.	Staff heavily committed to teaching and advising. Dept. not organized to obtain research grants (like a US Land Grant univ.). Hence, no cohesive Dept. research thrusts. (Model = teaching + individual consulting)
GIMPA[73]	Business orientation; organized to pursue contracts with donors through their GIMPA Consultancy Services subsidiary. Good training centers & facilities, and capacity to offer short-term training courses.	Lack consistent thematic focus beyond "management consultancy" services (see consulting services at): http://www.gimpa.edu.gh/index.php/consultancy.html
IFPRI	High-quality policy research; able to do formal surveys. Strong track record of obtaining donor funds (including USAID) to do strong policy studies. Can draw on IFPRI HQ subject matter specialists.	Heavily committed to multiple donor-funded activities. Perceived as autonomous, but not a Ghanaian institution. Policy outreach/extension is weaker than research capacity.
Private consulting firms (many)	Can offer independent input; able to draw on short-term capacity across a wide range of organizations (including government agencies & universities).	Operate as boutiques with limited staff; spend a lot of time pursuing new business. Lack institutional capacity & deep bench. Work may lack consistent thematic focus.
PEF[74]	Broad-gauged private sector policy and enabling environment advocacy umbrella organization for four associations.	Although claiming to do policy research and advocacy, there is little evidence of research capacity. Not necessarily focused on agribusiness investment & operations constraints.
Agric. apex organization	Another umbrella entity for production agriculture, agro-input supply, and phytosanitary product suppliers.	More of an advocacy organization than one able to do policy research and analysis. Can do policy advocacy, however.
MoFA, PPMED	Has some capable policy analysts, whose many responsibilities make it difficult to carry out policy studies. Some training would help update their skills.	Unit is underfunded and understaffed relative to policy analysis & agric. sector M&E needs. Need to add new analysts and update others' skills.

73 Ghana Institute of Management and Public Administration, at http://www.gimpa.edu.gh/, offers degree and evening/continuing education programs in its Business, Law, Technology, and Governance and Public (Sector) Schools.
74 The Private Enterprise Foundation (PEF) was founded on the initiative of four major business associations namely, Association of Ghana Industries (AGI), Ghana National Chamber of Commerce, Ghana Employers Association (GEA) and the Federation of Associations of Ghanaian Exporters (FAGE). These business associations felt the need to come together to exert greater influence on policy initiatives for the creation of enabling environment in which private sector businesses could thrive as partners in economic development of the country.

Annex 11: Institutional Capacity to do Policy/Regulatory Research in Nigeria

Organization	Strengths	Disadvantages
Federal University of Agriculture, Akure (FUTA)	University has a very capable Agricultural Economics Department with faculty that are strong in agricultural policy analysis in Nigeria. Contact Person: Professor Adebiyi Daramola.	Subject to the typical limitations of academic institutions, where faculty have major teaching and advising responsibilities. (Many of their former students may work in relevant government agencies, however, which provide access to information).
Nigeria Institute of Social and Economic Research (NISER), Ibadan	An Economic Policy Research Department (EPRD) conducts research and policy analysis on the productive and private sectors of the economy. Contact: Prof. Ade S. Olomola), Director of Agriculture & Rural Development Department.	NISER covers a broad swath of economic and social issues. It is not specialized in agriculture or agribusiness investment promotion. NISER's major funding is from Government, but with external funding the institution has the capacity to engage in high quality research in agribusiness development given its extensive network of researchers within Nigeria.
Nigeria Institute of Social and Economic Research (NISER), Ibadan	An Economic Policy Research Department (EPRD) conducts research and policy analysis on the productive and private sectors of the economy. Contact: Prof. Ade S. Olomola), Director of Agriculture & Rural Development Department.	NISER covers a broad swath of economic and social issues. It is not specialized in agriculture or agribusiness investment promotion. NISER's major funding is from Government, but with external funding the institution has the capacity to engage in high quality research in agribusiness development given its extensive network of researchers within Nigeria.
Nigerian Governors' Forum, Abuja	Provides a platform for collaboration among governors on public policy issues. Promotes good governance, sharing of good practices and cooperation at the State level, and coordination with other arms of the federal government. Contact Persons: David Nabena and Dr Afeikhena Jerome.	This is a forum for coordinating federally legislated or decreed policies across many state governments. There have been inconsistencies in implementation of the fertilizer subsidy scheme, for example. This forum is not a policy analysis or research entity.
IFPRI, Abuja	Nigeria Strategy Support Program (NSSP) funded since 2008, with recent USAID funding. Also funded earlier by CIDA through the Agricultural Policy Support Facility (APSF), a project undertaken in collaboration with FMARD. Contact Person: Prof Kwabena Gyimah-Brempong.	Although an international organization, IFPRI conducts research on public investment in agriculture and on commodity value chains. t builds capacity, through short-term training courses, seminars and workshops. Produces policy notes, working papers and holds seminars on relevant topics such as rice policy, mechanization, irrigation, and the input subsidy schemes.
Institute of Public Policy Analysis and Management (IPPAM), Abuja	Contact Person: Professor Eric Eboh, Principal Advisor.	No details.

Annex 13: Policy Matrix, Tanzania

Access to Inputs

Category	"Problem" Policy/Regulation	Potential impact on local agribusinesses	Consequent impact on smallholder farmers
Seed: Exports not Allowed	Without ISTA accreditation, Tanzanian seed producers are unable to export to neighboring countries. This is an institutional / policy gap.	Private seed companies have less incentive to expand seed production, as the regional market is closed to them.	Contract seed growers, often larger smallholders and medium size farms, have fewer opportunities to increase output and income.
Access to Seed	The subsidy program is poorly implemented so farmers often do not obtain quality maize and rice seed. This is a poorly implemented policy / regulation.	The subsidy system crowds out private sector producers of seed and traders.	Many smallholders are unable to access improved maize and rice seed.
Seed: Tax Burden	Import duties on seed, VAT applied to packaging materials, and cess charged on locally produced seed by local government authorities. This is an economically flawed policy / regulation.	These taxes increase the cost of seed and lower profitability for seed companies.	Costs are passed on to farmers, whose capacity to lay out cash for input purchases is limited.
Fertilizer: Testing	Requirement that three seasons of tests be carried out under TFRA supervision at a cost of $10,000 per season for each 'new' fertilizer product. This is an excessive policy / regulation.	This provides a disincentive to fertilizer blending, effectively discouraging entry.	Producers fail to benefit from fertilizer formulations adapted to their soil types and crop requirements.
Lab Tests of Seed & Fertilizer	Laboratory tests of seed & fertilizer are done by public organizations and are both costly and inaccurate. This is an institutional / policy gap.	Without accurate lab results, seed & fertilizer distribution invites opportunistic sales by firms whose products do not follow truth in labeling. Poor quality inputs lower overall demand for improved inputs.	Substandard seed and fertilizer lower agricultural productivity.
Land	Recent announcement to increase land taxes ten-fold in rural areas to the same level as urban land taxes. This is an economically flawed policy / regulation.	Large commercial farms will pay higher taxes, beyond their current tax burden, that will lower profitability and could deter future investment or expansions.	If enforced, this will negatively affect the profitability of farm operations; it could also force some land sales and urban migration.
Tractor Imports	Tractor spare parts are charged duties ranging from 0% to 25%, and 18% VAT is applied. *This is an economically flawed policy / regulation*	This will lead to suboptimal maintenance and repair of agricultural machinery. This could forestall (at margin) investment in agricultural machinery service centers.	As tractor down-time is increased, fewer small farms will have access to tractor hire services. This could raise costs of tractor hire services and reduce timeliness.

Access to Markets

Cess on Food Crop (and Seed) Sales	Cesses on local sales of food crops, applied at municipal and district levels, raise marketing costs. These taxes are applied inconsistently and at multiple stages of the marketing chain. *This is a poorly implemented policy / regulation.*	Cesses raise marketing costs and invite opportunistic behavior, increasing the number of checkpoints and delays on roads, and leading to double taxation (at multiple points in marketing chain).	Overall increase in marketing costs leads traders to offer farmers lower prices for their agricultural products.
Rice Imports	Changes in tariffs and granting of import permits increases unpredictability in the domestic rice trade and affects domestic rice prices negatively. *This is an economically flawed policy / regulation.*	Increased rice imports will lower demand for local rice, decreasing production for the market and throughput at rice mills. Market/price unpredictability also undercuts medium-term storage incentives.	Lower producer prices will depress paddy production incentives. Producers will shift to other crops or lack interest in growing rice for the market.
Maize (and rice) Exports	Unpredictable imposition of bans on food crop exports goes against regional trade agreements, creates an unofficial culture of rent-seeking behavior, and lowers agric. export revenues. *This is an economically flawed policy / regulation.*	Bans reduce the number of buyers and hence competition. Some traders pay bribes or smuggle, both of which increase maize marketing costs and export prices	Farmers face lower demand for their crops and dampened price incentives
Role of Food Reserve Agency	NFRA announces a minimum price that is high and not based on market conditions. NFRA competes with the private grain trade, yet it is not always able to defend support price. *This is a poorly implemented policy / regulation, as well as excessive government intervention in markets.*	Private trade in cereals, particularly maize, is reduced by NFRA purchases. This limits participation in grain trade and competition. Expansion in public grain storage will reduce opportunities for private storage. Grain acquisition costs will likely rise for private grain processors.	Smallholders wait weeks to be paid by NFRA. This can delay agricultural input purchases. If NFRA runs out of funds and cannot buy some producer output, some small farmers may receive far lower prices from private buyers.

Annex 14: Institutional Capacity to do Policy/Regulatory Research in Tanzania

Organization	Strengths	Disadvantages
Economic and Social Research Foundation (ESRF)	ESRF participates in two of the AGRA Policy Nodes. Approx. 20 staff working on five broad areas. Strong orientation toward capacity building for policy research and analysis. A number of recent "Strategic Research" topics cover areas of interest: food price analysis and policy, enhancing land tenure security and agricultural productivity & tapping export opportunities for horticulture products. Produce attractive Policy Briefs, newsletters and special studies.	Although ESRF is well-established (created in 1994), its focus areas do not directly overlap with agribusiness investment & policy, although "Strategic Research" topics covered since 2012 touch on agricultural policy areas of interest. (*An assessment of their performance under the Policy Hub would be a useful input*).
REPOA (Policy Research for Development)	Another NGO think tank with a broad research agenda, REPOA does work on agricultural and rural transformation. The AGRA Policy Hub coordinator sits at REPOA, which participates in the Markets Policy Action Node.	Large research organization with a broad mandate. Agribusiness policy and investment climate work is not a priority, though Policy Hub is sited at REPOA.
Rural Livelihood Development Company (RLDC)	Another NGO established in 2005, it has received Swiss Government (SDC) financial support & Swiss NGO technical support. Designed to focus on the Central Corridor, it aims to "make market systems work better for the poor" (M4P) to benefit rural producers. VC focus is cotton, sunflower, and rice. Leads the Markets Policy Action Node, which has produced strong policy briefs. Also covers poultry and women's livelihood issues.	Dodoma base could be seen as a disadvantage, particularly given a one corridor focus. Smaller research organ- ization than ESRF or REPOA (2 managers; 8 technical staff), but web site is well organized with attractive policy briefs and PowerPoint presentations. Does not try to be all things to all people, so maintains a tighter focus. Swiss funding created and has carried RLDC through RLDP programme, whose 2nd phase ends in March 2016); too dependent on one donor.
Briten	Dynamic leader with very strong agricultural input marketing and policy experience. She played a key role in CNFA's contract with AGRA to develop a strong agro-input dealer network and continued with TAGMARK.	Small NGO with limited capacity. Administrative assistant to the Policy Hub Coordinator sits at Briten, which is well integrated into input and output marketing work of the Policy Hub.
Sokoine University of Agriculture (SUA)	Key professors manage Policy Action Nodes for inputs and participate in two others. An Agricultural Economics and Agribusiness program offers Master's degree training. iAGRI, an Innovation Lab funded by USAID based at Sokoine, coordinates an Agricultural Policy Seminar Series with SERA, a USAID Project. iAGRI is committed to capacity building for agricultural research (including policy).	Using the national agricultural university for training in policy analysis is a long-run strategy for building analytical capacity and depth that can eventually go to a number of public, NGO and private institutions. At a minimum, AGRA needs to liaise with iAGRI. Although iAGRI was preparing a proposal to promote more systematic and impactful outreach by SUA to the agribusiness sector, under the rubric of Development of Public-Private
Sokoine University of Agriculture (SUA)	Key professors manage Policy Action Nodes for inputs and participate in two others. An Agricultural Economics and Agribusiness program offers Master's degree training. iAGRI, an Innovation Lab funded by USAID based at Sokoine, coordinates an Agricultural Policy Seminar Series with SERA, a USAID Project. iAGRI is committed to capacity building for agricultural research (including policy).	Using the national agricultural university for training in policy analysis is a long-run strategy for building analytical capacity and depth that can eventually go to a number of public, NGO and private institutions. At a minimum, AGRA needs to liaise with iAGRI. Although iAGRI was preparing a proposal to promote more systematic and impactful outreach by SUA to the agribusiness sector, under the rubric of Development of Public-Private Sector Partnerships, there is no evidence that this has gained traction.
MAFC, Policy Analysis Unit	MSU, with BMGF support, is building analytical capacity in MAFC to carry out rigorous policy analysis and present compelling results to policy-makers in the form of easily digested policy briefs. Field research on the incidence and impact of local market cesses is underway.	As a complementary initiative, AGRA's MIRA needs to coordinate closely with David Nyange who is leading work and training with MAFC's policy unit. This is part of a large community of practice in agricultural policy analysis that includes participants in the USAID sponsored "daybreak seminar" series.

















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