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Growing Africa

Unlocking the Potential
of Agribusiness



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Financial and Private Sector Development Department
Agriculture, Irrigation and Rural Development Unit, Sustainable Development Department
Africa Region



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Foreword

After years of neglect, agriculture is once again seizing the attention of African governments, business leaders, communities, and development donors, as a powerful driver of the continent's relentless growth.

Africa now earns an average of 24 per cent of its annual growth from its farmers and their crops. If matched with more electricity and irrigation, smart business and trade policies and a dynamic private agribusiness sector that works side by side with government to link farmers with consumers in an increasingly urbanized Africa, the World Bank estimates that agriculture and agribusiness together could command a US\$ 1 trillion presence in Africa's regional economy by 2030.

This is why I believe that we cannot overstate the importance of agriculture to Africa's determination to maintain and boost its high growth rates, create more jobs, significantly reduce poverty, and grow enough cheap, nutritious food to feed its families, export its surplus crops, while safeguarding the continent's environment.

This is a message I share with African governments, the private sector and community leaders on a continent which holds more than half of the world's unused fertile farm land, and impressive but untapped water resources.

With global and regional food and agricultural markets growing at unprecedented rates, this new report is a valuable and timely contribution to our understanding of how to unlock and transform agriculture for development and opportunity across Africa.

It synthesizes the large body of work on agriculture and agribusiness in Africa, marking a first effort of its type. It builds on a diagnosis of specific value chains, and shows how a dynamic agribusiness sector can contribute to growth. As part of this effort, the value chain for Africa's largest and fastest growing food import—rice—is benchmarked with quality field data and analysis spanning the value chain.

Over 170 agribusiness investments by the Commonwealth Development Corporation (CDC) in Africa and Southeast Asia were polled and analyzed to gain a better perspective about the elements that determine success or failure of businesses, offering useful lessons of experience particularly for Africa where the large majority of agribusinesses are small.

The report also synthesizes private sector perspectives gained through interviews with 23 leading agribusiness investors and industry stakeholders, and shows the potential private sector dynamism that could be unleashed if some of the barriers to investment in Africa—poor infrastructure, fragmented markets, poorly functioning input markets, difficulties accessing land, water and finance, and inadequate skills and technology—are removed.

Finally, the report offers practical, policy-oriented advice that draws extensively on successful experiences of countries from within and outside Africa.

Africa is now at a crossroads, from which it can take concrete steps to take on a much bigger role in both the regional and global markets or continue to lose competitiveness—missing a major



opportunity for structural transformation. Governments and investors must also put in place effective environmental and social safeguards to reduce potential risks of agribusiness investments, especially those associated with large-scale land acquisitions by investors.

This vision is consistent with our commitment to mobilize the World Bank Group behind transformational development projects across Africa, especially those that spur greater agricultural development and improve the productivity and sustainability of drylands.

This report contributes significantly to our practical knowledge of what works and what doesn't in agricultural transformation and I hope it will galvanize public and private initiatives that will empower Africa to realize its huge, largely untapped agriculture potential.

Makhtar Diop
Vice President, Africa Region
The World Bank Group



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Acronyms and Abbreviations

3ADI	African Agribusiness and Agro-Industries Development Initiative
AECF	Africa Enterprise Challenge Fund
AFD	Agence Française de Développement
AfDB	African Development Bank
AFTFP	Africa Finance & Private Sector Development Department
AFTAI	Africa Region Sustainable Development Department
AGRA	Alliance for a Green Revolution in Africa
AgriFin	Agriculture Finance Support Facility
API	Agence pour la Promotion des Investissements
ARM	Agence de Régulation des Marchés (market regulatory body, Senegal)
CAADP	Comprehensive Africa Agriculture Development Program
CDC	Commonwealth Development Corporation
CFA	Communauté Financière Africaine (African Financial Community) (franc)
CNCAS	Caisse Nationale de Credit Agricole du Sénégal (agricultural credit provider)
Cocobod	Cocoa Board of Ghana
DFCU	Development Finance Company of Uganda
ECOWAS	Economic Community of West African States
Embrapa	Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Corporation)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FOB	Freight on board
GAP	Good Agricultural Practices
GDP	Gross domestic product
GHS	Ghanaian new cedi
GIE	Groupements d'Intérêt Économique (producer groups, Senegal)
GOANA	Grande Offensive Agricole pour la Nourriture et l'Abondance (food security initiative, Senegal)
GOPDC	Ghana Oil Palm Development Company
ha	Hectare
HACCP	Hazard Analysis and Critical Control Points
ICT	Information and communication technology
IDA	International Development Association
IFC	International Finance Corporation
IRRI	International Rice Research Institute
ISO	International Organization for Standardization
ISRA	Institut Sénégalais de Recherches Agricoles
JICA	Japan International Cooperation Agency
kg	Kilogram



KTDA	Kenyan Tea Development Agency Holdings Ltd.
m	Million
MoFA	Ministry of Food and Agriculture (Ghana)
MT	Million (metric) tons
NES	Nucleus estate and smallholder
NGO	Nongovernmental organization
NPK	Nitrogen-phosphorus-potassium (fertilizer)
OHADA	Organisation pour l'Harmonisation en Afrique du Droit des Affaires (Organization for the Harmonization of Business Law in Africa)
PCG	Partial credit guarantee
PINORD	Plateforme des Initiatives du Nord (association of farmer organizations in northern Senegal)
PNAR	Programme Nationale d'Autosuffisance en Riz (National Program for Self-Sufficiency in Rice) (Senegal)
R&D	Research and development
SADC	Southern African Development Community
SAED	Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal et des Vallées du Fleuve Sénégal et de la Falémé (national land management and allocation society for the Senegal River Basin)
SAFEX	South African Futures Exchange
SE	Southeast
SLIEPA	Sierra Leone Investment and Export Promotion Agency
SMA	Single Mothers Association
SMEs	Small and medium enterprises
SMS	Short message service
SPEED	Support for Private Enterprise Expansion and Development
SS	Sub-Saharan
SSA	Sub-Saharan Africa
STECO	Smallholder Tea Company (Malawi)
t	Ton (metric)
t-km	Ton-kilometer
TEU	Twenty-foot equivalent unit
TFP	Total Factor Productivity
THB	Thai baht
UK	United Kingdom
UNIDO	United Nations Industrial Development Organization
USA	United States of America
USAID	United States Agency for International Development
WUO	Water users' organization
yr	Year
ZAMACE	Zambian Commodity Exchange
ZSC	Zambia Sugar Company



A photograph of a rural agricultural field. In the foreground, a person is crouching and working in a field of young green plants. The field is divided into rows by raised earth. In the background, another person is visible walking in a similar field. There are large green trees on the left and a line of trees on the horizon under a clear sky.

Executive Summary

Why agribusiness?

Agriculture and agribusiness together are projected to be a US\$ 1 trillion industry in Sub-Saharan Africa (SSA) by 2030 (compared to US\$ 313 billion in 2010), and they should be at the top of the agenda for economic transformation and development. Agribusiness can play a critical role in jump-starting economic transformation through the development of agro-based industries that bring much-needed jobs and incomes. Successful agribusiness investments in turn stimulate agricultural growth through the provision of new markets and the development of a vibrant input supply sector.

After decades of neglect, agriculture is again receiving attention from African governments, investors, and other partners, but their attention should extend to agribusiness. The attention focused on production agriculture will not achieve its developmental goals in isolation from agribusinesses, ranging from small and medium enterprises to multinational companies. The challenge is thus threefold: (1) develop downstream agribusiness activities (such as processing) as well as upstream activities (such as supplying inputs), (2) develop commercial agriculture, and (3) support and link smallholders and small enterprises to productive value chains.

This report highlights the great potential of the agribusiness sector in Africa by drawing on experience in Africa as well as other regions. This evidence demonstrates that good policies, a conducive business environment, and strategic support from governments can help agribusiness reach its potential. Africa is now at a crossroads, from which it can take concrete steps to realize its potential or continue to lose competitiveness—missing a major opportunity for increased growth, employment, and food security.

The report pursues several lines of analysis. First, it synthesizes the large body of work on agriculture and agribusiness in Africa. Second, it builds on a diagnosis of specific value chains. As part of this effort, the value chain for Africa's largest and fastest-growing food import—rice—is benchmarked in Senegal and Ghana against Thailand's rice value chain. Third, 170 agribusiness investments by the Commonwealth Development Corporation (CDC) in Africa and Southeast Asia are analyzed to gain perspective on the elements of success and failure (see www.worldbank.org/africa/agribiz). Fourth, the report synthesizes perspectives from the private sector through interviews with 23 leading agribusiness investors and a number of other key informants (see Annex 2, www.worldbank.org/africa/agribiz).

In conclusion, the report offers practical policy advice based on the experience of countries from within and outside Africa. The huge diversity of Africa's agro-ecological, market, and business environments, however, necessarily means that each country (and indeed regions within countries) will need to adapt the broad guidance provided here to the local context.

Agribusiness in Sub-Saharan Africa—A large sector

Agriculture and agribusiness together account for nearly half of GDP in Africa. Agricultural production is the most important sector in most African countries, averaging 24 percent of GDP



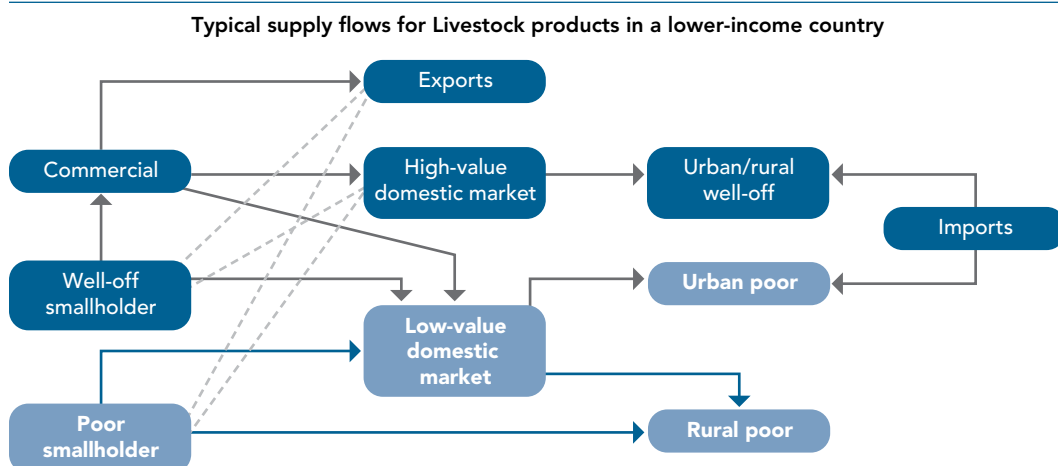
for the region.¹ Agribusiness input supply, processing, marketing, and retailing add about 20 per cent of GDP. Global experience suggests that with growing incomes and urbanization driving the commercialization of agriculture, the shares of both downstream and upstream agribusiness activities are poised for rapid growth.

Agricultural value chains are very diverse. Many value chains have dualistic structures serving different markets—an informal sector often serves low-income consumers and a formal sector accommodates high-income consumers and exports (Figure A). Major opportunities exist to drive agribusiness development by upgrading informal value chains and linking them to formal value chains.

Strong growth opportunities for agribusiness

Both domestic and global markets are experiencing strong demand, which is likely to continue even as domestic demand accelerates. In the 1980s and early 1990s, when many African countries liberalized their markets, declining world commodity prices negated many of the rewards expected from liberalization. The return to economic growth in Africa since the 1990s, burgeoning urbanization, and buoyant global commodity markets now provide unprecedented market opportunities for Africa to develop a competitive agribusiness sector. Urban food markets are set to increase fourfold to exceed US\$ 400 billion by 2030, requiring major agribusiness investments in processing, logistics, market infrastructure, and retail networks. The growing middle class is also seeking greater diversity and higher quality in its diets. The most dynamic sectors overall are likely to be rice, feed grains, poultry, dairy, vegetable oils, horticulture, and processed foods for import substitution, along with the

Figure A: Dual but interlinked value chains for livestock



Poor consumers get most of their animal source food from lower-value domestic markets where poor livestock keepers sell their products (beyond what is consumed directly on-farm)

Source: ILRI 2011.

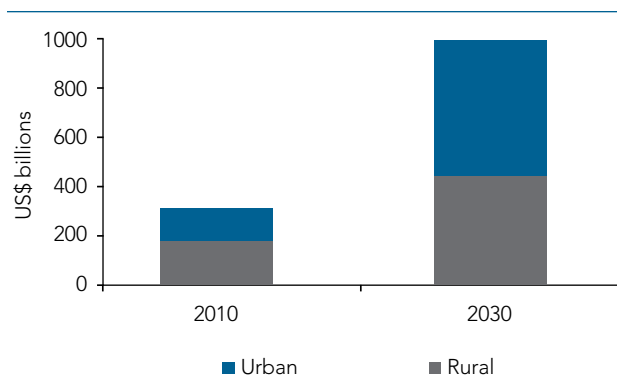
¹ In this report, “Africa” is used as shorthand for Sub-Saharan Africa excluding South Africa.

traditional tropical exports and their derived products (especially cocoa, rubber, cashews, and palm oil), together with some higher-value horticultural crops, fish, and biofuels for export.

Most African countries have a comparative advantage in agriculture. Africa has more than half of the world's agriculturally suitable yet unused land,² and its impressive water resources have scarcely been tapped. Although rapidly growing local and regional markets could be partly and efficiently sourced from imports, Africa's abundant natural resources, large and exploitable yield gaps (Figure C), and an improving investment climate open major opportunities on the supply side, too.

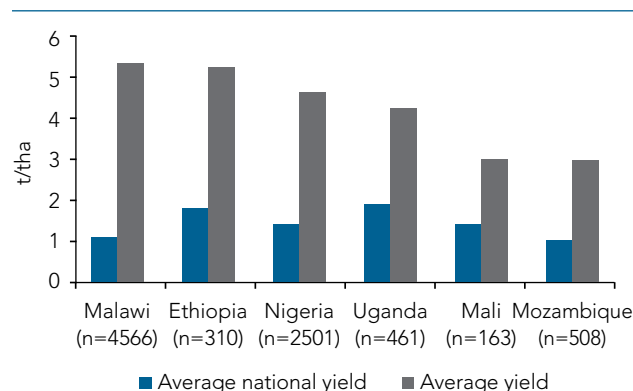
Private sector interest in African agribusiness is unprecedented. The past decade has witnessed an upsurge in interest from the private sector in African agriculture and agribusiness, including interest from foreign investors and investment funds. International investors actively seek alternative venues to Asia and Latin America as a new source of supply and an opportunity for higher, risk-adjusted returns. The challenge is to harness investors' interest in ways that generate jobs, provide opportunities for smallholders, respect the rights of local communities, and protect the environment. Going forward, a key challenge is to curb speculative land investments or acquisitions that take advantage of weak institutions in African countries or disregard principles of responsible agricultural investment.

Figure B: Projected value of food markets in Sub-Saharan Africa



Source: Authors' calculations.

Figure C: Exploitable yield gaps are high for maize in Africa



Source: World Bank 2007c.

Note: n = number of plots.

Agriculture and agribusiness are underperforming

In most African countries, agriculture and agribusiness have been losing in the competitiveness race. Competitiveness as crudely measured by Africa's share of global agricultural exports has fallen for most countries and for many export commodities, even as higher commodity prices have

² This land does not include forests and conservation areas.

stimulated a commodity boom over the current decade. Many developing countries, such as Brazil, Indonesia, and Thailand, now export more agricultural products than all of Sub-Saharan Africa combined (Figure D). While its export shares are falling, Africa's imports of many food products have been rising. Continued growth in domestic demand could increase food imports rapidly, despite the abundance of land and water available for African agriculture.

Poor competitiveness in turn relates to low and stagnant productivity. Even since the start of liberalization in the late 1980s, productivity

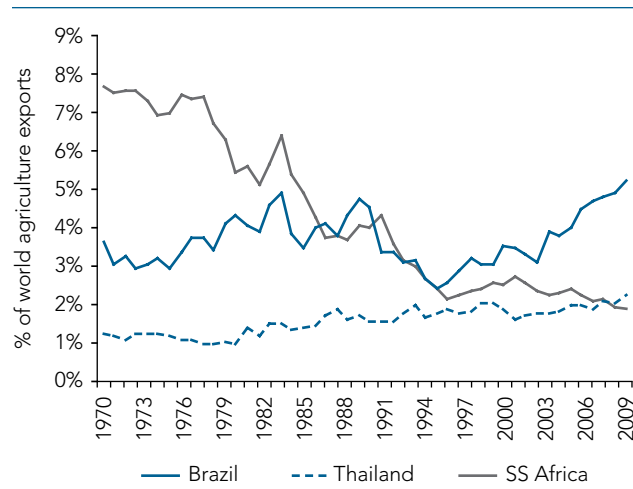
of almost all agricultural subsectors has performed poorly in Africa relative to regions with similar agro-ecological potential. Crop and livestock yields are often half of averages in Asia and Latin America, largely reflecting Africa's very low use of modern inputs such as improved seed, fertilizer, and irrigation water (Figure E). Africa's agricultural growth derives largely from opening new land to agriculture, with negative consequences for biodiversity, forests and soils.

These adverse trends can be reversed through good policies, sustained public and private investments, and public-private partnerships backed by open, transparent procedures and processes along the entire value chain. Africa already has a number of bright spots of good productivity growth and competitiveness, such as horticulture, tea, and in some cases rice. A number of countries, including Kenya and Côte d'Ivoire (until 2005) and (more recently) Cameroon, Ethiopia, Ghana, Malawi, and Zambia, have performed relatively well in tapping buoyant markets.

Many constraints are specific to value chains

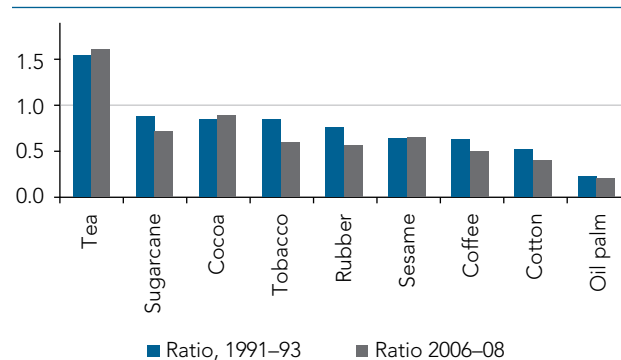
To realize these opportunities, Africa has to overcome a legacy of state intervention in agricultural markets, weak land markets, and the neglect of public investment in agriculture. It must also confront new risks from

Figure D: Shares of world agricultural exports (1960–2009)



Source: FAOSTAT.

Figure E: Ratio of cash crop yields in Africa compared to Asia and Latin America



Source: FAOSTAT.

environmental degradation and climate change. Constraints to the development of agribusiness in Africa have been studied extensively and can be classified into four broad categories:

1. Erratic policies in agricultural output and input markets and trade (see Brenton 2012).
2. Limited access to land and respect for community land rights (see Deininger and Byerlee 2011).
3. Poor infrastructure and high transportation costs; see the World Bank flagship report on Africa's infrastructure (World Bank 2010).
4. Difficulties for smallholders and small firms to access technologies, information, skills, and finance; see the World Development Report on agriculture (World Bank 2007d).

Because these key constraints vary not only by country but by value chain, this report demonstrates how they affect the performance of different types of value chains in selected African countries. The cases selected for discussion show not only how the key constraints can vary across value chains but over time within an individual chain.

Rice in Senegal and Ghana—producers lack seed, irrigation, and machinery. Rice is Africa's largest and fastest-growing import, valued at US\$ 3.5 billion in 2009 or nearly half of total consumption. Rice is substituting for traditional staples as urban consumers seek more storable and easily prepared foods. Urban, higher-income consumers also show a distinct preference for higher-priced imported rice with aromatic qualities. Given the thinness of world rice markets and the shock of 2008—when several exporters implemented export bans and world rice prices tripled—many African countries are giving priority to stimulating domestic rice production. With improved policy incentives and higher world prices, local production has risen sharply in some countries.

The prospects for competitive import substitution were investigated for two large importers, Senegal and Ghana, through field studies. Costs along the value chain were benchmarked against those in the world's leading rice exporter, Thailand, for both white rice and aromatic rice. In Senegal, rice from the Senegal River Valley is produced under irrigation and partial mechanization at costs only slightly above those in Thailand. With relatively efficient milling and transportation, local rice can be quite competitive—even more so if the aromatic rice varieties now being tested can be produced commercially. In fact, Senegal has made major progress in increasing yields to reach 3.6 tons per hectare nationally (more in irrigated areas). Any expansion in competitiveness is held back, however, by the difficulty of accessing secured, tradable land rights, which discourages significant private investments in irrigation systems.

Ghana produces rice at a significantly higher cost and faces a greater competitiveness challenge than Senegal, even though tariffs and other charges add 40 percent to the price of imported rice. High production costs are partly caused by low yields and low levels of mechanization. Low milling ratios and high transport costs further disadvantage local rice, especially rice from the main producing area in the North. As in Senegal, strong and more flexible seed systems are needed in Ghana to provide a wider range of varieties to meet diverse growing conditions and consumers' diverse preferences. In both countries, too, domestic value chains need to give substantially greater emphasis to grain quality, cleanliness, and packaging as major determinants of consumers' preference for imported rice. Finally, gaining access to land is even more difficult in Ghana than in Senegal.



Maize in Zambia—distortionary policy interventions. Maize is Africa's most important food staple and one of its most politicized crops. Per capita food consumption in many Eastern and Southern African countries exceeds 100 kilograms, and feed consumption, estimated to be growing at 6 percent annually, is an important future source of growth in demand. Maize is Zambia's dominant food staple (133 kilograms per capita), and in most years Zambia is relatively self-sufficient in maize. Demand for livestock feed is expanding rapidly, however, and a substantial regional market remains to be tapped. With more than 5 million hectares of uncultivated land suited to maize production (nearly 10 times the current area), and a yield gap of 60 percent relative to economically attainable yields, Zambia could be a breadbasket for the region.

Owing to fairly widespread adoption of improved seed and increasing levels of fertilizer (which is largely subsidized), yields are around 2 tons per hectare and have grown at 1.9 percent annually, well above the average for Africa. Very high yield risk and price risks constrain further intensification, however. A mere 2 percent of medium-size farmers (averaging about 7 hectares and mostly using animal traction), together with a handful of large-scale commercial farmers, supply over half of the marketed maize surplus. At the other extreme, two-thirds of maize farmers with an average of about 1 hectare do not sell maize and are often food deficit.

Zambia is competitive for import substitution but not for exports, except to neighboring countries. High transport costs of about US\$ 100 per ton from Durban provide natural protection from imports. Production costs are about one-third above those in Thailand, partly because of higher fertilizer costs, higher labor costs (mechanization is limited), and lower yields. Post-harvest costs are also high because of inland transport costs. High risks affect all components of the value chain, but price risk is in large part policy induced. Erratic interventions in maize markets by the Zambia Food Reserve Agency, seeking to stabilize prices, often have had the opposite effect. A fertilizer subsidy accounts for nearly 40 percent of public expenditures on agriculture but is captured mostly by larger farmers in better-endowed areas who would probably purchase fertilizer if it were available commercially. Late delivery of fertilizer is associated with inefficiencies in the management of the subsidy program. The major challenge is to transition these government programs to market-driven approaches to improve the sector's performance. Investment in appropriate technologies, such as legume rotations or conservation tillage and labor-saving methods, could reduce costs and risks and enable maize area to expand efficiently and sustainably.

Cocoa in Ghana—better-organized and more skilled smallholders are needed to add value. Cocoa is Sub-Saharan Africa's most important agricultural export, valued at about US\$ 6 billion in 2009 and providing livelihoods for an estimated 20 million people. Africa's share of both raw and processed cocoa exports has increased from the 1990s. As middle-income countries such as China consume more chocolate, the industry projects that demand will grow by an additional 25 percent in the next decade. That demand will be difficult to meet, given current production trends.

Ghana has been the star performer in cocoa exports in recent decades, aided by reduced export taxation, a program to upgrade technology and management, and close attention to quality, spearheaded by a reformed parastatal, Cocobod. Yet productivity is still far below potential, so concerted strategies will be needed to maintain competitiveness and ensure sustainability by reducing



forest encroachment. With aging farmers and aging trees, substantial investment will be needed to upgrade plantations and engage a new generation of more professional farmers.

Motivated by the fact that raw cocoa and other primary ingredients account for less than 10 percent of the retail price of chocolate, Ghana and other African producers have provided substantial incentives for first-stage processing (grinding into cocoa paste and butter). Because of scale economies, location, and costs of energy, however, it is not clear how much value is being added to national income. More promising ways to add value could include raising quality, branding, and pursuing certification schemes, although these are costly to manage in a largely unorganized smallholder industry such as cocoa in Ghana.

Dairy in Kenya—upgrading informal value chains. Although much of Eastern and Southern Africa is well suited to dairy production, only Kenya has established a competitive dairy industry. Kenya's industry is based partly on a formal sector for processed milk and other dairy products, but its dynamic informal sector (based mostly on raw milk) is even more important, supplying over 80 percent of the market. Kenya's success largely comes from smallholders' progress in adopting cross-bred cattle, in improving feeding and animal health, and in improving their linkages to the formal sector through cooperative milk collection and cooling centers. Strong donor support and government policy, especially recent flexibility in setting quality and safety standards for the informal chain, have also been important in engaging smallholder chains. Further progress depends on measures to support smallholders in more remote areas, on regulatory measures to upgrade milk handling in the informal sector to meet rising demand for processed milk and other dairy products, and linkages between the formal and informal sectors.

Green beans in Kenya—meeting ever more stringent export standards. Green bean exports to the European Union (EU) are often presented as an African success story. Led by Kenya, African countries captured a significant share of a rapidly expanding but demanding export market. Their success is attributed to the leading role played by private companies in establishing the industry, the Kenyan government's supportive role, secured land tenure, and the inclusion of smallholders in the supply chain, at least initially. Private companies, through contracts and technical support with smallholders, were able to assure a reliable supply of beans. Now, however, challenges with increasingly stringent food safety and other standards in the EU are changing the shape of the sector and diminishing the role of smallholders, who presently account for only about 30 percent of the supply. Although Kenyan exports of green beans have fallen very recently as other countries have entered the market, Kenyan companies with well-developed logistics and long experience in export markets have been able to diversify and continue to expand fruit and vegetable exports.

These snapshots of a range of value chains reveal many well-known generic constraints but also big differences in constraints across value chains and over time. The common and well-known constraints include erratic policy interventions on tariffs, prices, and taxes; poor infrastructure; fragmented and risky markets; poorly functioning input markets; difficulties in accessing land and finance; and inadequate skills and technology (Table A). The main constraints, however, are specific to each value chain. For food staples and traditional exports, high transport costs, border logistics, and erratic government interventions are more important than other constraints, whereas for high-value products for domestic and export markets, major challenges are



Table A: Summary of major constraints by value chain

Constraint	Rice: Ghana and Senegal	Maize: Zambia	Cocoa: Ghana	Dairy: Kenya	Green beans: Kenya
Output markets					
Policies distorting markets	*	***	*	**	
Quality issues	**		*	**	***
Food safety		*	*	**	***
Social and environmental issues			**		***
Regional integration issues	**	***		**	
Price risk	**	***	**	*	*
Inputs and technology					
Policies distorting markets	**	***	*	*	
Access issues	***	***	***	*	
Land access issues	***	**	**		
Infrastructure issues					
Transport	**	**	**	*	
Other	*** (irrigation)	** (rural roads)	* (energy for grinding)	* (collection points)	* (cold chain)
Access to finance issues	**	**	***	*	
Skill issues	*	*	**	*	***
Issues with engaging smallholders				*	***

Source: Authors.

Note: Number of asterisks denotes relative importance as a constraint, with *** as the highest priority.

high food safety and other standards, along with the difficulty of connecting smallholders to ever more demanding markets. Interviews with private investors reinforced these findings (see www.worldbank.org/africa/agribiz).

Overcoming constraints: An agenda for getting agribusiness moving

While this report provides an optimistic view of the potential role of agribusiness in generating growth and employment in most African countries, it also recognizes the challenges in realizing that potential. The report does not pretend to provide a blueprint for moving forward, as constraints are so specific to countries, regions, and value chains. Rather, based on international experience, it discusses ways of removing some of the more pervasive constraints.



Improving the performance of output markets

Despite marked improvements, policies that hinder the functioning of output markets still constrain market access, transaction costs, and risks for agribusiness. For traditional staples and export crops, the highest priority is to deepen market reforms of parastatals and trade policies and to move toward a rule-based and predictable policy environment. Uganda and Mozambique are countries that have consistently maintained open borders to grain trade. In other countries that have liberalized internal grain markets, such as in Kenya, farm-to-retail margins have declined dramatically. In other cases, continued erratic interventions have undermined incentives for private trade and contributed to price volatility. For dominant export crops, the challenge is to sequence reforms to maintain farmers' access to inputs and credit traditionally provided through parastatals, in order to reap the full benefits of higher prices. Often a case can be made for an efficient parastatal or strong producer organization to regulate quality and monopoly buying power.

One of the highest priorities is to accelerate the regional integration of markets by implementing trade liberalization schemes. Minimizing checkpoints and bribes along main inland freight corridors, reducing the bureaucratic delays and transaction costs of border crossings, and harmonizing standards and procedures are all imperative to create regional markets with sufficient scale to attract investors. While progress is being made, transaction costs are kept high by poor logistics, bureaucratic freight procedures, nontariff barriers, and bribes. By diversifying supply, closer regional integration would also reduce price volatility caused by the vagaries of local climates.

Modern information and communication technologies offer exciting new ways to improve market integration, reduce transaction costs and risks, and guard against fraud and corruption. These technologies are spreading rapidly in the region, initially to provide better price information and increasingly to facilitate market exchange. A growing body of evidence shows that these technologies help farmers and producers receive higher prices while reducing overall marketing margins. The public sector can provide the enabling environment and underwrite some of the initial costs for these technologies, but private players should take the lead in implementing them to put them on a demand-driven and sustainable footing.

In an increasingly "buyer-driven" environment, food markets can grow by upgrading processing, packaging, quality, and branding in value chains. Value-adding activities range from sorting, cleaning, and packaging to processing, branding, and retailing. Value often can be captured through relatively simple changes, such as canning, drying fruit, cooling milk, packaging, and even labeling. These windows of opportunity can benefit small and medium enterprises, given a favorable business environment and links to reliable supplies of raw materials of a given quality from the farm sector.

For higher-value products, the priority is to build capacity and coordination along the chain to meet increasingly stringent standards. In doing so, it is important to recognize that farmers with different capacities will target different markets, both domestic and international. The current focus on integrating smallholders into EU supply chains needs to be recalibrated. A more gradual approach would help smallholders focus initially on less stringent regional and domestic markets, which are also the most rapidly growing markets.



Supermarkets are poised to take off, with implications for traditional retail chains and smallholders. Supermarkets are being established across Africa, where they generally serve the upper-income population. Their benefits can include a broader supply of products, more streamlined supply chains, safer foods, economies of scale, and lower consumer prices. At the same time, their procurement systems can profoundly change supply chains and challenge small-scale farmers. Supermarkets already influence more traditional retailing in terms of offer, quality, and more organized supply chains, and they frequently drive small retailers to upgrade their services. Capacity-building for small-scale farmers, processors, and their organizations is important for them to benefit from the supermarket revolution.

Facilitating access to inputs and technology

The growth of competitive agribusiness in Africa is severely constrained by the low use of modern inputs and limited access to improved technologies. Wider uptake and more intensive use of improved seed, fertilizer, and other inputs would go a long way to closing the African “agricultural performance deficit.” Building input markets in Africa also represents a major agribusiness opportunity, with potential markets in the billions of dollars. Because of their specialized nature, location specificity, and highly seasonal demand, agricultural input industries have unique challenges, however.

A top priority is to reform seed policies and regulations. Policy and regulatory barriers—including import restrictions and rigid, lengthy processes for releasing new varieties—are slowing the adoption of agricultural inputs. Priorities are to reform seed policies, ensure a level playing field for the private sector, and liberalize varietal release procedures. As emphasized time and again by investors, these reforms must be accompanied by policies to allow free exchange of varieties and seeds within a region to create markets of sufficient size. Despite general agreement on the value of such reforms, their implementation has been painfully slow. The vested interests of government agencies responsible for certifying, producing, and distributing improved varieties and seed are hard to overcome.

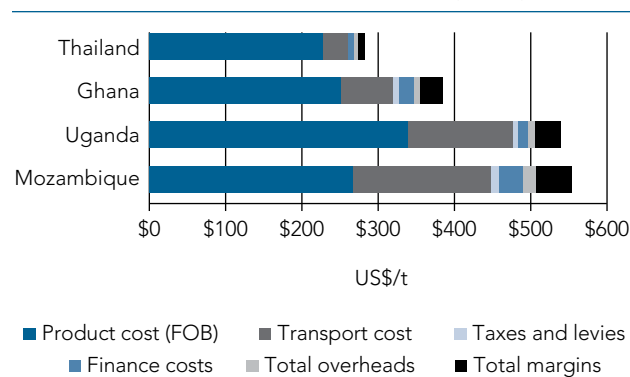
Another top priority is to reform fertilizer policies to reduce the high cost of fertilizer. Almost all fertilizer used in Africa is imported. Prices in Africa are at least 30 percent higher (far higher for inland locations) than in Thailand, which also imports most of its fertilizer (Figure F). Priorities are to privatize supply, carefully rationalize subsidies and convert them to a market-smart approach, and build logistics systems to reduce the costs of imports. Building a dense network of input suppliers through training and business development services is critical to deliver inputs and associated services to the farm gate—a fact now increasingly recognized in government and donor programs. Countries that have consistently implemented these policies (Kenya is one) have seen a steady increase in fertilizer use by smallholders as the fertilizer prices paid by farmers decline steeply in relation to import prices. If plans for large private investments in fertilizer production in West and Central Africa are realized, they may also sharply reduce Africa’s dependence on imported fertilizer.

Input systems must be backed by a dynamic research system. Research and development (R&D) must involve public financing, because of the public good nature of most R&D products. By all measures, Africa’s R&D systems are underinvested, highly fragmented, and subject to volatile



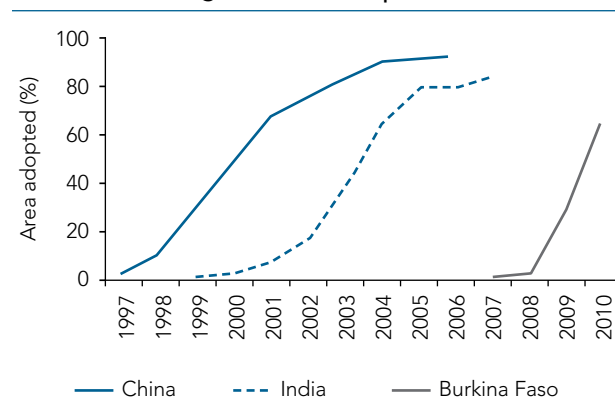
funding from governments and especially donors. Private R&D by seed companies has now taken off in several countries of Eastern and Southern Africa and in Nigeria, but it focuses quite narrowly on hybrid maize. Collective action by industry associations to implement a small levy on production offers a promising way to finance R&D for the products of commercial agriculture, as demonstrated in several countries of Latin America. The limited efforts at industry R&D financing in Africa, such as tea research in Kenya and research on export crops in Côte d'Ivoire, have also generally performed well. These country-level initiatives need to be complemented with stronger South–South collaboration in R&D and public-private partnerships (Figure G). A technology transfer program between Brazil (through the Brazilian Agricultural Research Corporation, Embrapa) and Africa started in 2010. Technology also passed from Brazilian companies through their investments in sugarcane in Mozambique and Angola and from Asian oil palm companies through their investments in Ghana, Liberia, and Gabon.

Figure F: Comparison of Fertilizer Value Chain Costs, Africa and Thailand (2006)



Source: IFDC and Chemonics Int. 2007.

Figure G: Adoption of Bt Cotton in Burkina Faso through a Partnership with Monsanto



Source: James 2010.

Enhancing access to land and tenure security

Agribusiness will falter unless communities' and individuals' land rights are formalized and governance of land resources improves. Recent media attention devoted to “land grabs” has highlighted the poor governance of Africa’s large and underutilized land resources as well as the lack of secure land tenure for smallholders and investors. Sometimes quick wins can come from clarifying the tenure status of abandoned state or private farms and auctioning the rights to that land to investors. For the longer term, governments urgently require a decentralized, transparent, and participatory process to allocate land, rapidly formalize community and individual rights, build community capacity to negotiate fair deals with investors, and reduce the transaction costs and tenure insecurity that discourage investors. In return, investors must give greater attention to the rights of

local users and the potential impacts of their investments on local livelihoods, including holding wide, meaningful and participatory consultations with stakeholders. Experiences with community empowerment in Malaysia and elsewhere provide potential models for sound community-investor partnerships. Representative and accountable local authorities should drive an inclusive and transparent process to guide land investments. Central governments, with the support of development partners, should provide technical assistance to help local authorities get the most out of investors' growing interest—such as assistance in recording land rights, making a formal inventory of land rights/cadastre, developing “land banks,” learning negotiating skills, and developing model lease contracts. Investors should be willing to commit to long-term investments, pay fair rents on land and water, and provide other economic and social benefits to local communities in exchange for secured and tradable land rights. Open, participatory processes are vital, both for financial viability of agribusinesses and for long-term sustainability of enterprises.

Upgrading infrastructure using public-private partnerships where possible

Irrigation is critical to increase and stabilize production, reduce risks, and provide the basis for higher-value agriculture. Given the severe constraints on public sector resources and capacity, tapping private capital and management skills will be essential to accelerate investment in irrigation. Lessons emerging from experiences with public-private partnerships in irrigation (in Brazil, for example) can help, but much learning is still needed to balance public and private roles appropriately within the African context. Public-private partnerships can also fill other infrastructural gaps, such as storage, cold chains, logistics terminals, and wholesale markets, but they can be challenging to implement. In Africa—where risks are high, capacity low, and experience limited—even simple contractual arrangements, such as an upfront infrastructure investment by the government, followed by a sale (through auction) of the infrastructure to the private sector, have been slow to be adopted.

All-weather rural roads are also crucial for rural areas to develop and gain access to markets. Recent improvements in main roads mean that a disproportionate share of the high transport costs for agricultural produce are incurred within the first few kilometers from the farm, because rural roads are still poor. The incentives for the private sector to build rural roads are few, so it is an important responsibility of the public sector, combined where possible with community initiatives. The overwhelming need to improve Africa's rural road systems has fostered the development of less costly alternative models. To truly serve the private sector and rural communities, however, investments in rural roads must be made in close consultation with the beneficiaries, who often are prepared to support road construction and maintenance by contributing their labor.

Financing agribusiness

The lack of finance is widely recognized as a perennial constraint on agricultural performance, whether among large agribusinesses or smallholders. Formal lending to agriculture is severely limited by agriculture's seasonality and high risk, the absence of formal land titles, the heterogeneity of agriculture across commodities and regions, and bankers' inexperience with agribusiness.



There are now much better opportunities to tap private sector financing. Companies can provide financing directly through interlinked value chains, provided that contracts can be enforced, especially for high-value exports and some products that require immediate processing. At the same time, interest in Africa among foreign investors, pension funds, and foreign banks in direct investments and loans is at an all-time high, but tapping that potential requires the identification of viable projects and attention to mitigating social risks. An unprecedented number of funds employ public-private partnerships with donors and foundations to provide patient capital to African agribusiness firms.

Although formal banks currently lend little to the sector, recent experiences show that agricultural and agribusiness lending can become a profitable business for established banks. Capacity building, new e-banking technologies, incentives to open rural offices or mobile banking, and flexible rules on collateral are expanding lending to the sector. For example, support through AgriFin is reorienting the Centenary Bank in Uganda toward agribusiness.

Other approaches focus on overcoming the risks of lending to the sector. Innovative ways of providing collateral, such as the use of movable assets (animals, for instance), warehouse receipts, partial credit guarantees, and equipment leasing, all reduce the risk of agricultural lending. Tying lending to insurance products is also being piloted. Each of these innovations has had some initial successes, but much remains to be done to make them sustainable, implement regulatory frameworks, and scale up. Partial credit guarantees have shown the most success in reaching a range of small and medium enterprises involved in input distribution and agro-processing, transport, and retail.

Building skills and entrepreneurship

A major constraint on competitive commercial agriculture and agribusiness is the lack of skills at all levels, from vocational to postgraduate education, including management and entrepreneurial capacity. With few exceptions, vocational and university programs need a major overhaul to focus on unmet demand from the private sector for operational, technical, and managerial skills. At the same time, experiences with developing entrepreneurship through training in business models and practical hands-on training show promise in helping to create a new generation of entrepreneurial farmers and businesspeople.

Ensuring inclusive investments

Africa has a huge challenge to create jobs, especially for the 25 million young people who will enter the labor force each year by 2025. Private investments in the sector should ensure the creation of good jobs that are available to local communities through local training programs. Such investment is much more than corporate social responsibility. It is integral to a sustainable, long-run business model, especially in industries such as export horticulture, where smallholders have lost market share but communities capture benefits through employment in larger enterprises capable of meeting exacting standards.

A range of approaches can be used to involve smallholders and communities. Contract farming with smallholders is often held up as a panacea for generating employment and inclusive



growth. Africa has many good examples of successful contract farming, especially in sugarcane, oil palm, and horticultural crops. Contract farming works well, however, in only a few industries where the smallholder and buyer share common interests and contracts can be easily enforced. Other ways for local communities to participate are through granting shares in agribusiness companies, often in exchange for land, and through the provision of good jobs by larger-scale, relatively labor-intensive enterprises. The tea industry, for example, pioneered equity shares by smallholders and employees in company ownership. Local communities can also benefit from fair land rental payments by companies; agribusiness investments in infrastructure, schools, and health clinics; and the generation of local tax revenues.

Implementing the agenda

Agriculture and agribusiness should be at the top of the agenda for much of Africa. The favorable market outlook on both the demand and supply side provides a unique window of opportunity for many countries. Yet major market and government failures entail serious risks for agriculture and agribusiness. Government policies to unleash Africa's agribusiness potential should be implemented following careful analysis and piloting within a transparent and inclusive consultation process.

The state has an important role in promoting agribusiness. Most governments have paid insufficient attention to agribusiness and have little experience in nurturing a private sector. Strong leadership will be needed from both the public and private sectors to articulate a bold vision and strategy with wide acceptance. Experiences from competitive agribusiness in Latin America and Asia suggest that the public sector must be proactive in setting priorities but that it must exercise caution to avoid overstepping its capacity, distorting incentives, or creating an environment that favors rent seeking. At the same time, private investors should not assume that their actions are for the good of society but must pay particular attention to fostering inclusive growth, while mitigating social and environmental risks. A set of principles for responsible agricultural investment being discussed by international agencies provides a useful framework for screening investments for social and environmental risks.

Agribusiness programs initially need to focus carefully on a few cross-cutting interventions and/or on a few value chains and locations. There is no blueprint for implementation, but in general, a focus on a few priority cross-cutting issues, locations, and/or value chains can provide quick wins. By demonstrating the benefits of agribusiness investments, agribusiness programs can build momentum for wider changes. Focusing on specific locations and/or value chains is a way to channel scarce resources to tackle a critical mass of issues. Scattered reforms and public investments across regions and value chains may not yield results, given the long list of constraints affecting agribusiness (listed earlier in Table A). A narrower focus may also stimulate sensitive and complicated cross-cutting reforms (such as piloting fertilizer, regulatory, and land reforms) as well as deal with vested interests (for example, Ethiopian leather manufacturers may agree to a lowering of import tariffs if the export ban on semi-processed leather is lifted).

Specific steps are required to limit the risks associated with implementing agribusiness strategies. The choice of locations and value chains should be driven by detailed, evidenced-base



analysis involving the identification of the main opportunities and constraints using international benchmarking and a careful assessment of investors' demands and needs. In general, locations and value chains with revealed competitive advantage and proven investor demand should be preferred over attempts to initiate new industries in new areas. The key essential policy reforms should be enacted before committing to large public investments (for example, there is little point in investing in irrigation if farmers do not have the right seed to take advantage of it). Priorities and action plans should be flexible to meet the unanticipated opportunities and constraints that will inevitably emerge. Finally and crucially, strong governance and monitoring systems should be put in place to correct or terminate failures and replicate or scale up successes.

Often a strong case can be made to support strategic first movers, provided it occurs under a transparent and rule-based system. Given high climatic risks, volatile commodity prices, and the agro-climatic specificity of agricultural technologies, investors and governments need to recognize that many ventures offer high short-term risks as well as potentially high returns. For example, only 30 percent of CDC investments in agribusiness in Africa and Southeast Asia have been successful, although over the longer term, after restructuring or new ownership, some 70 percent have succeeded. These experiences point to the need for governments to partner with strategic first movers to explicitly build in piloting and learning activities prior to scaling up.

Experience suggests that direct support to selected industries can sometimes succeed in developing a competitive industry, but in an environment of poor governance, it also carries significant risks. Initial support can be justified by the high startup costs and risks associated with developing new agribusiness value chains. State support can also be important in underwriting the high transaction costs of linking investors to smallholders in the startup phase. Examples of support to first movers that unleashed the growth of new industries include Kenya and Ethiopia (roses) and Senegal (cherry tomatoes).

Development partners are mobilizing to help Africa seize its agribusiness opportunity. The Comprehensive Africa Agriculture Development Programme (CAADP) is articulating the central role of private investors and agribusiness through CAADP's Pillar 2. Several international agencies have partnered with the African Union in the African Agribusiness and Agro-Industries Development Initiative (3ADI).

World-class, dedicated, and empowered implementation units can help achieve the necessary focus and intensity. They can also help to get beyond the ministry of agriculture and involve other relevant ministries and local governments. The unit should preferably have access to the prime minister or equivalent, as occurred in Botswana and Malaysia. Such dedicated implementation units will also help mobilize and coordinate support from development partners. For specific value chains, mechanisms led by the private sector to enhance coordination and governance have now been widely tested and are ready to be scaled up.

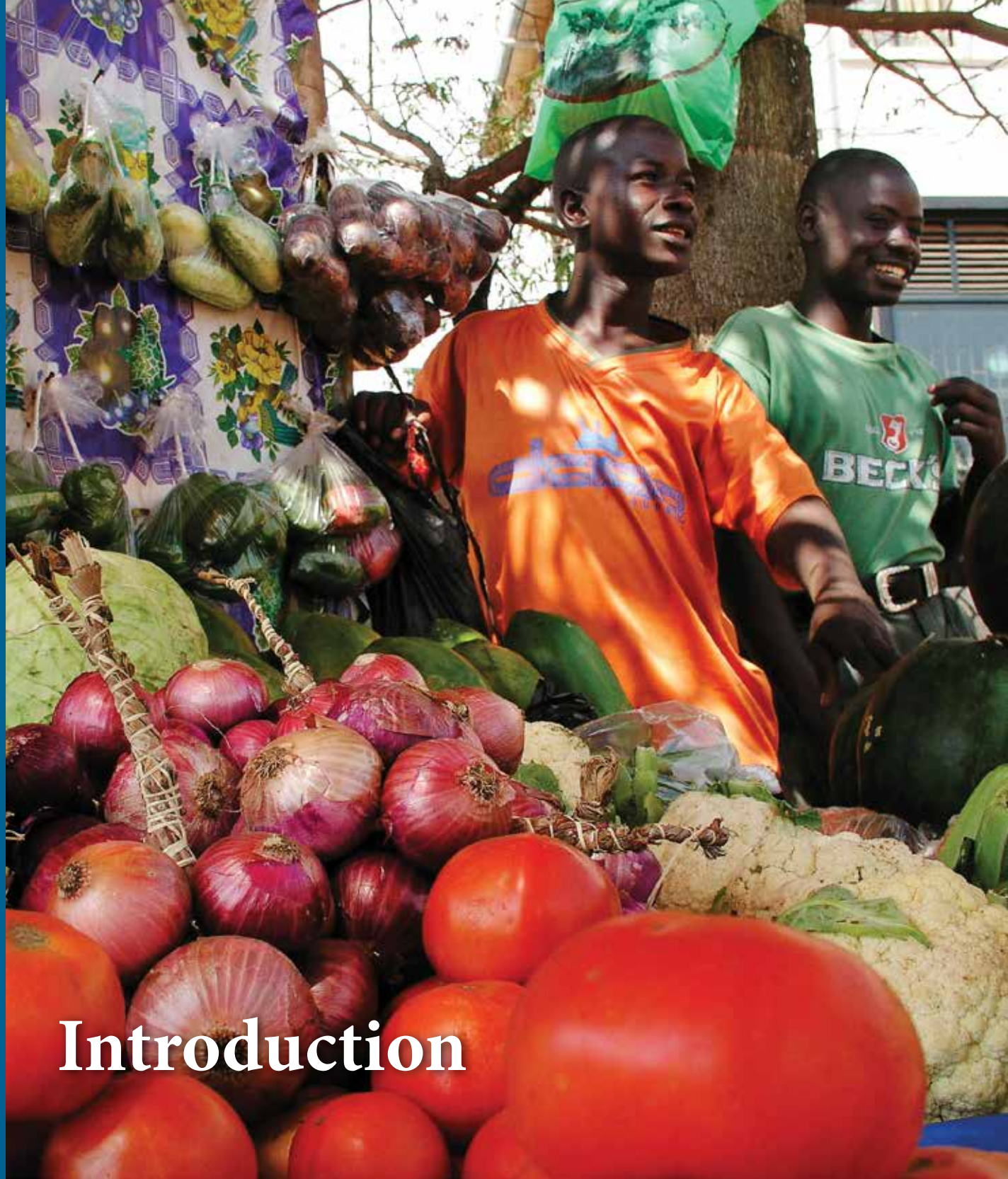
Finally, these mechanisms will have a key role to play in generating and leveraging four types of knowledge to motivate and inform actions from both the public and private sector:

- Identification of the main agribusiness opportunities based on agro-climatic surveys (including irrigation potential) and demand analysis.



- Identification of the main constraints through in-depth productivity/cost benchmarking, interviews of leading players with international exposure, and comparative analysis.
- Identification of practical solutions to remove the main constraints based on the experience of similar successful countries.
- Monitoring and evaluation of progress to correct/terminate failing initiatives and scale up or replicate successful ones.





Introduction

Why a report on agribusiness?

Together agriculture and agribusiness are Africa's largest economic sectors; they have also been among its fastest-growing sectors since the mid-1990s. In many African countries, agriculture and agribusiness could lead the kind of economic transformation seen in many emerging economies in other regions, especially those with abundant land and water such as Thailand, Indonesia, Brazil, Colombia, and Ukraine.

Africa represents the “last frontier” in global food and agricultural markets. It has more than half of the world's uncultivated but agriculturally suitable land and has scarcely utilized its extensive water resources. As Africa's population, incomes, and cities grow and spur the development of domestic markets, the prospects for agriculture and agribusiness will be better than ever—if Africa can achieve competitiveness. The emergence of dynamic, competitive industries based on agriculture will be central to meeting Africa's outsized employment and food security challenges.³

Although agriculture is again central to Africa's agenda, it is not sufficient to focus solely on production agriculture. Production agriculture must be linked to agribusiness, broadly defined to include upstream and the proximate downstream industries (Box 1.1). Throughout much of the world, agribusiness is dynamic, undergoing rapid change through vertical integration, retailing “revolutions” (such as the emergence of supermarkets), mergers and acquisitions, and increased foreign direct investment in search of new frontiers and higher risk-adjusted margins. Local agribusiness companies are emerging and in some places forming powerful regional blocs. As the manager of a rapidly expanding processing company from Eastern Africa enthused, “The time is right now to invest. Africa is virgin territory for the tougher-skinned, agribusiness investor.”

More recently, international agencies and African governments have recognized the growing role of agribusiness, as evidenced by a recent book, *Agribusiness for Africa's Prosperity* (UNIDO 2011); the African Agribusiness and Agro-Industries Development Initiative (3ADI);⁴ and the Strategic Framework for Pillar 2 on markets and agribusiness in the Comprehensive Africa Agriculture Development Programme (CAADP).⁵ Building on those efforts, this report not only highlights the great potential of agribusiness in Africa but draws on experiences from within and outside the region to demonstrate how good policies and governance, a conducive business environment, strategic and well-targeted support from governments, and active participation by the private sector can create every prospect to realize that potential. This report presents Africa at a crossroads, from which it can take concrete steps to realize its potential or continue to lose competitiveness—missing a major opportunity to increase growth, employment, and food security.

³ For overviews of these challenges for agriculture, see World Bank (2007c); for agribusiness, see Hagglade (2011) and Yumkella et al. (2011).

⁴ See UNIDO (2010). 3ADI is supported through the African Union, United Nations Food and Agriculture Organization (FAO), African Development Bank (AfDB), International Fund for Agricultural Development, United Nations Economic Commission for Africa, and United Nations Industrial Development Organization (UNIDO).

⁵ Yumkella et al. (2011) and UNIDO (2010). See also www.3adi.org.



Box 1.1: Working definitions for this report

Agriculture refers to on-farm production. It includes crops and livestock but not floriculture, fisheries, or forestry. Although much agriculture in Africa is oriented to sustaining livelihoods, this report focuses on commercial farming, recognizing that the commercial farmers in Africa are overwhelmingly small and medium scale.

Agribusiness denotes organized firms—from small and medium enterprises to multinational corporations—involved in input supply or in downstream transformation. It includes commercial agriculture that involves some transformation activities (even if they are basic). It includes smallholders and micro-enterprises in food processing and retail to the extent that they are market oriented—indeed these producers and enterprises make up the bulk of agribusiness activity in Africa today.

Africa is used as shorthand for Sub-Saharan Africa. Unless otherwise stated, this definition excludes South Africa, where agriculture is based on large-scale farming and agribusiness is well developed.

Horticulture includes fresh fruits and vegetables.

Source: Authors.

Analytical framework and data sources for this report

In agribusiness, as in any industry, an objective metric to assess economic performance and competitiveness is the industry's size and total factor productivity, which are closely interrelated. An increase in total factor productivity should increase the size of the industry (through lower prices for a given quality of output), while a larger agribusiness sector should result in lower operational cost (through economies of scale and cluster effects)—provided that negative externalities such as the impact on the environment are kept in check. This report examines public policy interventions aimed at improving the economic performance of the agribusiness sector through the lens of market and government failures as a means of ensuring that such interventions are justified.

The unit of analysis for assessing policy interventions consists of specific markets for agricultural inputs (fertilizer and seed, for example) and outputs (such as rice and beans) as well as markets for factors of production (such as land, capital, and labor). The methodology relies on three analytical steps:

1. *Benchmarking performance.* The competitiveness of a country in a given product market is determined by the aggregate performance of the firms active in that market. This report has been developed through a synthetic approach that builds on a diagnosis of specific value chains representing different markets, including markets for food staples, high-value products for emerging domestic markets, traditional exports (tea, cocoa, cotton, and so on), and high-value exports. An in-depth value chain analysis of the rice market—the most rapidly growing food staple market—was based on fieldwork in two major West African



markets, Ghana and Senegal, followed by fieldwork to collect productivity and cost data from a benchmark site in the major rice exporter, Thailand (see www.worldbank.org/africa/agribiz). The analysis of rice was complemented by qualitative desk reviews of value chain studies representing a diversity of other markets—maize in Zambia (a traditional food staple), cocoa in Ghana (a traditional export), dairy in Kenya (a high-value domestic commodity), and green beans in Kenya (a high-value export commodity).

2. *Explaining differences in performance.* Differences in productivity and cost among players and countries were explained to the extent possible by differences in the way agribusiness actors operate, which in turn can be related to factors in their external environment. Such external factors include a combination of market failures and government failures. Market failures occur when private actors alone cannot reach an optimal societal outcome as a result of negative externalities of investments or lack of investment in public goods. The most common and important market failures include physical insecurity, insecure property rights, deficient infrastructure, and negative impacts on the environment. Government failures occur when a government intervention leads to a suboptimal outcome given its stated objective—usually the correction of a market failure or the pursuit of a redistribution objective. The main examples of government failures as they relate to agribusiness include:
 - a. Failure to protect farmers against crop diseases (a negative externality).
 - b. Failure to secure property land rights (a public good), which increases the cost or risk of private investments.
 - c. Inadequate government investment in and poor management of infrastructure (as public goods), which limit access to land and water.
 - d. Ineffective public research and extension services (as public goods and a redistribution objective).
 - e. Ineffective input schemes such as subsidies (as a redistribution objective), which distort or prevent competition and result in high cost or poor services.
 - f. Mismanagement of support to key agribusiness companies by the state, originally justified by the need to support first movers that face higher cost or risks and carry positive externalities (such as investments in storage infrastructure available to other players).
7. *Identifying solutions to improve performance.* To provide practical advice on moving forward to harness Africa's agribusiness potential, this report draws widely from local successes in Africa that have the potential for scaling up. Considerable information comes from interviews with 23 investors that have current (and in some instances planned) investments in a range of domestic and foreign agribusiness companies operating in different stages of the value chains in Africa (Annex 2, www.worldbank.org/africa/agribiz). The report also draws on findings from a retrospective of more than 170 investments made in the course of 50 years by the Commonwealth Development Corporation (CDC) in agribusiness in Africa and Southeast Asia (www.worldbank.org/africa/agribiz). Additional experiences from emerging countries, such as Brazil and Thailand, are included because they provide valuable lessons for building a sound agribusiness sector in Africa. In its totality, the evidence assembled suggests solutions to the many issues identified as constraints in



African countries, although the solutions would need to be adapted to local circumstances. These examples also show how countries can take a pragmatic and proactive approach to resolve—in a reasonable time and with limited resources—a critical mass of issues from the long, challenging list of difficult market and government failures. One such approach would be to establish agribusiness investment zones.

Although this report broadly covers agribusiness opportunities in Africa, it is not intended to be comprehensive. The huge diversity of agro-ecological, market, and business environments in Africa requires each country (and indeed each region within a given country) to adapt the broad guidance provided here to its specific situation.

Overview of the report

This report is organized around the following six questions:

1. What is the current status of agribusiness in terms of size?
2. What is the potential for agribusiness growth and associated development impacts in Africa?
3. What has been the recent record of agribusiness performance?
4. What are the major constraints on realizing the potential of agribusiness for specific value chains?
5. What are some solutions to those constraints over the short, medium and long term?
6. What are the key steps in implementing an agribusiness agenda?

Chapter 2 summarizes the current size and structure of the agribusiness sector, noting that it is large, highly heterogeneous, and dynamic. Chapter 3 outlines the sector's immense potential in terms of market prospects, natural resources, and investor interest. Yet as seen in Chapter 4, almost all indicators demonstrate that Africa has lost competitiveness in its agribusiness sector, so business as usual will not be enough. As mentioned, the major constraints are examined through the lens of five value chains representing diverse markets (Chapter 5). Many of these constraints are well known and cut across value chains, while others are quite specific to individual value chains. Chapter 6 provides extensive and detailed guidance on moving forward in seven major areas—market policies, access to inputs and technologies, access to land, access to finance, investing in infrastructure, upgrading skills, and sharing benefits with local communities. The concluding chapter focuses on implementation, especially the roles of public and private actors. Throughout, guidance is illustrated through specific examples of successful agribusiness industries in the region, many based on the interviews with agribusiness companies.





Agribusiness in Africa— A large sector

The size of the agricultural and agribusiness sector

Agricultural production and agribusiness together constitute an average of around 45 percent of the economy of Sub-Saharan Africa. In Sub-Saharan African countries, the share of agribusiness (including logistics and retail) in gross domestic product (GDP) is typically around 20 percent, while the share of agricultural production is around 24 percent for low-income countries, although only a part of production is commercialized.

The role of agribusiness increases with rising incomes. Globally, agribusiness is about 78 percent of value added in the agricultural value chain (Box 2.1), but this share varies widely across income levels. Using the country typology from the World Development Report 2008 (World Bank 2007d), the ratio of value added in agribusiness to that in farming is 0.6 in agriculture-based countries (in other words, most of Africa), but the ratio increases to 2 for transforming countries (mostly Asia), 3.3 in urbanized countries (mostly Latin America), and 13 in the United States.⁶ The share of upstream and downstream agribusiness in total GDP rises to as much as 30 percent in middle-income countries, even as the share of primary agricultural production in the economy is falling rapidly. These trends reflect the commercialization of farming to meet rising demand from urban consumers, leading to higher use of purchased inputs; increased services for machinery repair, finance, and retail; and much greater demand for processing, packaging, and transportation. The growing role of processing is evident in Figure 2.1.

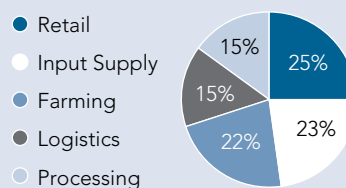
Notwithstanding the low share of agribusiness in the value chain in Africa, a sizeable share of African manufacturing is based on agricultural raw materials. In the least developed countries, agro-processing accounts for 68 percent of the manufacturing value added.⁷ In Africa, the share of agro-industry in manufacturing value added is typically one-third to one-half and sometimes higher (Figure 2.2).

Box 2.1: Globally agribusiness is big business

Agribusiness upstream and downstream from farming accounts for about 78 percent of the global value added in all agricultural value chains, with farming making up the remainder. Value added is largest in the downstream activities of processing, logistics, and especially retailing. Input supply accounts for about a quarter of value added.

Source: Brookfield Agriculture Group 2010.

Percent value added shares in the global agricultural value chain



⁶ Wilkinson and Rocha (2009); Roepstorff, Wiggins, and Hawkins (2011).

⁷ Roepstorff, Wiggins, and Hawkins (2011).

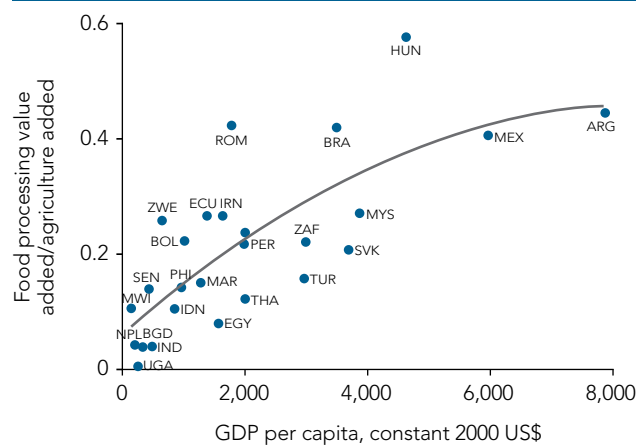
African agriculture is highly diversified. Compared to Asia, where cereals made up 35 percent of agricultural value added prior to the Green Revolution, cereals make up less than 20 percent in West and Central Africa (Figure 2.3). The remaining value is from other staples (especially roots and tubers), horticulture, export crops, and livestock. Even among cereals, no single crop predominates in Africa, unlike rice and wheat in Asia. In Africa, maize is followed by sorghum, millet, and rice, and all are important.

Structure of agribusiness

Agricultural value chains in Africa are mostly made up of micro, small, and medium enterprises. Participants in a value chain may consist of micro-enterprises, small and medium enterprises (SMEs), and semi-industrial and industrial enterprises distinguished not only by size but by their sources of labor, capital intensity, and the type of market they reach. In West Africa, 75 percent of agriculture-related firms are micro or small enterprises, 20 percent are semi-industrial, and 5 percent are industrial.⁸ Employees are typically family members, and 50–90 percent are women.⁹

Agribusiness structure is determined by many factors. The structure and organization of value chains can

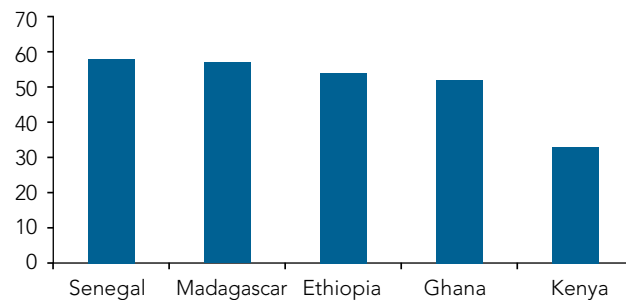
Figure 2.1: The ratio of food processing to agricultural value added rises with incomes



Source: Taken from World Bank 2007c. *World Development Report 2008: Agriculture for Development*. Washington, DC., based on World Bank 2006: UNIDO Industrial Statistics Database 2005.

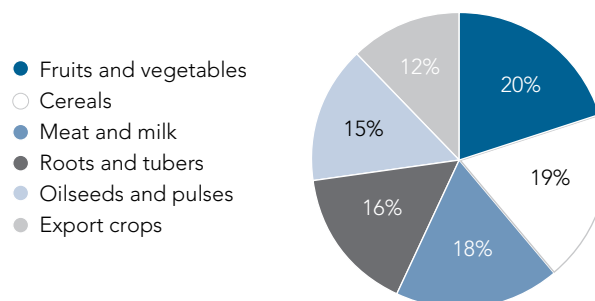
Note: The list of 3-letter codes and the countries they represent can be found in World Development Report 2008: Agriculture for Development, page xviii.

Figure 2.2: Agro-industry as share of total manufacturing value added, mid-2000s



Source: Roepstorff, Wiggins, and Hawkins 2011.

Figure 2.3: Share of total output value, West and Central Africa



Source: Nin-Pratt et al. 2011.

⁸ Staatz (2011).

⁹ Roepstorff, Wiggins, and Hawkins (2011).

differ substantially according to whether products are undifferentiated (bulk commodities) or differentiated primary products, semi-processed products, or ready for consumption, with quality and standards increasing in importance along that spectrum (Table 2.1). A further determining factor is the shelf life of a product. Many agricultural products require tight vertical coordination, either because they must be processed immediately after harvest (tea, sugarcane, and oil palm are some examples) or they have a relatively short time to reach the consumer before quality deteriorates and wastage sets in (as with fresh fruits, vegetables, and livestock products). Vertical coordination can sometimes be achieved in spot markets, but more often it requires contracts, joint ventures, or fully integrated operations.¹⁰ Horizontal coordination is often valuable for aggregation and realizing market power, as with sales of products or bulk purchases of inputs or services. This type of coordination typically is achieved through professional associations, cooperatives, or joint ventures.

Many agricultural value chains are dualistic, featuring an informal chain serving lower-income consumers in domestic markets alongside a formal chain with more processing and stronger quality controls for higher-income, “middle-class” domestic consumers or exports. Kenya’s informal dairy value chain, for example, comprises smallholders and SMEs that provide 86 percent of Kenya’s milk supply and delivers raw milk to lower-income consumers through small vendors. At the same time, larger dairy farms and processors provide pasteurized milk and processed dairy

Table 2.1: Importance of selected determinants of competitiveness in four types of value chains

Determinants of competitiveness	Undifferentiated primary commodities	Differentiated primary products	Semi-processed products	Consumption-ready products
Natural resource advantage, factor endowments	Generally critical		Little importance, but varies with the mobility of primary outputs	Little importance, but varies with mobility of primary and semi-processed products
Human capital and managerial expertise	Some importance, especially for production technology		Great importance: Skills are critical in organizations and coordination of activities	
Quality-enhancing technology	Some importance	Some importance	Great importance: End-use characteristics most important	
Product characteristics and nonprice factors	Some importance: Grades and standards provide information	Moderate importance: Product differentiation possible through quality differences	Great importance: Degree of product differentiation often determines the amount of value added	

Source: Staatz 2011.

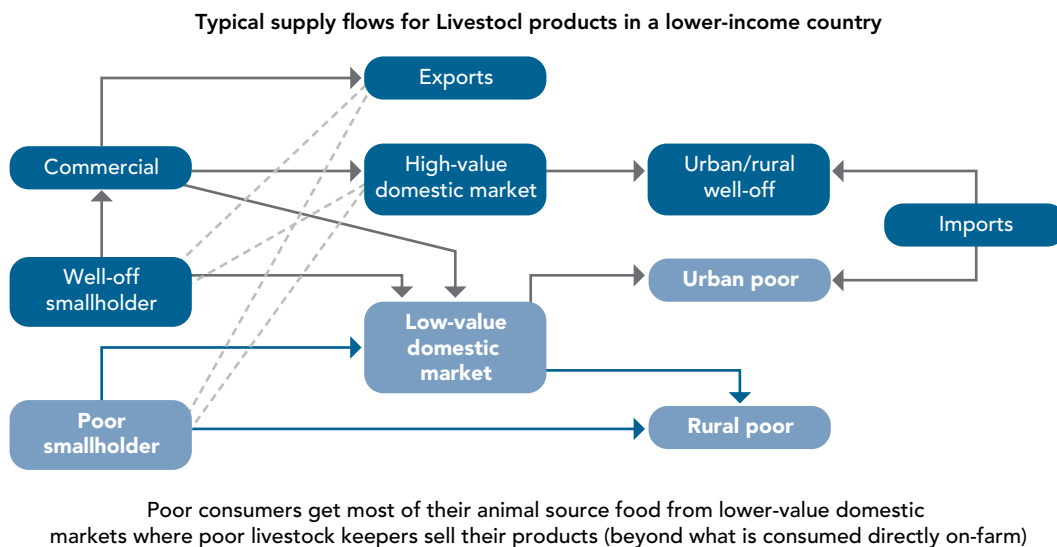
¹⁰ This type of vertical coordination can be led by a buyer (a supermarket, for example), producer (a plantation), or intermediary (an exporter) (Vorley, Lundy, and MacGregor 2009).



products via cool chains for sale to Kenya's higher-income urban consumers through supermarkets (Figure 2.4). Likewise, despite a large and successful fruit and vegetable export chain dominated by medium to large enterprises, over 95 percent of Kenya's fresh fruits and vegetables are produced for domestic markets and handled largely by an informal value chain of smallholders and SMEs.¹¹ Dualistic supply structures also exist where a few large firms (plantations) provide a bulk commercial product alongside an artisanal sector serving local rural markets and higher-income urban consumers. A good example is palm oil in West Africa, where oil harvested from wild trees and processed traditionally commands a higher market price.

Development impacts from agribusiness investments also depend on interactions between informal and formal value chains. The sheer size of the informal value chains means that progress cannot be made without improvements in their performance. Such progress is essential to generate employment and foster inclusiveness, and it often requires informal value chains to link with formal value chains to gain vital capital, skills, know-how, and market contacts. Horticulture offers good examples of how connecting smallholders to more demanding domestic and export markets for horticultural crops injects new skills and provides new markets. At the same time, agribusiness investments that bring radically new technologies and organizational innovations can threaten existing SMEs that are unable to adapt quickly enough. The nascent supermarket revolution is one example. Other examples of these tensions and appropriate policy responses are noted throughout this report.

Figure 2.4: Dual but interlinked value chains for livestock



Source: ILRI (International Livestock Research Institute). 2011. "CGIAR Research Program 3.7: More meat, milk, and fish by and for the poor." Nairobi.

¹¹ Tschirley et al. (2010).



**Bright prospects for
agribusiness**

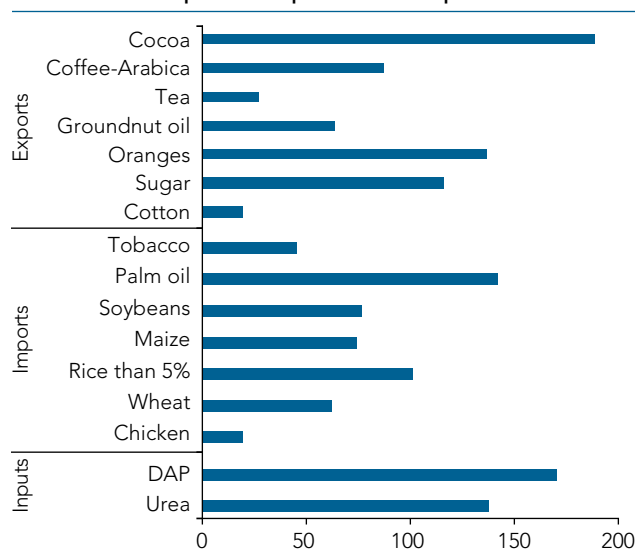
Strong market demand

Strong demand is driving global food and agricultural prices higher. Following a long period of decline, global prices of agricultural commodities have broadly risen since around 2000 (Figure 3.1) in response to continuing growth in food and feed demand, rapidly rising use of biofuel feedstocks, and slowing growth in yields. The same combination of population growth and rising incomes and urbanization will continue to drive demand, especially for vegetable oils, horticultural crops, and livestock products (with derived demands for feed), as well as some industrial inputs, such as rubber. High energy prices and national biofuel mandates place a substantial additional burden on agricultural markets to provide biofuel feedstocks.

Supply issues are also driving up prices. Among the major crops—especially rice and wheat—global yield growth has slowed sharply since the 1980s in most countries due to the exhaustion of Green Revolution technology, a slowdown in research and development (R&D) spending in many countries, and increasing land degradation and water scarcity. Climate change is creating new uncertainties about future yields, given the projections of potentially large negative effects from climate change in many developing regions. Water scarcity has become a major constraint because of competition from rapidly growing industrial sectors and urban populations. Given demand trends, all supply projections indicate that prices will be higher and more volatile relative to the past decade but probably lower than current high prices.¹²

In this new market climate, Africa has great potential for expanding its food and agricultural exports. African countries have big opportunities to export into international markets. Almost all successful cases of African agricultural exports involve commodities—cocoa, coffee, cotton, tobacco, tea, groundnuts, cashews, rubber, and more recently horticultural crops—that tend to be grown in restricted areas with specialized agro-climatic characteristics, which limits global supplies. Many of these commodities also require large amounts of labor and/or land for production or processing, which gives a clear advantage to African producers with plentiful low-cost labor

Figure 3.1: Percent change in real commodity prices of key African agricultural exports, imports, and inputs, 2000–10



Source: Authors' calculation, based on World Bank data.

Note: DAP = diammonium phosphate.

¹² OECD/FAO (2011); Nelson et al. (2010).

Box 3.1: Explosion of urban food markets

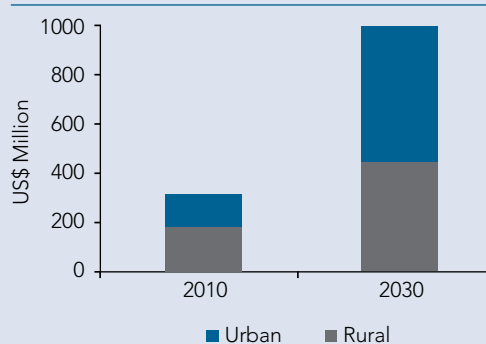
Africa is poised for unprecedented growth in food markets. Assuming that the 6 percent growth target set by the New Partnership for Africa's Development is met to 2030, and marginal expenditures on food are at 0.5 (down from about 0.6 currently), total food and beverage markets in Sub-Saharan Africa will reach US\$ 1,000 billion by 2030, up from US\$ 313 billion currently.^a This market, assuming a net agricultural trade deficit is converted from US\$ 10 billion currently to a US\$ 20 billion surplus in 2030, would provide agricultural value added in the region of US\$ 500 billion relative to US\$ 150 billion now. The majority

of the increase in food consumption will occur in cities. Based on United Nations projections of urbanization and assuming that the per capita value of food consumption is 25 percent higher in urban areas than rural areas, the urban market is set to expand fourfold in 20 years. In other words, commercial value chains, including processing, transport, and retail networks, must be in place for an additional urban food and beverage consumption of about US\$ 400 billion. This scenario represents an exciting growth opportunity for all types of firms.

Source: Authors' calculations.

^a Value added and household expenditure data taken from African Development Indicators. The share of food and beverages in expenditures is based on De Hoyos and Lessem (2008) for Africa. The estimated share of food and beverages in total consumption in 2030 is 0.53, consistent with De Hoyos and Lessem's data for middle-income countries, implying an income elasticity of demand of 0.8. The estimates are consistent with McKinsey (2010) estimates for all of Africa.

Projected value of food markets, Sub-Saharan Africa



and/or land. In the long run, given the more favorable outlook for world markets, African countries with relatively good land and water resources and low population density should be able to tap booming markets in rice, maize, soybeans, sugar, palm oil, biofuel, and feedstocks and emerge as major exporters of these commodities on world markets, following the example of recent successes in Latin America and Southeast Asia.¹³ One new foreign investor in Africa when interviewed stated, “The time has come for African agriculture. Southeast Asia has become crowded, competitive, and expensive for doing agribusiness, chipping away at profit margins. We see higher profit potential in Africa for exports—and for domestic sales.”

With urban food markets set to quadruple over the next two decades, domestic and regional markets offer the most attractive opportunities for African producers in the medium term. Domestic and regional markets for food staples are already large in Africa, but they are growing rapidly, fueled by population growth and rising incomes. A rapidly increasing share of output will

¹³ See World Bank (2009); Binswanger-Mkhize (2009).

be commercialized as the continent becomes more urbanized. The urban population of Sub-Saharan Africa is projected to double by 2030, and with per capita income growing by 4 percent per year, urban food markets are set to quadruple (Box 3.1). If business as usual persists, imports will contribute significantly to those markets, despite the inherent comparative advantage of many African countries in agriculture.¹⁴

The explosion of urban markets provides unprecedented opportunities for upstream and downstream agribusiness industries. Urban consumers' demand for more processed and convenience foods will generate demand for the food manufacturing and services sector. McKinsey estimates that the growth of these sectors in Africa will be equivalent to about one-third of the increase in the value of agricultural production (McKinsey 2010). A more commercialized agricultural sector also generates demand for upstream industries providing seed, fertilizer, machinery, and associated services.

The diversity of Africa's agriculture and climate provides major opportunities for regional trade. At around US\$ 1 billion, the total intraregional trade in food staples is a tiny fraction of Africa's US\$ 25 billion food import bill. Many of the same food crops are grown throughout large parts of Africa, yet clear differences between countries in patterns of comparative advantage provide opportunities for regional trade. Using revealed comparative advantage, Diao et al. (2007) identified 29 food commodities exported in significant quantities by countries *within the region* alongside countries that import significant quantities, which provide the potential for intraregional trade. Regional trade could help to smooth the impacts of drought on production and prices at country and sub-regional levels, since production and rainfall are often weakly correlated even within a subregion.¹⁵

New markets are also emerging. Recent initiatives to scale up production of biofuels using sugarcane, cassava, palm oil, and jatropha in Sub-Saharan Africa provide new markets for these commodities. McKinsey (2010) has estimated that the regional biofuel market could reach US\$ 11 billion by 2030. An additional consideration is that most African countries enjoy special trade preferences with the European Union (EU), and a significant share of agribusiness investment in the region aims to produce biofuels for export to that market.

Positive factors on the supply side, too

Africa is land rich. At a time when much of the world, especially Asia, faces an acute scarcity of land and water to expand agricultural production, Africa has an abundance of both. Many private companies interviewed for this report pointed to the growing scarcity and rising cost of land in Asia. Almost half of the world's uncultivated land considered suitable for expanding crop production—nearly 450 million hectares that is not forested, protected, or densely populated—is in Africa.¹⁶ This area is more than double the currently cropped area. Just eight countries contain two-thirds of this

¹⁴ Nelson et al. (2010).

¹⁵ Haggblade (2010).

¹⁶ Deininger and Byerlee (2011).



Table 3.1: Current yield relative to estimated potential yield

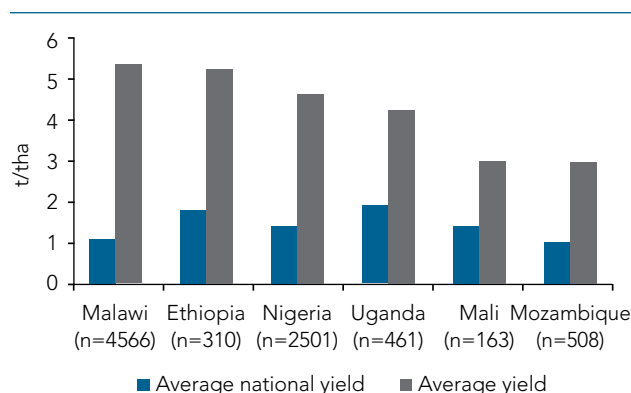
Country/region	Maize	Oil palm	Soybean	Sugarcane
Sub-Saharan Africa	0.20	0.32	0.32	0.54
Asia	0.62	0.74	0.47	0.68
South America	0.65	0.87	0.67	0.93

Source: Deininger and Byerlee 2011.

uncultivated land (Sudan, South Sudan, Democratic Republic of Congo, Mozambique, Madagascar, Zambia, Angola, and Tanzania), although it is often in places far from ports and roads.

Africa has scarcely tapped its water resources. Sub-Saharan Africa uses less than 2 percent of its renewable water resources, against a world average of 5 percent. Irrigation development in Africa, at less than 5 percent of cultivated area, lags every region of the world by far. Three countries (Sudan, South Africa, and Madagascar) account for two-thirds of the currently irrigated area, and only about half of this area is equipped for full or partial irrigation. Total economically exploitable irrigation potential is estimated to be at least 39 million hectares—four times the current level.¹⁷ Although a number of basins are experiencing or approaching water scarcity, the problem generally is not absolute scarcity as much as a lack of storage capacity.

Africa's crop yields are way below potential. Crop models show that current maize yields reach only 20 percent of potential yields and that cash crops yields reach 30–50 percent. These gaps far exceed those in other regions (Table 3.1). Hundreds of thousands of on-farm demonstrations in Africa using “best bet” technologies for maize also suggest a wide yield gap of 60–80 percent (Figure 3.2). An important consideration, however, is that Africa will be affected more than any other region by climate change. Large areas of Southern Africa are already subject to more frequent drought and heat stress. Another consideration is Africa's high level of post-harvest losses, which were recently estimated at around 15–20 percent for cereals and higher for perishable products.¹⁸

Figure 3.2: Exploitable yield gaps are high for maize in Africa

Source: World Bank 2007c.

Note: n=number of plots. Open-pollinated improved varieties in all cases except Nigeria, which uses hybrids. Data for 2001 for Ethiopia, Mozambique, Nigeria, and Uganda; 2002 for Malawi; and an average of 2001, 2002, and 2004 for Mali.

¹⁷ World Bank (2007c).

¹⁸ World Bank, NRI, and FAO (2011).

A better policy environment and strong private sector interest

The macro-economic environment for business investments has improved dramatically. From the 1960s to the 1980s, poor macro-economic policy was especially damaging to a tradable sector such as agriculture, along with high taxation of the sector to raise government revenues through export taxes or to keep food prices low for urban consumers. In 1980–84, governments plundered African agriculture with an average price of exportables that was only about half of the world price equivalent; this fell to a 19 percent equivalent tax in 2000–04 but remained the highest of any region. Although policy reform at the macro level is unfinished in much of Africa, overall investment incentives have improved dramatically.

Reforms at the sectoral level have also progressed but at a much slower pace. Most parastatal operations in agricultural markets have been scaled back. Even so, market interventions in several countries in the form of border restrictions and government purchases and sales of food staples continue to undermine private investment in food markets. Likewise, public expenditures on agriculture, which declined to only 4 percent of budget expenditures in the early 2000s, are only beginning to rise.¹⁹ Part of the increase has been in the form of input subsidies, however, rather than investments in public goods such as roads and R&D.

Africa has significant locational advantages, real and potential. Much of Africa is physically close to big markets in the Middle East and Europe. Some countries already capitalize on low backhaul air freight charges to Europe to export horticultural products. Better road networks and transport corridors are opening new markets; examples include exports into the Persian Gulf market from western Ethiopia via Port Sudan and the nearly completed Abidjan–Lagos highway. The creation of regional free trade zones progressed significantly—including the Economic Community of West African States (ECOWAS), Common Market for Eastern and Southern Africa (COMESA), and Southern African Development Community (SADC)—although much remains to be done to make them truly operational. Special EU and United States trade preferences provided to most African countries provide further opportunities in new products such as biofuels and horticultural crops.

Private investment into emerging agribusiness markets is booming. Agriculture and associated industries are now favored sectors for foreign direct investments, private equity investments, and sovereign wealth funds. Total foreign direct investment flowing into agriculture and agribusiness in developing countries was estimated at around US\$ 13 billion for 2006–07.²⁰ While much of this investment is targeted to Brazil and other Latin American countries, investors are also flocking to Africa, which received about US\$ 1 billion in that period. Investment has been even more active since the 2008 food crisis, especially direct investment in farmland, although often to the detriment of local communities.²¹ While nongovernmental organizations (NGOs) fostering private sector partnerships in Africa are enthusiastic about the interest of private investors, experience

¹⁹ ReSAKSS (2011).

²⁰ Miller et al. (2010).

²¹ Deininger and Byerlee (2011).



shows that speculative land investments do not automatically benefit local populations and end up compromising the rights of local communities. One NGO interviewed for this report observed that “Africa is where agribusiness innovation is going to happen” and equated current conditions to those in Thailand and Vietnam in the years when their agribusiness industries started to take off.

Potentially large development impacts from inclusive growth

Agribusiness in Africa will undergo a major structural transformation in the coming years. To generate the jobs, incomes, and food so badly needed by Africa’s growing population over the next 20 years, agro-industries need to undergo a structural transformation as profound as that required of farming. As discussed, the transformation of agro-industries and farming are inextricably linked, and the growth of vibrant agro-industries is essential to offer employment for the large number of smallholder farmers who are unlikely to farm their way out of poverty.²²

Agro-based industry can kick-start the development of broader manufacturing. On the one hand, agro-industry encourages locally based supply chains to develop; on the other, the agricultural sector provides material inputs for most early stage manufacturing, such as food processing, textiles, and leather. The lack of cheap and reliable supplies of such inputs is often the single largest constraint on the development of a competitive light manufacturing sector.²³ Agro-based industries can also provide the skills, services, and infrastructure for wider industrial development, especially if they are clustered. Examples include the palm oil clusters in Southeast Asia, which have led to downstream food industries; the maize-soy-poultry complex behind growing poultry exports from Thailand and Brazil; the sugarcane cluster in Brazil, which supplies the ethanol industry; and Pakistan’s textile exports based on domestic cotton. In Brazil, it is estimated that districts where rapid sugarcane expansion occurred have built infrastructure and experienced an economic growth rate that is 0.5 percentage points higher than in comparable districts with little or no expansion.²⁴ Sugarcane is four times more labor intensive than the cattle industry it replaces.²⁵

Such clusters are in their infancy in much of Africa. For example, a global agricultural processor commented that one challenge that it and its partners had to overcome in establishing a new cocoa-processing plant in Kumasi, Ghana was the small size of the city’s industrial base.

Dynamic value chains that link to smallholders have the broadest benefits. Given the dominance of smallholders in all African countries, broad-based economic growth will depend on connecting smallholders to markets. The state’s failure to provide basic agricultural services, along with the lack of financial markets for deepening agricultural investments, opens opportunities for agribusiness to enter into contractual and other types of partnerships with smallholders to source raw materials. This setup works best where immediate post-harvest aggregating, processing, packing,

²² Staatz (2011:86).

²³ World Bank (2012b).

²⁴ Deuss (2011).

²⁵ Martinelli et al. (2011).



or shipping facilitate the enforcement of contracts, such as with sugarcane, tea, oil palm, and fresh horticultural and dairy products (see “Making agribusiness inclusive,” p. 100).

Where smallholder production is not efficient, agribusiness investments can create good jobs. Smallholders find it difficult to participate in some industries in which demanding standards prevail, such as fresh horticultural and floricultural exports, or in which processing benefits from large-scale production, such as sugarcane. These industries are typically labor intensive, however, and create jobs. For example, horticulture requires 3–5 times more labor per hectare than traditional smallholder agriculture. Even large-scale plantations such as sugarcane and oil palm plantations can be quite labor intensive. Realizing the benefits of these industries requires investors to respect the land and water rights of local communities, uphold labor standards, implement appropriate environmental safeguards, and build “social capital.”

Box 3.2: Thai agribusiness as a model for Africa

As Africa’s share of world agricultural markets has declined, Thailand’s share has risen. The value of agricultural exports from Thailand (a country of 66 million people) now exceeds that of all Sub-Saharan Africa (a region of more than 800 million people).

Thailand started developing a competitive commercial agribusiness sector by using its ample land and labor resources to export bulk commodities. It currently leads the world in three of them—rice, rubber, and cassava—and is the world’s second-largest sugar exporter. By moving into higher-value and value-added exports over time, Thailand has become a leading exporter of poultry, pineapples, other fruits and vegetables, and prepared foods, occupying top place for exports of several processed foods.

Although Thailand forbids foreign investment in farming, agribusiness investments have played a major role in this transformation. The Government of Thailand has strongly supported farming and agribusiness by maintaining a consistent policy of giving a leading role to the private sector. Initially led by foreign investors, Thailand is now home to its own multinational agribusinesses, such as Charoen Pokphand, a giant animal feed, poultry, aquaculture, food processing, seed, and food retailing enterprise. Additional support came from the Bank of Agriculture and Agricultural Cooperatives, a state bank that lends to the majority of farmers. Thailand was also the first country in Southeast Asia to implement a nationwide land titling program, providing security to farmers and investors. After acquiring its initial competitive edge through land and labor expansion, Thai agribusiness has maintained a competitive position since the 1990s through sharp increases in agricultural productivity.

Medium-scale farmers with 5–15 hectares have led the commercialization of the sector and stimulated a vibrant agribusiness sector consisting of small and medium enterprises. In central Thailand, these enterprises include construction operations, rice and sugar mills, cassava brokers, producers of cassava pellets for export, metal workshops and agricultural equipment manufacturers, as well as livestock feed mills and village shops.

Source: Leturque and Wiggins 2010; Roepstorff, Wiggins, and Hawkins 2011; World Bank 2009.



Other regions provide good examples of industrialization based on agriculture. In Thailand, successful agribusiness and agro-industry (Box 3.2) helped reduce rural poverty sharply from 60 percent in the 1960s to 10 percent in recent years. Malaysia and Indonesia also have become global players in agricultural markets while sharply bringing down poverty. In Latin America, although Brazil is the most successful example of a country that created a globally competitive agro-industry and is often held up as a model for Africa, Brazil's dependence on large capital-intensive farms means that its success in agricultural growth has translated poorly into poverty reduction.²⁶ Within Africa, Kenya and (until the 2000s) Côte d'Ivoire have had the most developed commercial agricultural and agro-industrial sectors and have provided many lessons for other African countries.

²⁶ World Bank (2009).



A photograph of a man in a checkered shirt and a cap pushing a bicycle heavily laden with green bananas on a dirt road. The bananas are stacked high, covering the front and back of the bike. The background shows a rural setting with houses and trees.

Overall performance
has lagged

Despite the immense opportunities described in the previous chapter, the performance of agriculture and agribusiness has been disappointing based on such measures of competitiveness as export shares and productivity growth. Given the paucity of statistics on agribusiness per se, much of this chapter focuses on agriculture as a proxy for the combined performance of the agricultural and agribusiness sectors.

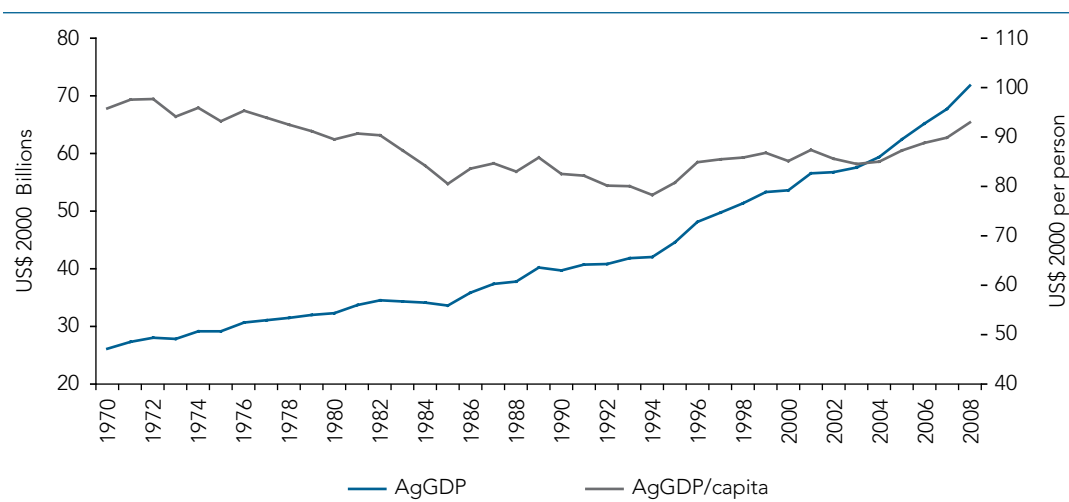
Growth

Agricultural growth turned the corner in the mid-1990s. The high growth of African economies and agriculture in particular has been widely noted. Growth performance as measured by real agricultural GDP per capita has risen steadily since 1994, although it is still approaching levels seen in 1970 (Figure 4.1). Agricultural growth resumed largely because of greatly improved macro-economic policies, reduced taxation of the sector, higher international commodity prices, and fewer civil conflicts. These broad trends hide wide variations in performance, however, as some countries continue to show negative per capita agricultural growth in the 2000s.

Trade

Africa has converted from a net exporter to a net importer of agricultural products. Up to the early 1990s, Sub-Saharan Africa as a whole was a significant net exporter of agricultural products. With the resumption of growth and the mineral commodity boom in the 2000s, imports have risen sharply to exceed exports by over 30 percent (Figure 4.2). Wide differences exist among countries,

Figure 4.1: Trends in agricultural GDP and per capita agricultural GDP in Sub-Saharan Africa

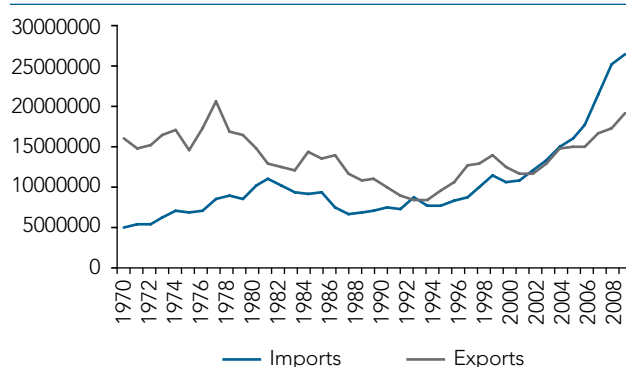


Source: World Bank Indicators.

however. Three countries stand out for their strong export orientation (Côte d'Ivoire, Malawi, and Kenya), whereas a number of mainly mineral-dependent economies are large net importers (Figure 4.3).

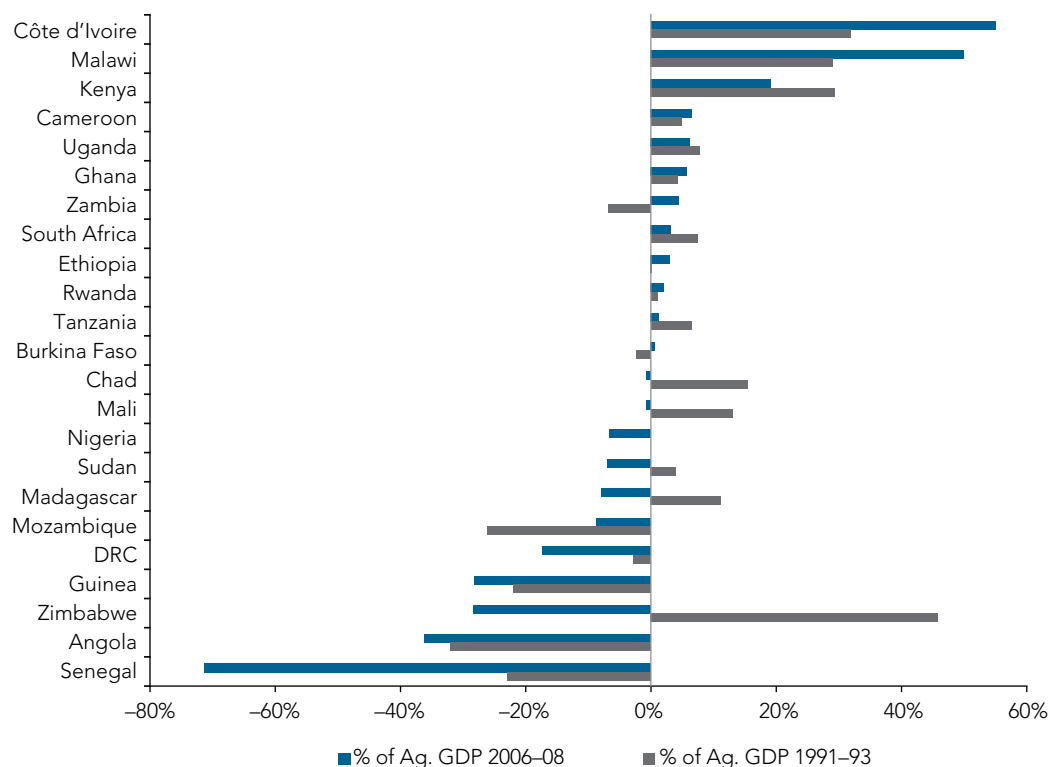
Africa has steadily lost competitiveness in global export markets over the past 50 years. A crude measure of competitiveness is a region's or country's share of global export markets. While Africa had 12.1 percent of the world's population and contributed 5.3 percent of agricultural GDP in 2009, its share of global agricultural exports has fallen to 2.0 percent in comparison to 7.6 percent in the early 1960s (Figure 4.4). Most of this decline occurred prior to the structural adjustment period, but it has continued since 2000, even as global export market shares captured by countries in Latin America and Asia have

Figure 4.2: Value of agricultural exports and imports, Sub-Saharan Africa (1970–2009)



Source: Authors/FAOSTAT (South Africa excluded).

Figure 4.3: Net agricultural exports as a share of agricultural GDP



Source: FAOSTAT.

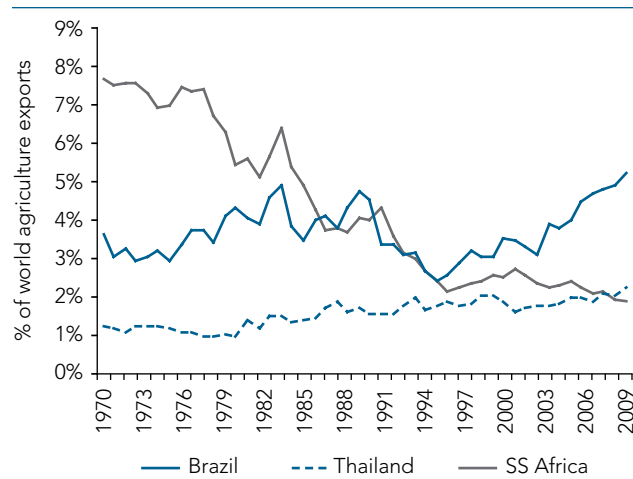
risen steeply. The value of agricultural exports from Thailand, which has less than 10 percent of Sub-Saharan Africa's population, is greater than for the whole of Sub-Saharan Africa. Likewise, the value of Brazilian exports is now 150 percent higher than the value of African exports, although it was similar to Africa's in the 1980s. Unlike their Latin American and Asian competitors, African countries have made little progress in value-added exports, beyond horticulture.

At the country level, Côte d'Ivoire, Kenya, and Zimbabwe all have been successful exporters in terms of market share and (except for Zimbabwe)

maintained their market share in recent decades (Figure 4.5). Ethiopia, Ghana, Mozambique, and Zambia stand out as African success stories in terms of significant increases in export market shares since 1991, although Mozambique and Zambia started from a very low base. Of the 24 African countries with a population exceeding 10 million, however, 15 have lost market share.

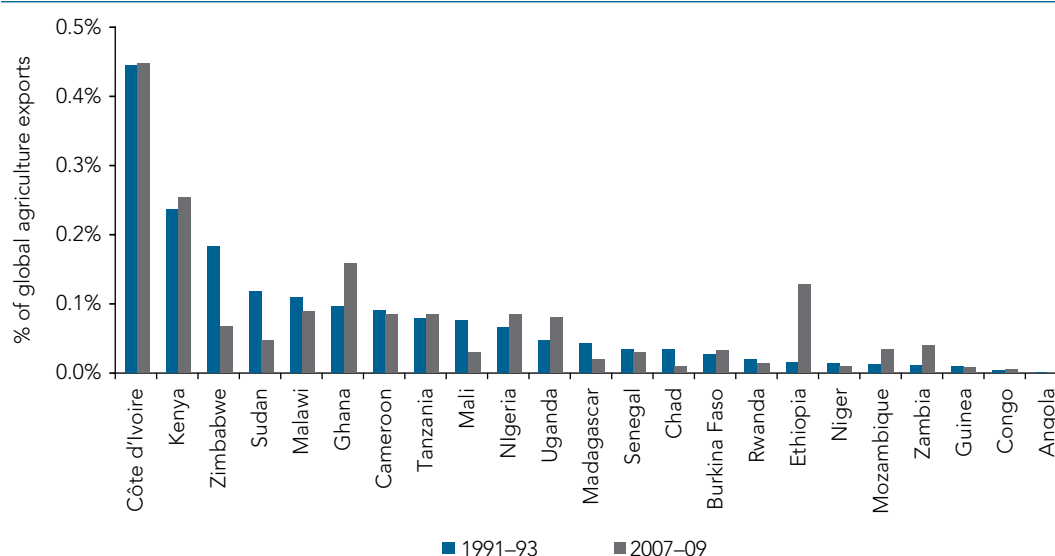
Figure 4.6 shows the region's top 10 exports, which constitute more than 80 percent of all exports. Africa had an export market share above its share in global agricultural value added in

Figure 4.4: Shares of world agricultural exports (1960–2009)



Source: FAOSTAT.

Figure 4.5: Global share of agricultural exports by country (1991–93 and 2007–09)



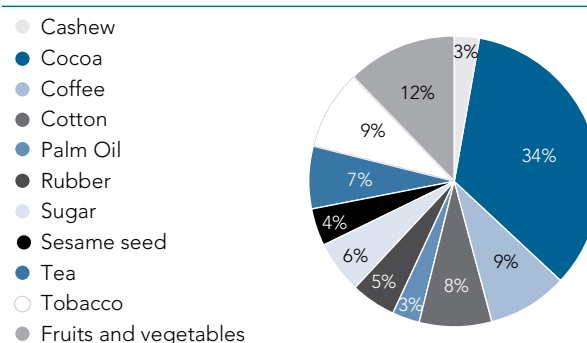
Source: FAOSTAT.

five commodities—cocoa, sesame, tea, coffee, and cotton. It has gained significant market share in tea, cashews, and sesame and lost a major share of the coffee market. Other shares have not changed much, including fruit and vegetable exports, which remain very small in relation to world exports despite considerable attention from donors and governments (Figure 4.7).

While export shares have been falling, import shares have been rising.

Food imports generally rise along with incomes, at least until middle-income status is achieved. The tragedy is that Africa's market share for imports has increased at the same time that it has lost market share in exports, contrary to the experience in Latin America and Asia, which have led world markets for both exports and imports. Of the 24 African countries with a population exceeding 10 million, 18 have increased their share of global imports. As expected, the two largest importers are oil producers, Nigeria and Angola. Since 1991, Africa's share of global imports increased for all commodity groups except maize. Africa's rapidly rising imports of rice, wheat, and sugar are now each approaching a 10 percent share in global trade in those commodities (Figures 4.8). On the livestock side, imports of milk products and poultry have risen rapidly to surpass US\$ 2 billion in recent years (Figure 4.9). Africa, with its cheap labor and plentiful land, should have a natural comparative advantage in many of these products (except for wheat, a temperate-zone crop). Africa is also a growing importer of processed foods. For example, it imports nearly US\$ 400 million of processed fruit juices and canned fruits and vegetables, suggesting major agribusiness opportunities to develop local processing capacities.

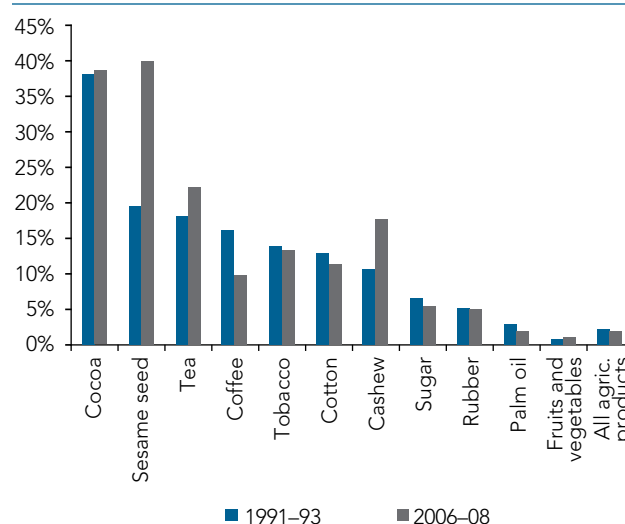
Figure 4.6: Composition of Sub-Saharan Africa's exports by commodity, share of total value (2007–09)



Source: FAOSTAT.

Note: Tobacco = unmanufactured; cocoa = beans and semi-processed; cashew nuts = shelled and with shell; rubber = natural dry rubber; coffee = green coffee; sugar = raw centrifugal and refined; and cotton = cotton lint.

Figure 4.7: Sub-Saharan Africa's share of world exports by commodity (raw and processed) (1991–93 and 2006–08)



Source: FAOSTAT.

Note: Tobacco = unmanufactured; cocoa = beans and semi-processed; cashew nuts = shelled and with shell; rubber = natural dry rubber; coffee = green coffee; sugar = raw centrifugal and refined; and cotton = cotton lint.

Productivity

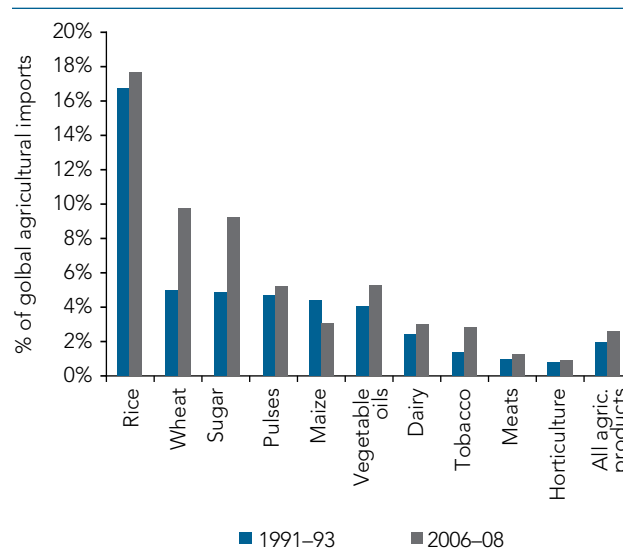
Africa's poor competitiveness largely reflects its low productivity and slow productivity growth over a wide range of products and subregions.

Crop and livestock yields in Sub-Saharan Africa are low and have increased at less than half the rate of other regions. Yields of the

14 most important food crops in Africa are often half or less than those obtained in Asia and Latin America; over the past two decades, the yield gap has widened for 12 of these products (Figure 4.10). Likewise for cash crops, yields of tobacco, rubber, coffee, cotton, and oil palm are less than half of the average for the rest of the world, and yield growth has been slower²⁷ (Figure 4.11). Tea is the major exception, as discussed later. Even if comparisons are standardized for rainfed conditions prevalent in Africa, the differences still hold (Figure 4.12). Rice has apparently made good progress very recently, but it is far too early to say whether a structural shift is occurring (see "Rice," p. 34). Finally, livestock yields also lag, especially milk yields (Figures 4.13 and 4.14). Although low and stagnant yields generally underlie the lack of competitiveness, they also signal an opportunity to exploit large yield gaps to improve competitiveness.

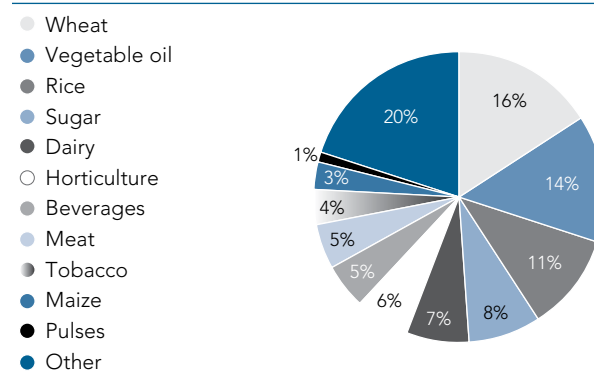
Agricultural growth has largely been driven by area expansion. All estimates indicate that total factor productivity (TFP) growth in African agriculture has lagged other regions, averaging

Figure 4.8: Africa's shares of global imports for top 11 imports (raw and processed) (1991–93 and 2006–08)



Source: FAOSTAT.

Figure 4.9: Composition of Africa's imports by commodity group (total: US\$ 24 billion) (2006–08)



Source: FAOSTAT.

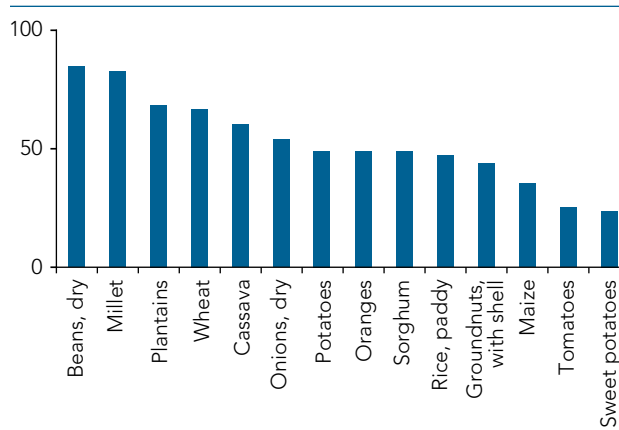
²⁷ Yams are important in Africa, but since African species differ from those produced in other regions, they are excluded from this comparison. Some yields are not strictly comparable—most oil palm in Africa is wild, for example.

around 1 percent annually since 1990 (Figure 4.15). Compared to the negative TFP performance in the 1970s, however, the recent growth rates represent a significant acceleration, which is largely attributed to more favorable price policies (Table 4.1).²⁸ With low growth of TFP and inputs, area expansion has accounted for two-thirds of the growth in agricultural output (Table 4.1). This growth strategy is not sustainable. It has mined soil fertility, putting future productivity growth at risk, and has often come at the expense of Africa's forests.²⁹

As expected for a very large and diverse continent, Africa's productivity performance has been heterogeneous, reflecting a wide variety of factors, including underlying resource endowments, the policy environment, and conflict. In Eastern and Southern Africa, Kenya has been a consistently good performer; in West Africa, productivity has been better in the coastal countries. Investments in R&D (national and international), roads, conflict resolution, and disease control explain differing patterns of growth.³⁰

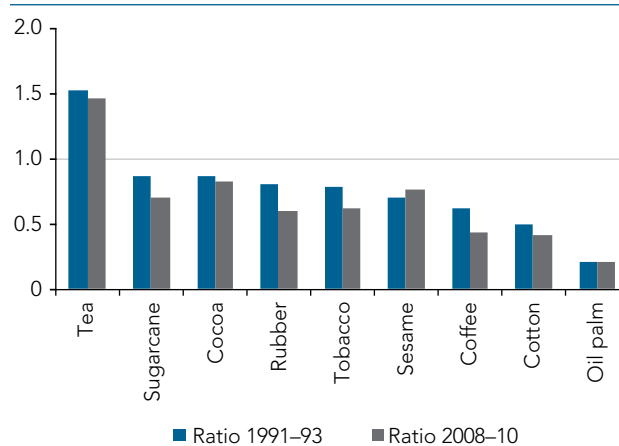
The bottom line is that Africa is losing competitiveness in its largest sector and one with major potential for growth. Africa's improved performance since 1995 has been achieved largely by the expansion in agricultural area, driven in part by stronger commodity prices. With rapid urbanization and buoyant world markets, Africa has reached a crucial juncture for transitioning to a productive and competitive agricultural and agribusiness sector. Several

Figure 4.10: Index of food crop yields in Africa relative to the rest of the developing world (=100) (2008–10)



Source: FAOSTAT.

Figure 4.11: Ratio of cash crop yields in Africa vs. Asia and Latin America



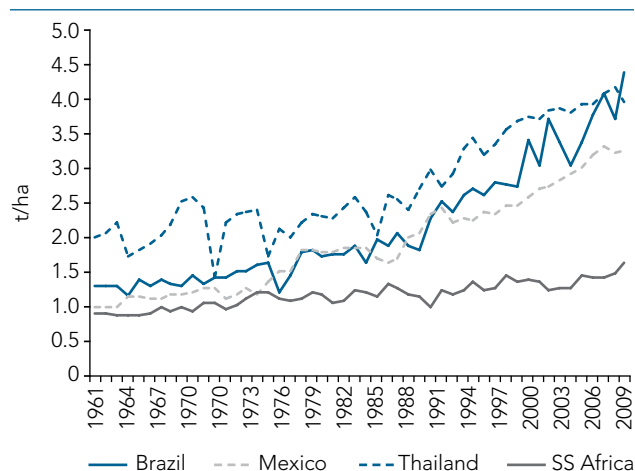
Source: FAOSTAT.

²⁸ Nin-Pratt (2011).

²⁹ It is estimated that about 8 million tons of nutrients are extracted from African soils, several times the 1.2 million tons of fertilizer applied (Sanchez 2002).

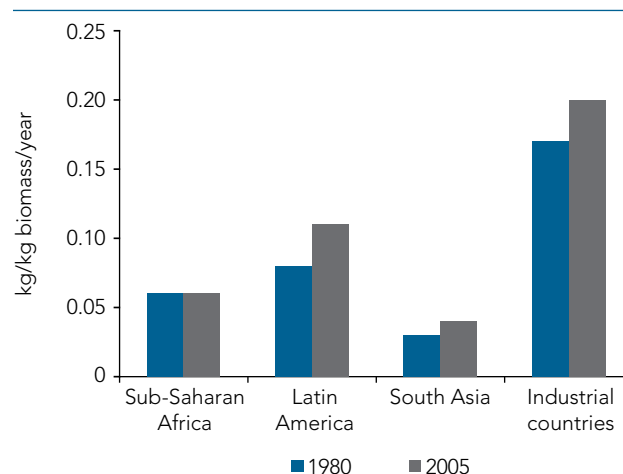
³⁰ Fuglie and Rada (2011).

Figure 4.12: Sub-Saharan Africa maize yields relative to non-African countries with rainfed maize production (1961–2010)



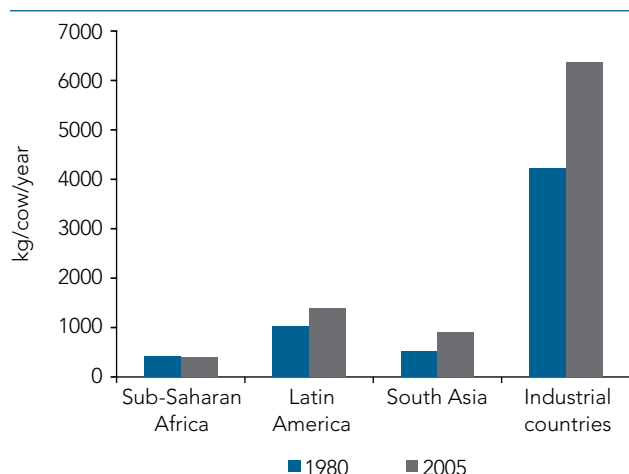
Source: FAOSTAT.

Figure 4.13: Change in livestock productivity, meat (1980–2005)



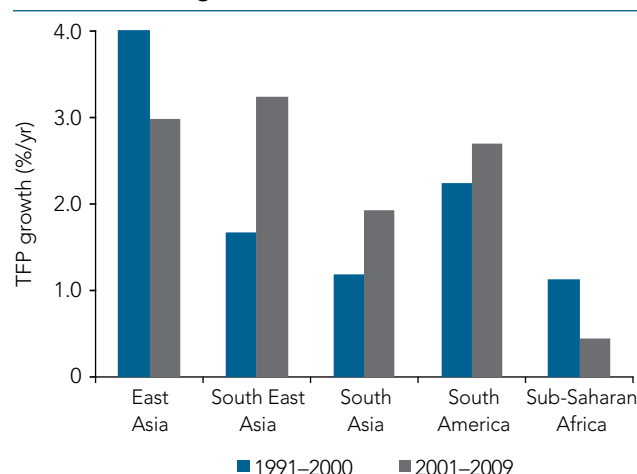
Source: ILRI 2011.

Figure 4.14: Change in livestock productivity, milk (1980–2005)



Source: ILRI 2011.

Figure 4.15: TFP growth in Africa lags other regions



Source: Fuglie, personal communication, based on Fuglie 2010.

countries have made good progress and increased their share of global export markets, but these gains must be consolidated through higher and sustained productivity growth. Development of a competitive agribusiness sector will be critical to supply rising demand for processed foods and higher-value products.

Table 4.1: Decomposition of agricultural growth in Sub-Saharan Africa (not including South Africa)

Growth rate of:	1991–2000 (%/yr)	2001–09 (%/yr)
Agricultural output	3.16	2.61
Land area	1.88	1.77
Irrigation	0.03	0.00
Output per unit area	1.25	0.83
Of which:		
Inputs	0.10	0.37
TFP	1.15	0.46

Source: Fuglie 2011.





Constraints to agribusiness identified through specific value chains

Constraints on African agriculture and agribusiness have been widely analyzed. Analyses have commonly noted:

- Problematic and erratic policies in agricultural output/input markets (see Brenton, 2012).
- A weak investment climate for agribusinesses investing in downstream processing and related activities (see Yumkella et al. 2011).
- Weak infrastructure and high transportation costs (see World Bank 2010).
- Difficulties for investors to access secured and tradable land rights and for governments to protect the rights of smallholders at the same time (see Deininger and Byerlee 2011).
- Difficulties for smallholders and small firms to access technology, skills, and finance (see World Bank 2007d).

The following chapter discusses these generic constraints and possible ways to remove them in more detail. This chapter analyzes how such constraints affect the performance of different types of agribusiness value chains in selected countries. The discussion has been organized in this way for two reasons. First, linking constraints to specific value chains provides a better understanding the nature of the constraints. Second, so-called generic constraints are not equally relevant for all value chains and are expressed differently in specific value chains. That is, the priority constraints to be addressed are often specific to a value chain.

For the discussion in this chapter, five value chains were reviewed to represent a sampling of different types of industries, varying in their market orientation, production structure, and product transformation (Table 5.1). All of the industries have been expanding relatively rapidly over the past 20 years. In the case of rice, detailed field visits were made to collect data and interview industry participants (details are provided in Annex 1, www.worldbank.org/africa/agribiz).³¹ For the other value chains (maize, cocoa, dairy, and green bean exports), the reviews depended on value chain analyses from secondary sources, which was a major factor in the selection of a focus country. The selection of industries and countries is by no means representative—rather, it represents a cross section of the challenges facing the development of agribusiness supply chains.

Rice: Lack of seed, irrigation, and mechanization

Major trends in the rice sector

Africa has become a major consumer and importer of rice. With growing incomes and urbanization, the urban population has sought convenience in food preparations using rice at the expense of traditional grain and root staples. Africa has also experienced rapid growth in rice production (Figure 5.1) as rice area expanded (and very recently as yields improved impressively, albeit from a

³¹ It should also be noted that this work will need to be complemented by a more comprehensive collection of data and detailed analysis.



Table 5.1: Overview of production, consumption, and trade of case study commodities

	Rice		Maize	Cocoa	Dairy	Green beans
Country	Ghana	Senegal	Zambia	Ghana	Kenya	Kenya
Main market	Domestic food staple	Domestic food staple	Domestic food staple	Traditional export	Domestic high value	Non-traditional export
Farm size structure	Small	Small	Small, few large	Small	Small and large	Mostly medium and large
Product perishability	Low	Low	Low	Low	High	High
Degree of product transformation	Simple milling	Simple milling	Simple milling	First stage grinding	Varies from raw milk to complex processed products	Post-harvest cleaning, grading, and packing
Production, value, million PPP \$ ^a (avg. 2006–08)	82	103	222	694	1,278	15
Net exports, value, million US\$ (avg. 2006–08)	–164	–386	26	1,105	9	49
Net exports as % of production (avg. 2005–07)	–166%	–328	7	89	0.2	90+
Annual production growth (1990–2009)	4.9%	3.6%	2.2%	5.7%	3.9%	4.0%
Annual growth in per capita food supply (1990–2007)	4.1%	1.2%	–1.5%	—	0.2%	—

Source: Calculated from FAOSTAT and authors' estimates.

^a PPP = purchasing power parity.

low starting point). Despite its achievements on the supply side, Sub-Saharan Africa depends heavily on rice imports from outside the continent, and, in recent years, imports of milled rice have constituted 45–50 percent of the annual 18-million-ton requirement for rice (Figure 5.1). As Africa's most important food import, at a cost exceeding US\$ 3.5 billion annually, rice represents a substantial market opportunity for farming in Africa. One estimate is that only 3.5 million hectares of the 240 million hectares suitable for wetland rice cultivation have been exploited.³²

³² Balasubramanian et al. (2007).



Higher and more efficient local production would help protect consumers from price shocks in the world markets.

Because only 6 percent of the annual worldwide production of 450 million tons of milled rice is traded internationally, the global market for rice is described as “thin” (the comparable figure for wheat is about 20 percent). Any fluctuation in rice output can have a disproportionate effect on its availability for international trade. This prospect is intensified by heavy government control of exports and outright bans. The potential for volatility became dramatically apparent in 2008, when prices spiked

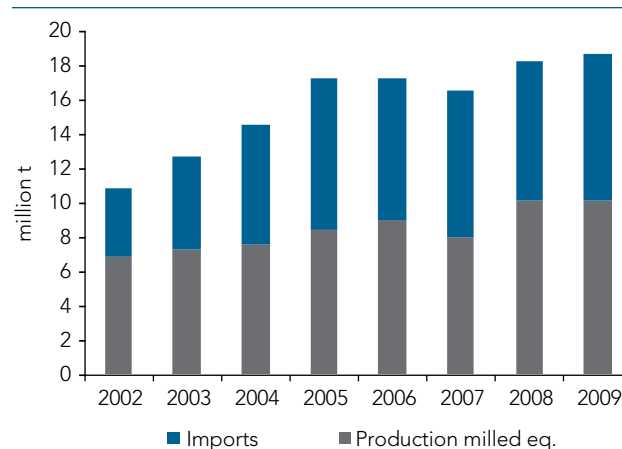
at nearly three times the level of the previous year following government intervention (rice export bans), panic, and speculation. Global rice stocks remain low, so governments are understandably concerned by price volatility. Although domestic food prices in Africa track world prices only partially, the link is stronger for rice than for any other commodity.

Rice production and consumption are quite diverse. The region has no single market for rice. Each country has its own national and sometimes local preferences for types of rice (parboiled, long-grain white, aromatic, japonica). While this segmentation gives each market a unique character, there are common themes. All countries depend heavily on imports to supplement their local production; in each country, urban markets drive the demand for imports; and local rice struggles to compete against the perceived superiority of imports in terms of variety, quality, and reliability. On the supply side, rice is grown under a wide range of conditions, from upland rainfed systems to fully irrigated intensive systems, and producers’ access to urban markets varies widely as well.

Benchmarking rice value chain costs in Ghana and Senegal against costs in Thailand

Where should improvements focus to achieve efficiencies and savings in the African rice supply chain? A first step in answering that question is to benchmark cost structures for a given level of quality in individual rice-growing countries in Africa against the costs for their overseas suppliers. Ghana and Senegal were chosen for review, because they import significant quantities of rice (Table 5.2), and were then benchmarked against Thailand, the world’s largest rice exporter and a major supplier to Africa. The international benchmarking results presented here should be seen as preliminary—they need to be completed through more comprehensive data collection and more detailed analysis, a task beyond the scope and means of this report.

Figure 5.1: Rice production and imports, Sub-Saharan Africa



Source: Accord Associates’ (or authors’) interpretation of FAOSTAT and COMTRADE Data.

Table 5.2: Rice in Ghana and Senegal

	Ghana Rice type: Aromatic and long-grain white (Whole/5%/25%) Major suppliers: Thailand, Vietnam, USA		Senegal Rice type: Broken (50% aromatic) ^a Major suppliers: Thailand, Vietnam, Brazil	
	2009	Trend	2009	Trend
Production (paddy t)	391,000 ^b	↗	502,000	↗↗
Yield (t/ha)	2.41	↗	3.60	↗
Production (milled equivalent t)	235,000	↗	301,000	↗↗
Imports (milled t)	384,000	↘	769,000	↘
Total usage (milled t)	619,000	↘	1,070,500	↘
Population (millions)	23.8		12.1	
Consumption (kg/head/yr)	26	↘	88.5	↘
% of usage imported	62%	↘	72%	↘
Value of imports (US\$ m CIF)	225	↗	327	↗
Unit value of imports (US\$/t)	585	↗↗	424	↗

Source: Production data from FAOSTAT, trade data from COMTRADE.

^a Proportion of aromatic was increasing and had reached 65% by 2008, but in 2009 high prices caused aromatic to drop to 50% of imports.

^b Trade sources dispute that local production is anywhere near this high.

Ghana produces rice in many areas, mostly under rainfed conditions, although some irrigated systems exist. Northern areas produce mostly long-grain white rice, which is brittle because it matures in hot, dry conditions. The grain is parboiled after harvest to reduce breakage on milling. Parboiled rice is consumed widely in northern Ghana, but commercial quantities do not reach the urban south, which now prefers and depends on imported aromatic rice, even though the price is substantially higher than that of imported white rice.

Thailand (and lately Vietnam) supply about half of Ghana's 350,000 tons of imported rice. This high-priced aromatic rice is branded, promoted by distributors, and increasingly sold in 5-kilogram retail packs rather than the more traditional 25- or 50-kilogram sacks. The urban market is sophisticated, segmented, and quite different from that in the North.

The cost of transportation restricts the distribution of imported rice into the interior of Ghana. In recent seasons, growers in southeastern and central Ghana have started to cultivate aromatic rice to capture some of the market for high-quality rice currently supplied through imports. Domestic production is an attractive proposition, given that imported aromatic rice has a retail value of some US\$ 280 million.

In Senegal, rice production is concentrated in two areas—in the Casamance region in the South and along the Senegal River in the far North. Rice produced in the South is mostly consumed there and not marketed in the capital, Dakar, or any of the larger towns outside the immediate production area. Irrigated rice in the Senegal River Valley is being developed further to reduce the scale of imports, which currently exceed 750,000 tons per year. Rice has become a staple in

Senegal, and national consumption of 88 kilograms per capita per year approaches consumption levels in Asia.

Owing to the strong preference for broken rice in Senegal, almost all imports are broken rice. Despite the marked preference for aromatic broken rice, prices are significantly lower than in Ghana, because broken rice is almost a byproduct of the milling industry.³³ Senegal has traditionally grown long-grain white rice varieties, but substituting for imported aromatic rice presents a significant market opportunity. Aromatic varieties were imported recently from the United States for commercial test plantings in 2011.

How do production costs in Ghana and Senegal compare to those in Thailand (one of their principal rice suppliers)? Data were collected from a number of Thai sources to benchmark African production of white and aromatic rice against matching supplies from Thailand. Three Thai rice varieties were chosen:

- Hom Mali is a fragrant variety grown exclusively in northeastern Thailand under rainfed conditions with relatively low inputs. Yields are quite low, but the rice is high value and branded as Thai Jasmine. Hom Mali rice has specific agro-ecological requirements (in particular it requires a specific day-length) and is not grown outside of the Northeast.
- The Pathumthani variety is also aromatic but grown on the Central Plains, where the bulk of Thai rice is produced under irrigated conditions that allow at least two crops per year. The quality of this variety is not considered as high as that of Hom Mali.
- Suphanburi is a typical long-grain white rice variety that is widely exported from Thailand. It is also produced in the Central Plains, with at least two crops per year.

Production costs in Senegal are comparable with those in Thailand for the varieties that are exported to Africa. Rice cultivation in the Senegal River Valley is partly mechanized, and yields in the range of 5–6 tons per hectare are comparable to yields of irrigated Thai rice. Estimates based on local trials indicate that the costs per hectare of producing aromatic rice in Senegal are no different from the costs of producing long-grain white rice, since similar husbandry is applied to both types of rice (Figure 5.2). The difference in costs per ton reflects the slightly lower yields of the aromatic types (about 0.7 of long-grain white rice), although these estimates are very preliminary. In Thailand, yields of rainfed Hom Mali are substantially lower, but the price premium more than compensates for the difference.

Lower yields drive higher costs in Ghana. Yields for Ghanaian irrigated rice average only 2.4 tons per hectare, owing largely to degraded infrastructure, inadequate land preparation, late sowing, poor weed management, and difficulty obtaining fertilizer (prices are high and availability limited). Overall, Ghanaian rice production is less mechanized. Equipment shortages are regularly blamed for delayed land preparation or harvesting. Manual clearing and rotavation with a hand tractor may cost US\$ 180 per hectare compared to hiring a tractor and plow for US\$ 35 per hectare in Thailand.

³³ In recent years, the increasing use of broken rice has reduced the discount for breakages in the output of mills.



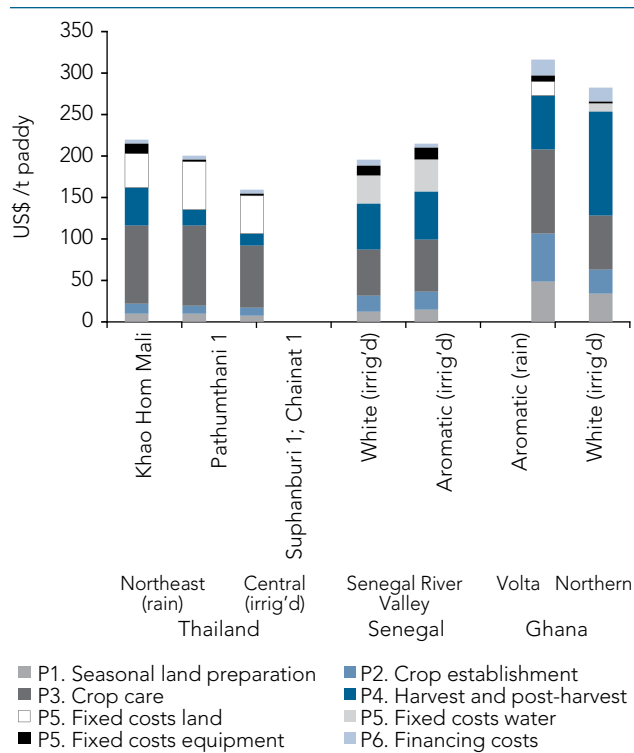
Typically, seasonal land preparation and crop establishment costs amount to about US\$ 62 per ton of paddy in Ghana versus US\$ 26 per ton in Thailand.

Land and water costs vary widely. In Thailand, water is provided at no cost to the farmer and can be considered a subsidy, whereas rental rates for land (US\$ 255 per hectare) are relatively high. In Senegal, the irrigation projects provide land for free but impose significant charges for water (US\$ 192 per hectare). In Ghana, a charge (US\$ 33 per hectare) is made for the operating costs of supplying water where irrigation is available, but often the fees are not paid.

Imported rice is expensive and local rice could compete, especially in Senegal. Figure 5.3 compares value chains leading to the consumer for similar rice varieties. Blending

Hom Mali and Pathumthani varieties somewhat reduces the cost of imported aromatic rice. Nevertheless, ocean freight and import duties, which in Ghana combine with other taxes and port fees, add almost 40 percent to the value of the imported rice and protect local producers. At current world prices and tariffs, import parity is achieved even at the high costs of Ghanaian rice. The calculations further indicate that at current prices—and even if import tariffs were reduced—aromatic rice production in Ghana and Senegal could deliver high returns to the farmer if a variety acceptable to consumers could be produced. At long-run trend prices, however, Ghanaian producers could not compete without import protection.

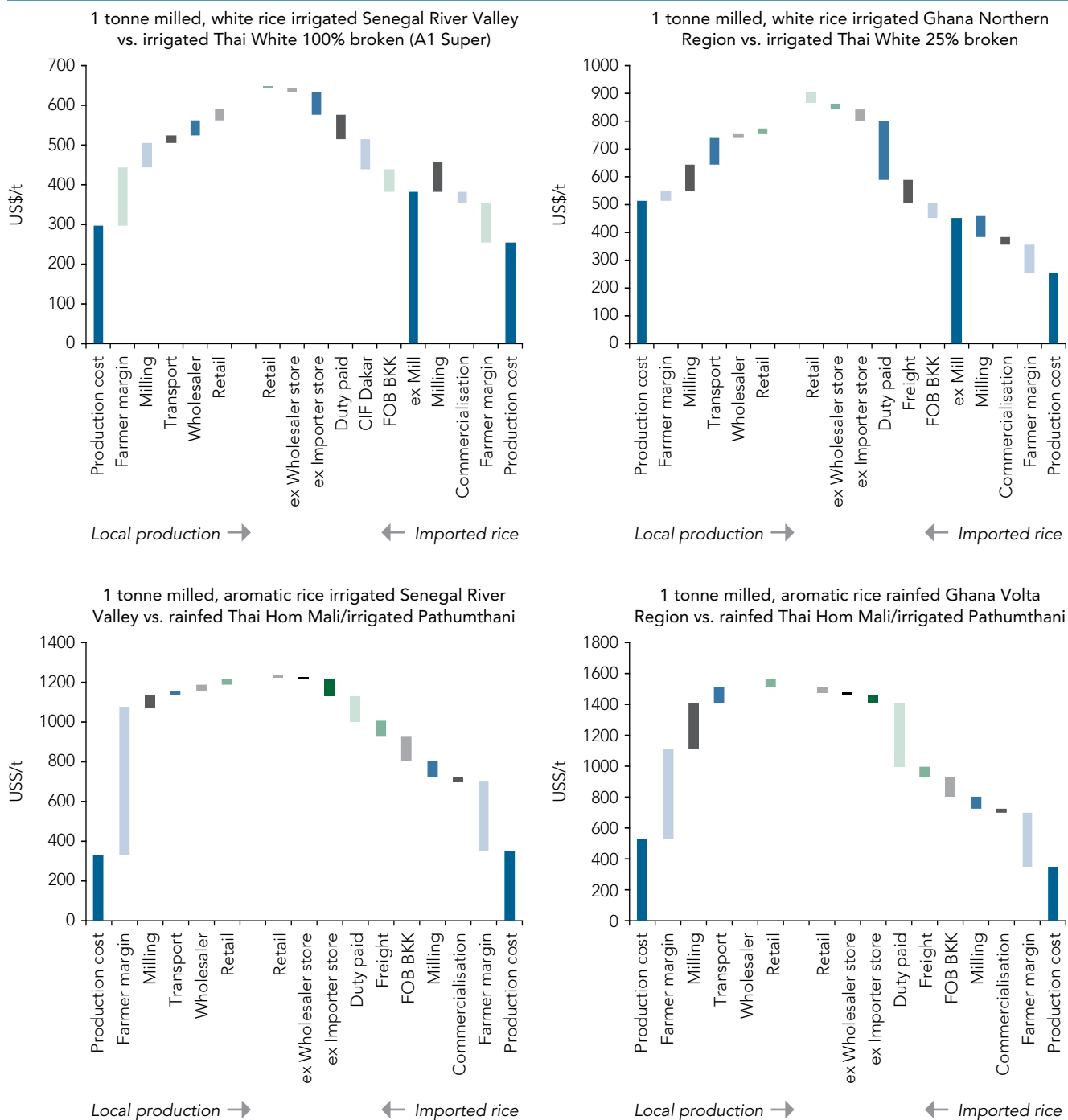
Figure 5.2: Production costs for rice in Ghana and Senegal benchmarked to Thailand



Source: Based on team data and interviews.

Major constraints to improved competitiveness in rice

There are many opportunities to improve efficiency along the value chain, but matching market demand for quality is the highest priority. The primary constraint at present is the difficulty in matching the market offer of the imported rice. Local rice in Ghana does not compete directly with imported rice, and these markets are best considered to be two separate markets. The urban middle-class consumer in Ghana and Senegal is willing to pay a substantial premium for the guaranteed cleanliness and quality of imported rice rather than investing time in cleaning and sorting locally grown rice. Urban consumers are looking for cooking characteristics such as swelling,

Figure 5.3: Value build-up in the rice markets of Senegal and Ghana

Source: Based on team data and interviews.

Note: Thai A1 Super production cost is adjusted by a factor of 0.83 to account for broken grains, which are sold after milling as a byproduct.

stickiness, and storability—qualities that are potentially more important in the preparation of meals that generally have flavors that overwhelm any inherent fragrance in the rice. A further consideration is that branding is well developed in Ghana, where promotion of the high quality of imported rice has secured customer loyalty.

Local rice can be prepared to the same standard as imported rice, but insufficient quantities have been available to develop local rice as a brand. Efforts by the trade in Senegal and Ghana to place local rice in competition with imported rice have struggled to make regular supplies of a product of consistent quality available in the market. Recent efforts in Senegal to develop a brand of high-quality Senegal River Valley rice (“Rival”) are having more success, however, and there are signs that consumers are recognizing that rice of local origin need not be of poor quality.³⁴

Supplying rice of acceptable quality to compete with imported rice will require improvements not only in Africa’s widespread artisanal processing conditions but in delivering quality material to the mills. Fully mechanized harvesting in Thailand, where small combine harvesters operate on hire to smallholders, delivers a clean product with little loss in the field to a truck that leaves immediately for the mill.³⁵ This relatively streamlined process contrasts sharply with the often entirely manual, less efficient handling in Ghana, which includes drying rice alongside the road. At a minimum, mechanized threshing could raise quality as well as reduce costs. In Senegal the rent of a threshing machine (US\$ 160 per hectare) is cheaper than manual threshing (US\$ 280 per hectare). The impact is clear: The standard and efficiency of production are significantly higher in the Senegal River Valley than in the Ghanaian producing areas. Even Senegal, however, lacks sufficient equipment of the appropriate scale.

The key to competitiveness is to develop varieties acceptable to consumers. Both Ghana and Senegal have promising new varieties that better match market preferences for imported rice. Even so, considerable investment is needed to test their performance on producers’ fields and—even more important—with consumers. Seed systems need to gear up to provide a range of varieties for different growing conditions and consumer markets.

Further expansion of rice production will require investments in irrigation, enabled by secure access to land. Aside from production and processing constraints, the limiting factor for expanding rice area is the extent of the irrigated area available. To achieve competitive yields with more than one crop per year requires investments in irrigation and associated infrastructure. If Ghana, for example, is to produce an extra 200,000 tons of rice to substitute for some of the 350,000 tons imported annually, a minimum of 40,000 hectares³⁶ must be brought into cultivation. The cost of developing this land with irrigation and drainage is estimated at about US\$ 600 million.³⁷ In Senegal, the requirement will be substantially higher, given the potential to substitute for imports of 750,000 tons. A significant share of these investments could be borne by the private

³⁴ Demont, personal communication.

³⁵ Not only in the Central Plains of Thailand but in the northeastern Hom Mali production area, too.

³⁶ Assuming two crops per year, yielding a total of 8.5 tons of paddy and 5 tons of milled rice. Achieving such yields will require levels of management significantly beyond current practices.

³⁷ Assuming US\$ 15,000 per hectare.



sector in exchange for secured rights to land for both investors and smallholders. The investments would need to be complemented by innovative approaches to provide mechanization services and varieties with quality characteristics demanded by consumers. Senegal has had some success with farmer groups taking the role of the investor in managing mechanization services, input supply, and credit, but the infrastructure for supporting machinery is still weak. In Ghana, these systems are still in their infancy, although recent investor interest shows promise (Box 5.1).

Maize in Zambia: Distortionary policy interventions

Maize, the most important food staple in Sub-Saharan Africa, is critical to food security. It currently covers 25 million hectares or about 14 percent of cropped area in Sub-Saharan Africa, largely in smallholder systems. In several countries of Eastern and Southern Africa, maize dominates the diet as much as it does in the maize-based food cultures of Mexico and Central America, and maize parallels the role of rice in many Asian economies. In Zambia, where annual consumption of maize is 133 kilograms per capita, it provides over half of the calorie supply. Given its importance as the main food staple, maize is a very political crop that is subject to considerable policy attention, especially when prices are very low or high.

Maize is overwhelmingly a smallholder crop. Eighty percent of farmers in Zambia produce maize. The great majority (67 percent), whose farms average around 1 hectare, do not produce

Box 5.1: Communities contribute to innovative rice production in Ghana

A good example of a West African company seizing the opportunity to invest in rice production and distribution is GADCO, located on the Volta plains in Fievie, Ghana. Formed in 2010 by two entrepreneurs with investment and agribusiness backgrounds, GADCO is backed by Summit Capital, Acumen Fund and loan capital by Deutsche Bank (JV fund with KfW) and Root Capital. GADCO follows a vertically integrated value chain model. It expects to have 1,000 hectares of irrigated rice under cultivation in 2012, including provision of infrastructure to smallholders under its Copa Connect scheme, and to be Ghana's largest rice producer. GADCO sees Africa as a "growth market with compelling fundamentals driven by urbanization, population growth, and rising incomes." It draws on Brazilian know-how, technology, and equipment, observing that "one country with an exceptional contribution to make to Africa is Brazil." It has also been successful in acquiring farmland at a reasonable cost by combining lease payments to landowners with the sharing of a mutually agreed upon percentage of revenues from rice sales. The company is still in its startup phase and expresses concern over the high cost and lengthy periods for developing projects in Africa, which impair returns on investment, cash flow, and the sharing of revenues with community stakeholders. For now, the company is upbeat about its prospects and plans to scale up with other high-demand crops in Ghana and the subregion.

Source: Interviews with GADCO.



maize for the market. The remaining one-third of farmers produce for the market and fit into three groups: (1) market-oriented smallholders using modest input levels (on about 1.5–3 hectares); (2) emerging commercial farmers using hired labor and draft power (usually animal) (on about 5–15 hectares) and accounting for about 50 percent of marketed surplus; and (3) a few large commercial farmers using full mechanization (on more than 100 hectares).

Demand for maize is increasing through population growth and demand for livestock feed. Like most of Sub-Saharan Africa, Zambia nears self-sufficiency in normal years, imports maize in bad years, and exports it in good years. Most trade is within the region, but there is much potential to foster regional market integration to smooth domestic supplies. Demand for maize as livestock feed is growing at 6 percent per year and projected to be a major component of future demand. To establish a commercially viable livestock industry, however, much depends on reducing the cost of feed.

Competitiveness of maize in Zambia

Zambia—like much of Africa—has huge potential in maize. An estimated 88 million hectares (excluding protected and forested areas) is presently not cultivated but suitable for growing maize,³⁸ giving Zambia the potential to increase its maize area tenfold. Considerable gains could be made even on Zambia's current maize area, where yields, at a little over 2 tons per hectare, are less than 40 percent of the yields that are economically attainable under rainfed conditions.

Zambia is competitive for import substitution but not for exports. The available evidence points to Zambia being a somewhat high-cost producer of maize. Costs run about 30 percent above those in Thailand in 2010/11, despite large government subsidies to the Zambian maize sector (discussed later). Commercial smallholders and emerging farmers generally have lower costs than large-scale, fully mechanized farms (Box 5.2). Post-harvest transport and logistics are also considerably higher than in Thailand. Even so, Zambia is generally competitive in growing maize for import substitution and could also competitively supply nearby regional markets, such as the Democratic Republic of Congo.

Major constraints on competitiveness

Zambia's future competitiveness depends on raising yields, reducing costs, and removing disincentives for the private sector in markets and trade.

Maize yields are constrained by input supply limitations and risks. Since 1990, Zambian maize yields have grown at 1.9 percent per annum, double the rate for Africa as a whole. Over the past decade, farmers have increased their use of both seed and fertilizer; these inputs, combined with favorable weather, underlie much of the yield increase. Liberalization of the seed industry stimulated a rush of private interest, and after private seed companies released 53 new hybrids from 2005 to 2008,

³⁸ Deininger and Byerlee (2011).



Box 5.2: Maize production costs higher in Zambia than in Thailand

A World Bank (2009) study of commercial agriculture in Africa compared production costs in Zambia, Mozambique, and Nigeria to those in Thailand, a competitive maize producer and exporter. Overall production costs were double those in Thailand, even allowing considerable margin for error. A more recent study based on a large national survey broadly supports the conclusion that production costs are high in Zambia, although the study emphasizes that costs vary widely among farmers and regions (Burke et al. 2011).

Comparative production costs of maize, Zambia and Thailand

	Year	Farm type	Yield (t/ha)	Cost (US\$/t)
Zambia	2007	Smallholder	2.8	145
		Emerging	3.9	160
		Large scale	5.8	175
Thailand	2007	Emerging	3.7	75
Zambia	2010	Smallholder + emerging	2.3	224
Thailand	2011	Smallholder	3.9	172
		Emerging	5.4	158

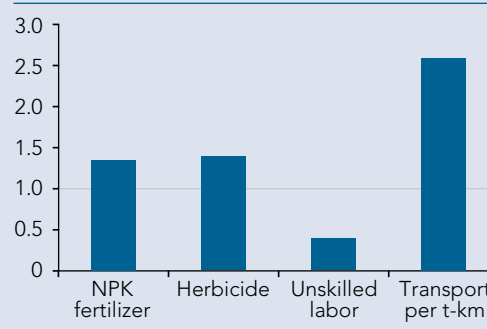
Source: World Bank 2009; Burke et al. 2011; field interviews.

Part of the difference in costs relates to higher yields in Thailand, but higher costs for inputs and larger labor inputs are also important factors. Costs of imported inputs are notably higher in Zambia than Thailand, by a factor of 30–40 percent, and transport costs are more than double. As expected, labor costs in Zambia are lower per day although not per ton of maize, due to higher labor inputs per hectare and lower yields.

Beyond the farm gate, processing for urban markets is not a large cost item in maize, averaging about 10 percent of the final cost. Assembly costs are very sensitive to the production location relative to Lusaka, however. Most commercial maize in Zambia is produced along the Line of Rail, and assembly costs average around 15 percent of the costs, largely for transportation. Even so, combined assembly and processing costs were US\$ 40 per ton higher in Zambia in 2007 than in Thailand.

Source: Authors, compiled from sources cited in box text.

Ratio of prices of inputs and transport in Zambia to Thailand, 2007



the adoption of hybrid seed increased dramatically³⁹ (Figure 5.4). An estimated 83 percent of the maize area is now sown to improved seed,⁴⁰ mostly of hybrids (although sometimes with recycled hybrid seed).

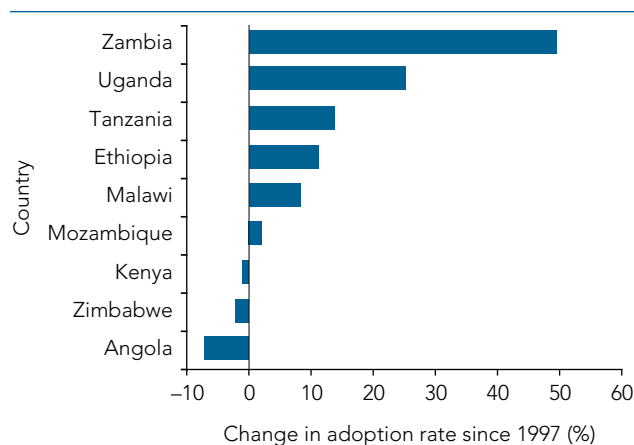
Fertilizer use has also increased, but although 36 percent of farmers now apply fertilizer, private markets for this input are undermined by state intervention.⁴¹ The government has subsidized fertilizer at a high cost in terms of government budgets (37 percent of the agricultural budget). Subsidized fertilizer is rationed, and surveys consistently show that distribution is biased toward farmers with above-average area and wealth. A further cost of the subsidy scheme is that fertilizer is delivered to many farmers late, leading to untimely and ultimately unprofitable fertilizer applications. Unsubsidized fertilizer is not profitable to many farmers in remote areas, who pay higher prices for it.

Use of fertilizers and other purchased inputs is limited by high risks. Production risks are high (the coefficient of variation around trend exceeds 30 percent) because of variability in rainfall. Government policies and their implementation have been erratic, posing additional market risks to farmers and traders.

Finally, commercial maize production by emerging market-oriented smallholder and medium-scale farmers is constrained by difficulties in bringing available land under cultivation. Although this constraint has been analyzed inadequately, it appears to relate to difficulty accessing land and the lack of suitable labor-saving technologies, especially partial mechanization.

Conservation farming offers much potential to reduce costs and drought risks. Hand-hoe cultivation is laborious and also limits area expansion. Medium-scale farmers use animal power (often borrowing or renting animals), with consequent delays in planting. Conservation farming with minimum tillage has been promoted widely in Zambia and was adopted by perhaps 100,000 farmers in 2003.⁴² Surveys indicated an increase in yields of 1.5 tons per hectare through better capture of rainwater, precision placement of seed and fertilizer, and earlier planting (although in years with good rainfall the effects are likely to be lower).⁴³ Use of herbicide with zero tillage, as practiced by

Figure 5.4: Change in adoption rates of improved maize varieties, 1997–2007



Source: Langyintuo et al. 2008.

³⁹ MacRobert (2009).

⁴⁰ Smale, Byerlee, and Jayne (2011).

⁴¹ Xu et al. (2009).

⁴² Haggblade and Tembo (2003).

⁴³ Burke et al. (2011).

small- and medium-scale maize farmers in Mexico and Central America but by only 3 percent of Zambian farmers, offers an even more promising way to cut costs.⁴⁴ Commercial maize farming on a larger scale also has scope to expand, given the relative abundance of land.

Further market liberalization is needed. Prior to the structural adjustment period, the Zambian maize sector was often held up as a prime example of unsustainable policies. Inefficient parastatals and subsidies to producers and consumers led to a total fiscal outlay to the sector accounting for 17 percent of the government budget in 1986.⁴⁵ After liberalization, as milling restrictions on the private sector were relaxed, consumers benefited from reduced transport and milling margins.

In recent years, market liberalization has seen a reversal through the operations of the newly created Food Reserve Agency, which sets procurement prices as well as export and import policies. In 2010, the combination of losses from sales on domestic and regional markets was estimated at 10 percent of the budget. Even more important, the pricing structure and erratic nature of the agency's interventions have undermined incentives for private sector participation in the market. Discretionary and unpredictable trade policy controls, such as import and export bans, changes in tariffs, as well as direct state trading operations, have impeded the capacity of regional trade to reduce price instability and discouraged private investment in marketing and storage.⁴⁶

Cocoa in Ghana: The need for better-organized and more skilled smallholders

Sub-Saharan Africa is the world's leading exporter of cocoa, the continent's most important export crop. Sub-Saharan Africa exports about US\$ 4 billion annually of cocoa and cocoa products. Four countries, led by Côte d'Ivoire and Ghana and including Nigeria and Cameroon, account for two-thirds of the world's exports of unprocessed cocoa and about 15 percent of exports of processed cocoa.⁴⁷ Over time, Africa has increased its world market share, with its main competition coming from Indonesia and to a lesser degree Brazil and Central America.

Cocoa is a quintessential smallholder crop and is extremely important in promoting inclusive growth in the region. The number of people who depend on cocoa for their livelihoods worldwide is 40–50 million, of which some 20 million live in West and Central Africa.⁴⁸ Cocoa has accounted for 28 percent of agricultural growth in Ghana since 2000, and with 700,000 smallholders producing the crop, it has become a major source of poverty reduction. Poverty among cocoa-producing households declined from 60 percent in the early 1990s to 24 percent in 2005. This trend probably has been maintained owing to high cocoa prices in recent years.⁴⁹

⁴⁴ Burke et al. (2011).

⁴⁵ Howard and Mungoma (1997).

⁴⁶ Chapoto and Jayne (2009).

⁴⁷ FAOSTAT.

⁴⁸ World Cocoa Foundation.

⁴⁹ Kolavalli and Vigneri (2011).



Demand for cocoa products has been expanding rapidly over the past decade.

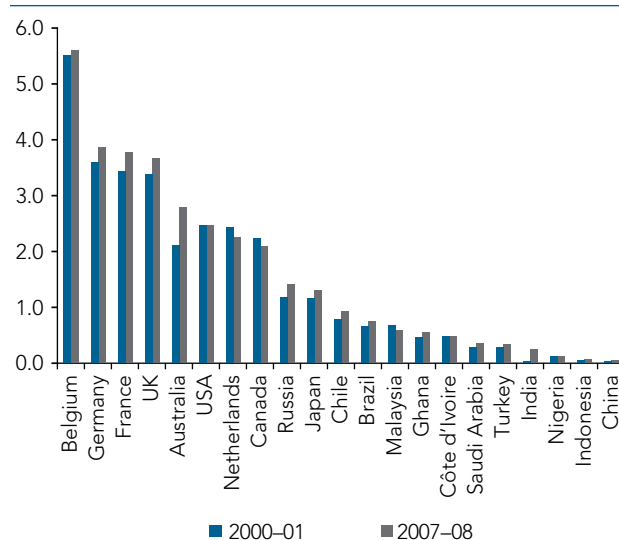
Since 2000, per capita consumption of chocolate has increased in all regions of the world. In absolute terms the increase has been largest in rich countries, but in relative terms, some emerging countries have experienced a dramatic rise in consumption (Figure 5.5). At the same time, consumer preferences have moved toward premium chocolate confectionaries with high cocoa content. Given the very low base of consumption in major emerging countries, such as China, these demand trends are likely to continue or accelerate. The industry projects an increase in demand of 25 percent by 2020, equivalent to a market value of at least US\$ 1.5 billion.

Given their dependence on the West African cocoa supply, global cocoa and chocolate companies interviewed for this report voiced grave concern over the region's ability to keep up with growing (and even existing) worldwide cocoa demand. Their concern has been accentuated by nearly a decade of civil disturbance in Côte d'Ivoire, where harvests have inched steadily downward amid inadequate tree stock replanting and maintenance.

West African countries have generally remained competitive in productivity, but quality has been another important factor in their success. In Ghana, a reformed and more proactive national cocoa board (Cocobod), the promotion of high-yielding hybrids and fertilizers, and improvements in pest management reversed the decline in yields evident up to 2000. Private Licensed Buying Companies, which purchase beans from farmers and resell them to Cocobod, also generally provide a package of inputs and seasonal credit to farmers. Cocobod's close focus on quality has proven important in securing a price premium of at least 5 percent over that in Côte d'Ivoire. For the 2011 season, Ghana announced a record harvest, exceeding 1 million metric tons for the first time in the country's history.

The cocoa sector still operates well below potential, with large scope for productivity and quality improvement. Yields are estimated to be 50–80 percent below potential, partly due to wide variation among farmers. Many farmers are using cocoa planting to establish land rights. Yield gaps reflect aging tree stocks, lack of use of improved inputs, serious pest problems, and the aging population of cocoa farmers themselves as young people migrate to cities. One way to raise West Africa's productivity is to focus on more commercially oriented farmers and encourage more marginal farmers to exit.⁵⁰ Intensification is also needed to overcome growing land scarcity and concerns

Figure 5.5: Per capita consumption of cocoa, selected countries (kg per person)



Source: ICCO 2010.

⁵⁰ Gockowski and Sonwa (2011).

about the continuing loss of tropical forests, since most of the increase in cocoa production has come from expanding area. A lack of quality standards and post-harvest losses arising from poor infrastructure are also identified as major constraints.⁵¹ Private industry, including the major chocolate manufacturers and the World Cocoa Foundation, has a number of programs on the ground to improve productivity and yields.

World prices for cocoa have risen sharply since 2007, and more of this increase is being passed to farmers. Between 2000 and 2010, real international prices of cocoa beans increased 86 percent. Ghana's Cocobod has an export monopoly and sets a minimum buyer price to the producer. This approach, along with competitive Licensed Buying Companies regulated by Cocobod, has enabled farmers to receive a larger share of world prices, now approaching 70 percent of the FOB price. In contrast, in Côte d'Ivoire, where markets were liberalized but disrupted by civil war during the 2000s, little effort was made to promote competitive buying or to safeguard quality, so farmers on average received a lower share of world prices.

Processing of cocoa beans into cocoa paste and butter, the central ingredients of chocolate, still occurs mainly near consumer markets in the "North," but African countries have recently invested substantially in processing.⁵² Raw cocoa beans make up only about 5 percent of the value of the retail price of chocolate, leading some to argue that processing should be located in countries that produce the raw beans to capture more value added. Currently the EU accounts for 40 percent of the world's cocoa processing and is also the major producer of chocolate. In recent years, however, more first-stage grinding has taken place in the country of origin. Côte d'Ivoire, through a differential export tax favoring processed cocoa exports and other incentives, has installed considerable capacity and now processes about one-third of its output locally. Ghana has more recently instituted a similar policy and sharply increased its processing capacity, with seven plants installed. If used to capacity, these plants could process over one-half of the current crop, but processing has been running well below the country's capacity.⁵³

Processing cocoa locally may add little value. It is not clear whether the move to local grinding has added value. First-stage processing to cocoa butter and liquor constitutes only another 5 percent of final value, and further processing to liquid chocolate constitutes about 10 percent of the retail value of chocolate. The remaining 74 percent comes from the final manufacturing and marketing of chocolate. The lack of other ingredients (sugar, milk, and packaging), high energy costs, the need to transport processed products under controlled temperatures, and the practice of blending cocoa from different sources to standardize the final product are further mitigating factors. Even first-stage grinding is of questionable economic merit because of its high capital intensity and economies of scale. Investment in a modern facility capable of processing 65,000 tons of beans per year runs on the order of US\$ 100 million but creates only about 200 jobs—or approximately US\$ 500,000 per

⁵¹ Gockowski and Sonwa (2011).

⁵² UNCTAD (2008).

⁵³ UNCTAD (2008).

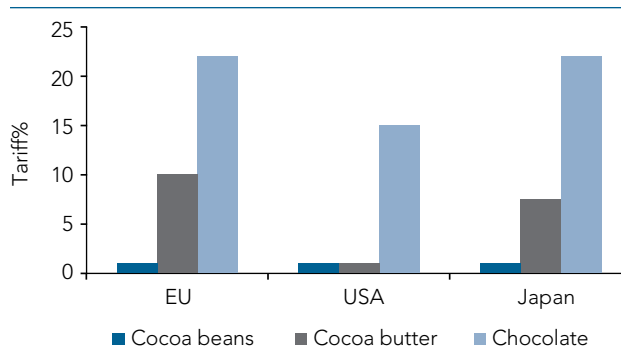


job created.⁵⁴ Additional issues of logistics for just in time supply to chocolate manufacturers in Europe and North America add to the costs for countries attempting to process their cocoa production.⁵⁵ Escalating tariffs to high-income countries (Figure 5.6) also diminish the competitiveness of processed cocoa products, especially chocolate, for exporters that do not qualify for duty-free import agreements to the EU, such as Ghana and Côte d'Ivoire.

At this stage, with regional consumption still low, the comparative advantage of manufacturing chocolate in West Africa⁵⁶ still needs to be proven, although there may be longer-term strategic advantages to moving up the value chain.

Opportunities for more value addition and inclusive growth can come from market differentiation, certification, quality improvements, and branding. Social and environmental standards, such as those reflected by certification from the Rainforest Alliance, can provide a basis for producers to further develop their businesses. Although the markets reached through such means are still a small fraction of the world market, and Fair Trade certification confers little advantage in today's markets because of high prices, it can be important for the industry's sustainability over the long run.⁵⁷ Multinational companies are currently converting large shares of their production into certification schemes. Cadbury, for example, foresees sourcing from 100,000 Fair Trade-certified Ghanaian cocoa farmers by 2014. In interviews, Mars reiterated its ambitious commitment to source all of its cocoa from certified producers by 2020, train cocoa farmers, and support R&D. On the producer side, the Kuapa Kokoo cooperative, one of 21 Fair Trade-certified cocoa producer cooperatives in Ghana, includes some 45,000 cocoa farmers.⁵⁸ The Cocoa Abrabopa Association has also recently obtained certification for organic cocoa production. The African Cocoa Initiative is a public-private partnership to double productivity of cocoa on 100,000 smallholder farms in West Africa. The big challenge is to ensure traceability along the supply chain for certified cocoa, given the large number of unorganized smallholders. Strong producer organizations will be needed to reduce transaction costs and move the industry to a more sustainable footing. By nature, this is a long-term undertaking.

Figure 5.6: Escalating import tariffs for different cocoa products



Source: FAO 2007.

⁵⁴ World Bank (2011a).

⁵⁵ Only three percent of chocolate, including cocoa-based beverages, is consumed in Africa.

⁵⁶ Ryan (2011).

⁵⁷ Ryan (2011).

⁵⁸ Ryan (2011).

Dairy in Kenya: Upgrading informal value chains

Kenya is Africa's leading producer and consumer of dairy products. Although the climate of much of Eastern and Southern Africa is well suited to dairy production, only Kenya has established a competitive dairy industry. Kenya is by far the largest producer in the region and also the only country to be a net exporter of dairy products, largely to other countries of the region. The productivity of dairy cows is nearly three times higher in Kenya than elsewhere in Sub-Saharan Africa. Kenya is also the largest consumer of milk, with an estimated 145 liters per capita annually, more than six times that in other East African countries. As a result, dairy products constitute the largest food consumption item in Kenyan households and provide 30 percent of farm household income.⁵⁹

Both formal and informal dairy marketing channels are well developed within the country. Informal channels sell less expensive (raw) milk, whereas formal channels sell pasteurized milk and depend on a cold chain. The informal channels target poorer consumers with lower prices and daily home delivery. They also offer higher prices to farmers. Formal channels, on the other hand, are highly regulated and taxed; they support internationally accepted quality assurance regimes. Evidence suggests that the safety of milk purchased through the two channels does not differ materially in coliform bacteria counts.⁶⁰ In any event, most consumers boil their milk before using it and consume it shortly after purchasing it.

Since colonial times, Kenya has engaged in commercial dairy production and processing, which now supply about 40 percent of the urban market. Some 29 licensed processors operate in Kenya, almost all as licensed franchisees that apply Tetra Pak processing and packaging technology. Smallholder cooperatives play an important role in the formal milk marketing channel, where they coexist with eight large dairies that process some 500,000 liters per day and dominate the formal sector with strong local brands and an extensive distribution network.

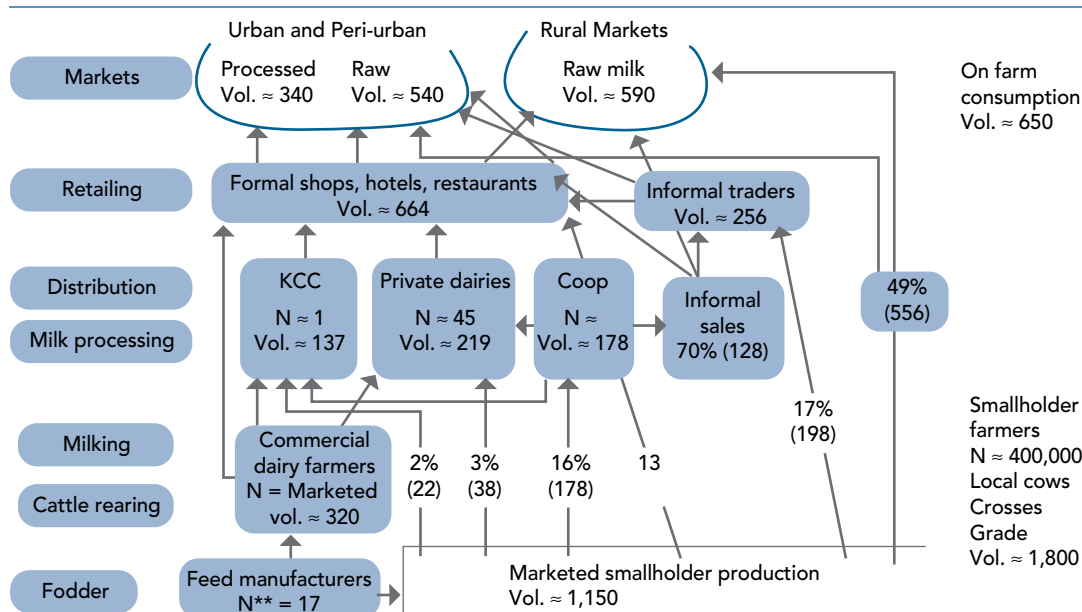
Through informal channels, smallholders provide an estimated 86 percent of milk supplies to small-scale milk vendors in both rural and urban markets, up from a 35 percent share in 1975. Some 800,000 households are involved in dairy production, which in turn generates some 36,000 additional jobs in marketing, processing, and retail (Figure 5.7).

Kenya's smallholder dairy producers are a diverse and innovative group. Farmers rely on different breeds of cows and production techniques, employ a variety of external services, and mix dairy production with production of a range of food crops and nonfarm activities. They also sell into informal or formal channels, depending on what works best for them. A core group of commercial smallholders in high-potential areas hires veterinary services and uses relatively advanced technologies consisting of improved crossbreeds through artificial insemination, zero grazing, and improved fodder species. They have tapped into services such as artificial insemination and veterinary services, originally provided by the public sector for commercial farmers and later privatized. They have also benefitted from considerable support from donor projects, such as the recent

⁵⁹ Kaitibie et al. (2010); Ngigi et al. (2010).

⁶⁰ Omore et al. (2004).



Figure 5.7: Kenya's milk marketing channels, 2002 (million liters)

Source: Ngigi et al. 2010.

Note: KCC = Kenya Co-operative Creameries.

Smallholder Dairy Project and the ongoing East Africa Dairy Development Project, and from financing through dairy cooperatives and private microfinance.

Development of the dairy sector in Kenya is generally acknowledged to be successful, especially since liberalization in the 1990s. It has taken time for new distribution channels and viable production models to emerge among smallholders. Part of the success comes from consistent government policy and the government's recent willingness to tolerate two-track development of formal and informal segments within the sector.⁶¹ Investors have responded positively to these policies by investing in both the formal and the informal sectors as well as in the subsidiary service support sectors.

Despite these successes, the sector faces many challenges to meet domestic and regional demand. A major challenge is to balance the interests of consumers and producers, which in turn requires balancing support for the formal and informal sectors. A debate has been underway in Kenya for some time concerning the need for increased regulation of the informal sector to ensure that only safe dairy products are delivered to consumers. The challenge facing policy makers has been to find ways to protect consumer interests and to better position the industry for increased exports while allowing small producers and vendors to continue to thrive.

Policy support previously focused on the formal sector but is now turning to ways of gradually upgrading the informal sector. A particular challenge in building on success and upgrading

⁶¹ Leksmono et al. (2006).

Box 5.3: Building capacity of smallholder vendors

After an extensive debate, and considerable evidence on the role of small-scale vendors in the milk industry, in 2004 the Kenyan Dairy Board began to license small-scale vendors. The Kenyan Smallholder Dairy Project facilitated licensing by providing training in safe handling of milk. A recent analysis has found that as a result of reduced transaction cost to small-scale vendors, marketing margins fell by an average of 9 percent (more in Nairobi). The amount of milk handled by small-scale vendors has also increased rapidly. Overall, the change is estimated to have contributed an increase of US\$ 230 million in the welfare of producers, consumers, and vendors (in net present value terms).

Source: Kaitibie et al. 2010.

the dairy sector is to upgrade the informal sector to meet growing demand from more affluent urban consumers for processed milk and milk products. Although sales of milk through informal channels to urban areas were technically illegal until 2004, the government now recognizes their overwhelming importance and the need to regulate them. A concerted effort is required to improve standards and to strengthen the informal sector, including smallholder producers, cooperatives, traders, and retailers (Box 5.3).

Pilot work in this regard was carried out by the Smallholder Dairy Project, and partnerships between milk processors and the informal sector are being encouraged. Recent efforts to train and then license small-scale vendors have also begun to provide substantial payoffs in terms of reduced milk marketing margins. In addition, maintaining the dynamism of the small-scale sector and extending it to more remote areas will require improvements in veterinary and animal health services, partly through recognition and training of community animal health workers, extending breeding services, strengthening disease control, and upgrading feeder roads.

Green beans in Kenya: Meeting ever more stringent export standards

Favorable agro-climatic conditions, previous experience in the horticultural sector, an emerging export market, and the availability of transport facilities set the stage for green bean exports from Kenya. After independence, the Kenyan government had supported initiatives through which fruit-processing industries incorporated smallholders. With low labor costs in a relatively stable economy and encouragement from the government, the private sector saw a window of opportunity to export vegetables to a growing Asian population in the United Kingdom. The increase in air traffic that took place with expanding tourism to Kenya was also crucial to the development of the sector, because it provided cargo space on flights back to Europe and allowed fresh beans to be shipped quickly and fairly cheaply to the market.



Sub-Saharan Africa has maintained its position in the world market despite rapidly increasing world exports. Starting with supplying produce mainly outside the European growing season, Kenya soon became a year-round exporter to Europe because of cheaper labor. Between 1990 and 2008, world exports of green beans increased by 119 percent in quantity and by over 180 percent in value.⁶² While Sub-Saharan Africa's share of the world market has fluctuated, the region has maintained its position over time, with a market share of 15.9 percent in 1991–93, 16.6 percent in 2006–08, and more than 20 percent in 2000–05. Kenya accounts for little over 70 percent of exports from Sub-Saharan Africa, almost all to the EU market. By adding value through cleaning and packaging fresh products, frozen products, and frozen vegetable mixes, Kenya is estimated to have increased the value of its fresh vegetable exports by as much as 250 percent.⁶³

In parallel, local markets with various segments are emerging. The domestic market for green beans developed in times of oversupply and as an outlet for beans that did not meet export standards. Beans rejected from export shipments often are sold to local supermarkets or the domestic canning industry (which also generates some exports). The canning industry does not have the same food safety requirements as the fresh bean export market, so beans for this market segment are mainly supplied by smallholders. National standards are beginning to be applied in the domestic market, however.

Throughout the industry's development, the government has played a supporting rather than a leading role. The government largely refrained from direct involvement in the development of the green bean sector. Instead, the private sector has coordinated the organization of supply chains. Private exporters have provided contracted farmers with inputs, technical assistance, and investments in post-harvest equipment. The role of the public sector has been to ensure functioning road infrastructure, access to air transport, and uninterrupted shipping out of the country. Since the late 1960s, the state has also provided important support through the Horticultural Crops Development Authority, including extension services, marketing information, co-financing of a fresh produce terminal at the airport, the setting of national standards, and technical assistance to implement those standards.

The exporters' success in integrating smallholders in the supply chain was important for the sector's early development. As with any higher-value market, appropriate production methods and consistent quality are essential, and it can be challenging to rely on a large number of small suppliers. For this reason, exporters frequently have distributed inputs and closely monitored production methods through contracts with local smallholders. Over time, producer organizations have evolved to coordinate farmers, decrease transaction costs for private companies, and create larger entities that enable cost-effective certification for private standards.

The ability to adjust to changing market demands has secured Kenya's position on the world markets for decades. Markets are constantly changing, and initial success is no guarantee of lasting competitiveness (Table 5.3). In recent decades, European food markets have undergone rapid transformation as retailers became increasingly concentrated and higher-value markets developed,

⁶² FAOSTAT.

⁶³ Jaffee (2003).



Table 5.3: Examples of existing standards for green bean producers in Kenya

Food safety standard	Description
Foreign standards	
British Retail Consortium Global Standards	Retail standard across the value chain (for production, packaging, storage, and distribution) of safe food, required mainly by retailers and branded manufacturers in Europe and in North America.
GLOBAL GAP (previously EurepGAP)	Good Agricultural Practice (GAP) standards. Private voluntary production process standards for agriculture and aquaculture products (pre-farm gate). GLOBAL GAP is a business-to-business standard and mainly required by retailers in the EU. Certified by third-party certifier.
Ethical Trading Initiative	A membership initiative. Member companies commit to adhere to a code of labor practice derived from the Conventions of the International Labour Organization.
Hazard Analysis and Critical Control Points (HACCP)	Originally developed by the Food and Agriculture Organization, HACCP is a standardized working method with the purpose of minimizing contamination in the processing and handling of food products. HACCP certification is obtained by adhering to ISO 22000 and validated by an accredited third-party certifier.
Nature's Choice	Private retail standard for Africa's largest and South Africa's leading health food distributor. Assortment includes organic, bio-friendly, and gluten-free products.
Official EU standards	
Domestic standards	
Industry	
KenyaGAP	Food safety code of conduct under the Fresh Produce Exporters Association of Kenya (FPEAK).
Horticultural Ethical Business Initiative	Voluntary labor standards.
Company/exporter code of practices	Adopted by, for example, Vegpro Ltd., Homegrown (Kenya) Ltd., and Kenya Horticultural Exporters Ltd.
Public	
Kenya Bureau of Standards	
Horticultural Crops Development Authority code of practices	

Source: Okello et al. 2007.

along with more sophisticated packaging requirements for fresh produce. Following several food safety scandals in the late 1980s and early 1990s and the subsequent EU food safety law, retailers started developing their own food safety standards. Kenyan exporters successfully adapted to changing market requirements, and other countries have followed their lead. The new demands on producers included adherence to Good Agricultural Practices (GAP) on the farm and Hazard Analysis and Critical Control Points (HACCP) and Good Hygiene Practices (GHP) in post-harvest



Table 5.4: Costs and returns to green bean farmers in Kenya, 2006

	Exporter owned	Large scale	Smallholder
Export vegetable area (ha)	101	14.2	0.31
Workers (no.)	340	77	1
Cost of EUREPGAP certification (US\$/ha)	149	1,162	1,584
Total costs (US\$/ha)	9,324	9,797	3,243
Total certification costs as % of annual costs	2	12	49
Yield (t/ha)	30	25	15
Price (US\$/ha)	0.65	0.59	0.51
Cost (US\$/kg)	0.31	0.39	0.22
Net revenue (US\$/ha)	10,164	5,389	4,476

Source: Mausch et al. 2009.

Note: EUREPGAP was transformed into GLOBAL GAP in 2007.

handling. Compliance has required such steps as the certification of producers according to international standards, the development of cold storage chains, and setting up HACCP-certified cleaning and packaging facilities. The ability to freely import specialized inputs has also been vital for producers to adhere to new food safety and quality requirements.

Tightened standards drove integration in the supply chain and reduced the role of smallholders. The overall cost of production is lower for smallholders than for larger farms (see Table 5.4.), which gives an incentive to engage smallholders. Initially, smallholders were the main suppliers of green beans to exporters to the European markets. With the development of private standards, producers' practices became important, giving rise to contract farming in which their practices were monitored. Since certification requirements have been extended to smallholders, however, the high cost of compliance has driven consolidation and reduced smallholders' role. Estimates show that the cost of certification for international food safety standards adds up to 49 percent of annual costs for a small-scale farmer, 12 percent for a large-scale farmer, and 2 percent for an exporter. An ongoing shift from small-scale contract farming to larger-scale, vertically integrated production entities is being observed in Kenya as well as in Senegal.⁶⁴ In Kenya, smallholders produced 60 percent of the green beans in the 1980s but only 30 percent in 2003. The integrated export value chain now depends on large contract growers and a limited number of small and medium growers (Figure 5.8). An estimated 20,000–50,000 smallholders still largely produce for the domestic market and canning industry, however.

While production opportunities have decreased for smallholders, employment opportunities on and off of the farm have risen with the development of the export sector, bringing overall benefits to poor households. Research on green bean producers in Senegal, which has seen a similar reduction in the role of smallholders, shows that the income effects on poor rural households in the region where the green beans are produced are positive through job opportunities on

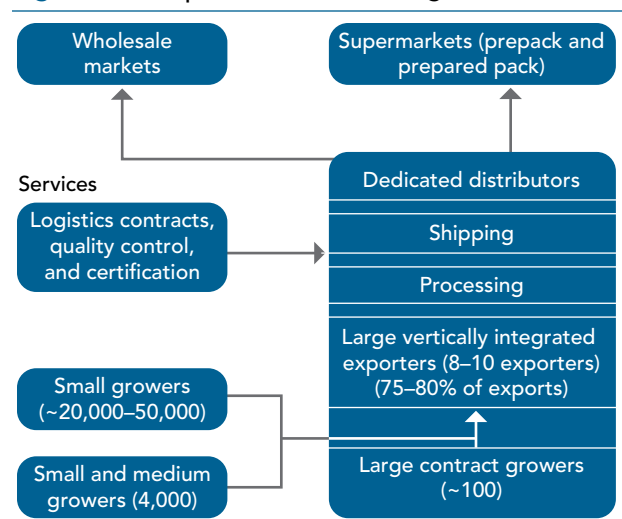
⁶⁴ Maertens and Swinnen (2009); Okello et al. (2007)



large farms.⁶⁵ In addition to providing on-farm labor opportunities, the development of high-value agricultural exports has created off-farm employment in the logistics, cleaning, and packing industries. In Kenya, it is estimated that the fresh vegetable export sector today employs somewhere between 45,000 and 60,000 workers, compared with 7,000 self-employed smallholders.⁶⁶ Reviews have generally shown that such employees (around 60 percent of whom are women) earn at least the minimum wage and well above earnings in traditional farming. Although the export sector's development has proven challenging for smallholders, private investment in the sector has created net positive benefits to communities by creating a large number of year-round jobs.

Kenya's producers have successfully managed to diversify their range of horticultural crops, building on the experience in growing green beans for export. As many countries entered the green bean market and European markets became saturated, Kenya diversified into exporting other horticultural crops. Fruit and vegetable exports have increased continuously over the past decade. Green beans now constitute around 10 percent of the sector's exports, down from around 25–30 percent in the early 2000s. This diversification was enabled by the skills, logistics, market contacts, and advanced market infrastructure put in place through first movers such as green bean exporters.

Figure 5.8: Export value chain for green beans



Source: Reproduced from Webber and Labaste 2011.

Summary of value chain constraints

These five value chains reveal common and well-known constraints, such as poor infrastructure; fragmented and risky markets; poorly functioning input markets; difficulties accessing land, water,

⁶⁵ The expansion of estate farms did not take place through the consolidation of small farms but by renting or buying land from large commercial farms, integrating with those farms, or cultivating underutilized government-owned land (Maertens and Swinnen 2009).

⁶⁶ Note that contracts often favor men. A study from Meru District in Kenya showed that although men do take part in the production process and contribute with labor inputs for certain activities such as plowing and fertilizer application, women are estimated to perform almost three-quarter of the labor. Mainly because of conventional land ownership structures, in which men most often hold title to the land (around 90 percent), exporters tend to sign contracts with the male family member rather than with the female. Thus despite their limited participation in producing green beans, men still controlled 38 percent of the incomes from production (see Dolan 2002).

Table 5.5: Summary of major constraints identified by snapshot reviews of value chains

Constraint	Rice	Maize	Cocoa	Dairy	Green beans
	Ghana and Senegal	Zambia	Ghana	Kenya	Kenya
Context					
Agro-climatic suitability		*			
		(risk)			
Output markets					
Policies distorting markets	*	***	*	**	
Quality issues	**		**	**	***
Food safety		*	*	**	***
Social and environmental issues			**		***
Lack of regional integration	**	***		**	
Price risk	**	***	**	*	*
Inputs and technology					
Policies distorting markets	**	***	*		
Access issues	***	***	***	**	
Land access issues	***	**	**		
Infrastructure issues					
Transport	**	**	**	*	
Other	*** (irrigation)	** (rural roads)	* (energy for grinding)	* (collection points)	* (cold chain)
Access to finance issues	**	**	***	*	
Skill issues	*	*	**	*	***
Issues with engaging smallholders				*	***

Source: Authors.

Note: Number of asterisks denotes relative importance as a constraint, with *** being the highest priority.

and finance; and inadequate skills and technology. More revealing, however, is the big differences across value chains (Table 5.5). For food staples and traditional exports, high transport costs, border logistics, and erratic government interventions are more important than other challenges. For high-value products for domestic and export markets, high food safety and other standards, and the difficulty of connecting smallholders to ever more demanding markets, are major challenges. Some standards are now also important for traditional exports like cocoa.





Overcoming constraints: An agenda for getting agribusiness moving

The constraints and opportunities identified in the first part of this report suggest a broad range of actions for moving forward, with priorities and sequencing depending on the country context, specific value chain, and region within a country. These actions include: (1) improving market performance; (2) improving access to inputs and technology; (3) providing access to land and tenure security; (4) facilitating access to finance; (5) investing in infrastructure, using public-private partnerships where possible; (6) building skills and entrepreneurship; and (7) maximizing social benefits from investments. Constraints identified by private investors interviewed generally fell into one or more of these categories (Annex 2, www.worldbank.org/africa/agribiz). This chapter summarizes the options and good practice for each action. The final chapter in this report discusses implementation of an agribusiness agenda.

Improving market performance and meeting new demands

Priorities for improving market policies

Improving access to and performance of agricultural markets at all levels is the highest priority for developing a commercial agribusiness sector. High transaction costs and poor market integration reduce the efficiency of market exchange and increase risks to investors. Many food and agricultural markets continue to be distorted and often destabilized by erratic state intervention, despite significant progress to liberalize those markets. Additional pressure comes with the imposition of quality and food safety standards, both for domestic and international markets. Urbanization and the rapid expansion of modern food systems (especially supermarkets) are heightening demands for compliance with standards for processed and fresh products. Ever more exacting standards are mediating access to global markets.

Market liberalization over the past two decades has more closely aligned domestic prices with world prices, but significant distortions remain. Exports continue to be taxed at higher levels in Africa than in other regions, averaging about 20 percent (Figure 6.1). For imports, the trend has been toward slight protection of food grains and significant protection of higher-value products, such as sugar, processed juices, milk powder, and poultry products (Figure 6.2). For major food staples, domestic prices often do not track world prices in the short run because of high transaction costs and policy interventions.

Policy reform has generally been incomplete, and market interventions have often been ad hoc and unpredictable. Many countries have maintained parastatals, albeit in a reduced role, but they continue to undermine private market development for food staples through discretionary and unpredictable trade controls such as import and export bans, ad hoc changes in tariffs, and direct state trading operations (Table 6.1). Together such interventions have severely reduced incentives for the private sector to invest in market infrastructure and storage, limited the potential of regional trade, and increased risks to all market participants.⁶⁷ At worst, erratic government interventions

⁶⁷ Minot (2011); World Bank (2012a).



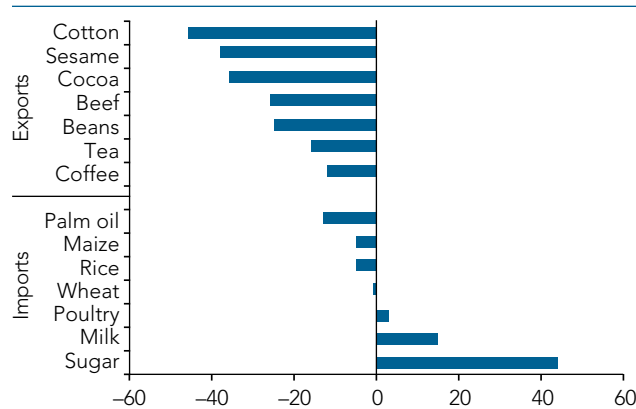
in the name of price stabilization have had the opposite effect, exacerbating price volatility.

Prices of food staples are highly volatile, increasing risks to producers and traders and imposing high costs on poor consumers. In general, the variability of prices of staple foods in Africa is double that in Asia.⁶⁸ Price volatility is linked to climatic shocks, combined with poor infrastructure and small market size caused by poor regional integration. Landlocked countries are most exposed to domestic sources of shocks. The ability to use world markets to smooth supply variability is limited by high transport costs and foreign exchange constraints. For example, maize prices in Ethiopia fluctuated during 2000–08 between import parity of US\$ 250 or more and export parity prices that may be as low as US\$ 50. As noted, high price volatility in some countries also results from erratic government intervention.

Over the long term, better market performance depends on investments in infrastructure to reduce transaction costs and losses (see “Upgrading infrastructure,” p. 94).

Generalized measures to support market efficiency, such as investments in transport, storage, information systems, and market regulations will serve to reduce transaction costs and the volatility of food prices in Sub-Saharan Africa. For example, transit delays have a significant effect on exports; a one-day reduction in inland travel times leads to a 7 percent increase in exports.⁶⁹ Improved infrastructure will not help, however, without concerted efforts in the short to medium term to improve market performance in three critical areas: (1) deepen reforms to complete

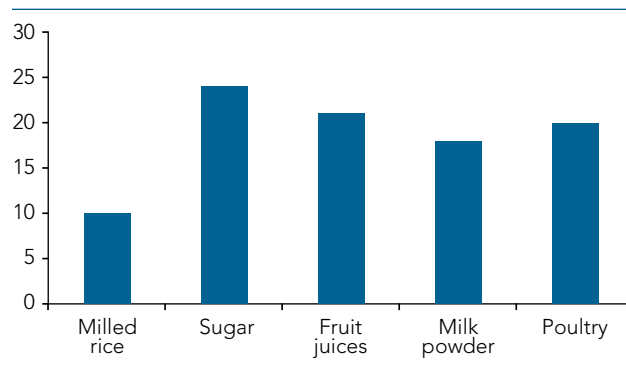
Figure 6.1: Nominal rate of assistance for exportables and importables, Africa (2000–04)



Source: Anderson and Masters 2009.

Note: The nominal rate of assistance measures the net effects of all taxes, subsidies, and protection to an industry. A negative rate indicates effective taxation of the industry.

Figure 6.2: Average tariffs on major food imports for the 20 largest countries (late 2000s)



Source: WITS tariff data.

⁶⁸ Byerlee, Jayne, and Myers (2006).

⁶⁹ Freund and Rocha (2011).

Table 6.1: Recent policy interventions in grain markets in Eastern and Southern Africa

Country	Parastatal	Recent interventions
Ethiopia	Ethiopian Grain Trading Enterprise (EGTE)	Ad hoc interventions in maize and wheat markets. No private imports and exports banned.
Kenya	National Cereals and Produce Board (NCPB)	High import tariff. Major corruption scandal on allocation of import licenses and subsidized maize from NCPB.
Malawi	Agricultural Development and Marketing Corporation (ADMARC)	Three price spikes in the past 8 years from lack of transparency in managing grain reserves and erratic government policies on imports and procurement for export.
Zambia	Food Reserve Agency	Erratic government policies on exports. Sale of subsidized maize to millers undercuts imports. Private imports impeded by licensing and government intervention.

Source: Minot 2010.

the transition to rule-based, transparent, private food markets; (2) pursue regional market integration; and (3) use technology to facilitate market transactions and provide market information.

Deepen reforms of parastatal and other interventions by the state

The first priority is to further deepen reforms of state market interventions and move to transparent and rule-based operations. To create space for private markets to operate, governments need a predictable, well-defined strategy to complete an orderly transition to market-based food systems. For example, blanket subsidies, restrictions on grain trade, and uniform prices imposed across seasons and regions need to be removed to give private traders an incentive to store and move grain from surplus to deficit areas. Market reforms have been shown to reduce margins to the benefit of both producers and consumers. For example, after significant liberalization in Kenya increased competition in processing and marketing, milling and marketing margins for maize fell by US\$ 180 per ton from 1994 to 2008, along with real prices to consumers (Figure 6.3). Private participation in markets is high in countries such as Uganda and Mozambique that have a “hands-off” policy on the operation of grain markets.

Likewise, continuing to reform remaining parastatals for cash crops, while maintaining support services and quality control, will be central to reclaiming Africa’s competitiveness in traditional export markets. African farmers continue to receive low prices for export commodities relative to world prices and relative to prices received by farmers in other regions. Progress in reducing high taxation on agricultural exports brought initial gains to farmers, but often reforms and their gains have not been sustained.⁷⁰ At times, the demise of export parastatals cut critical

⁷⁰ Aksoy and Anil (2011).



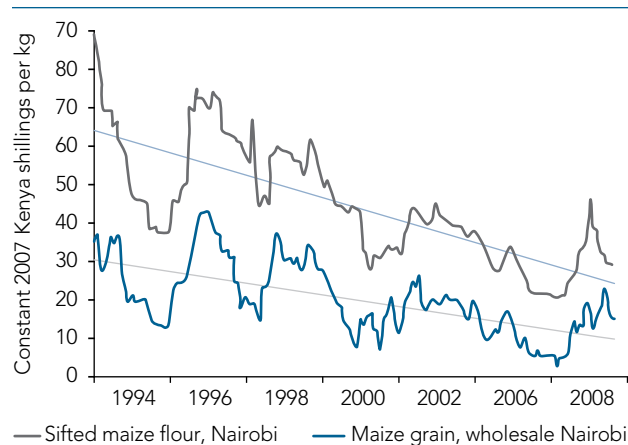
services—extension, credit, and risk management—that would have enabled producers to increase their productivity and take advantage of higher prices. It also undermined overall export quality and market building in some cases, as with cocoa in Côte d’Ivoire. Some form of collective action at the industry level is often needed to ensure quality, build external markets, and provide nonprice support. Reforms must be sequenced with care to ensure that such services are replaced by market-based mechanisms. Cautious reforms of Cocobod for cocoa in Ghana, the Tea Board and Tea Development Authority in Kenya, and La Société Burkinabè des Fibres

Textiles (SOFITEX) for cotton in Burkina Faso have preserved several of these functions with considerable success, although other key functions such as local purchasing have been liberalized.⁷¹ These organizations have also increasingly engaged with associations of producers and processors to build a sense of industry ownership among their main stakeholders. When strong associations emerge, they may assume functions performed by parastatals. In Colombia, FEDECAFE, a not-for-profit organization of smallholder coffee growers supported by a small tax on exports (currently equivalent to 2.5 percent), has a long record of providing services to producers and building Colombia’s reputation as a reliable supplier of high-quality coffee (Box 6.1).

Vigorously pursue regional integration

The promotion of regional trade is one of the most effective “quick-wins” for improving market efficiency and reducing food price volatility. Currently, only about 10 percent of agricultural trade is from within the region, yet natural “marketsheds” that span borders offer enormous opportunities for regional trade, as documented in a recent World Bank report.⁷² Although member states of all subregions have agreed to pursue free trade, implementation remains inconsistent. For regional markets to function, countries need to agree to ban export and import restrictions and use other means to protect their most vulnerable populations. Even a one-time arbitrary change in rules by one country can undermine confidence in regional markets and generally backfires later, when that country needs the regional market to stabilize its own prices. Governments understandably desire to protect vulnerable populations when markets peak or collapse, but they

Figure 6.3: Price trends for retail maize in Nairobi, Kenya



Source: Kiriimi et al. 2011.

Kiriimi, L., N. J. Sitko, T. J. Jayne, F. Karin, M. Muyanga, M. Sheahan, J. Flock, and G. Bor. 2011. “A Farm Gate-to-Consumer Value Chain Analysis of Kenya’s Maize Marketing System.” MSU International Development Working Paper No. 111, Michigan State University, East Lansing.

⁷¹ Kolavalli and Vigneri (2011); Mitchell (2011); Tschirley, Poulton, and Labaste (2009).

⁷² World Bank (2012a).

Box 6.1: FEDECAFE—A strong association of Colombian coffee producers

One of the world's largest coffee producers, Colombia has a long record of managing its coffee industry through a strong national producers' association, FEDECAFE, created in 1927. With over 300,000 accredited members averaging less than 2 hectares of coffee, FEDECAFE manages a "parafiscal" fund of over US\$ 100 million levied by the government on coffee exports, as well as considerable self-generated resources. Its wide range of functions encompasses a minimum price guarantee to growers, purchases and exports of coffee through cooperatives, storage and some processing, quality control systems, and market promotion, including management of the well-known Juan Valdez trademark for quality Colombian coffee. On the production side, FEDECAFE funds one of the world's premier coffee research institutes, a large extension program with over 1,000 professionals, disease and pest control programs, coffee plantation rehabilitation, and programs to diversity farm income. Finally, it has an extensive social program for education, health, and infrastructure, administered at the local level, as well as programs for sustainability and biodiversity conservation. Although sometimes criticized for the breadth of its programs—which in times of low prices have threatened its financial sustainability—FEDECAFE has long succeeded in maintaining Colombia's premier place in the world's coffee market, and it enjoys strong ownership from its smallholder members.

Source: Bentley and Baker 2000.

can use more efficient instruments for that purpose. Such instruments include establishing small, rule-based strategic reserves and scaling up the social protection systems that are already in place in many vulnerable regions.

Removing nontariff barriers could be an even greater stimulus to intraregional trade.

Despite moves toward regional integration, border trade continues to incur high transaction costs from official red tape and bribes, as well as poor infrastructure, high transport costs, and inconsistent grades and standards. Companies interviewed for this report noted consistently that they would be more inclined to invest in larger and more economic plants if they had assured access to larger regional markets. Border delays have significant impacts, highlighted by estimates that the Burundi–Rwanda border adds the equivalent of 174 kilometers in terms of its effects on food prices; the Democratic Republic of Congo–Rwanda border adds a staggering 1,600 kilometers.⁷³ Reforms require simplification and greater transparency of procedures on export/import licenses, certificates of origin, standards, and sanitary and phytosanitary regulations, all of which should be harmonized among countries within a region. One of the most effective ways to exert pressure to ease border crossings can be through trader organizations. A Ghanaian grain trader association negotiated an agreement with border officials to recognize its trucks and expedite crossing; in return, the association assures adherence to border regulations.

⁷³ World Bank (2012a).



Facilitate market transactions and provide market information through information and communication technologies

Modern information and communication technologies (ICTs) have tremendous potential to improve market performance. Mobile phone technology is evolving rapidly to improve market performance in Africa. Services often focus initially on providing real-time market information through Short Message Services (SMS), but they can also offer mechanisms for linking buyers and sellers and conducting market transactions. At least five such exchanges operate in Kenya, including one offered by the Kenyan Agricultural Commodity Exchange (Table 6.2). Used in this way, ICTs have been found to increase prices paid to African farmers by 10–20 percent, increase traders' profits, and reduce prices to consumers.⁷⁴ For example, in Niger the use of ICTs to transmit price information on food staples in villages within the network was estimated to raise traders' incomes by 29 percent and reduce prices paid by consumers by 3–4.5 percent, relative to villages outside the network.⁷⁵ Smart cards, another application of ICTs, have been used in Kenya to record tea deliveries at buying centers; the cards are estimated to have increased farmers' incomes by US\$ 300 annually, largely by reducing the incidence of fraud.⁷⁶ Many applications are still in a pilot or developmental phase, and a major challenge is to ensure that they can be sustained when donor funding is withdrawn. Market applications of ICTs should be driven by private initiative and capital, but public-private partnerships are generally needed, especially to finance some of the startup costs. The most successful applications have focused on meeting a very specific customer need at first and have expanded their offerings gradually as users become more familiar with the technology and as suppliers assess demands for new information products.

Agricultural commodity exchanges are attractive for engaging traders and agribusiness in more efficient market exchange and reducing risks, but they work best on a regional basis. Commodity exchanges often have been promoted as a way to improve market information, encourage storage, standardize grades, facilitate access to finance through warehouse receipts (see "Financing

Table 6.2: Summary of major ICT services to agriculture and agribusiness, Kenya

Application	Price information	Market linkages	Extension information	Distribution and traceability	Finance
KACE ^a	X	X			
DrumNet	X	X			
Virtual City		X		X	
Kilimo Salama		X			X
KenCall			X		

Source: Intelcon 2011.

^a Kenya Agricultural Commodity Exchange.

⁷⁴ Intelcon (2011).

⁷⁵ Aker (2008).

⁷⁶ Many other applications are described in two agricultural investment sourcebooks: World Bank (2011b) and the chapter on ICT in World Bank (2005).



agribusiness,” p. 87), and above all to reduce risk through the use of futures and options. In Africa, however, trade volumes have generally been too low to influence market performance significantly or even to cover operating costs. For example, the total trade volume of ZAMACE (the Zambian commodity exchange) in Lusaka in two years is exceeded by the value of one day’s trade in Johannesburg’s SAFEX.⁷⁷ Even so, countries and companies in southern Africa can and do trade on SAFEX with relatively little basis risk. Elsewhere in Africa, large countries may find it more viable to establish an exchange (as Ethiopia has done), and regional exchanges may have a role, provided regional market integration is fully implemented. Good practice is to start with spot markets and forward contracting, integrating with existing information and trading systems, and to let the private sector take the lead, while the public sector provides regulatory oversight. Incentives to use the exchange (tax benefits are one example) and extensive training are usually required to get an exchange up and running. Only when the credibility of the exchange and market volume are established should consideration be given to introducing futures and options.

Upgrading value chains

Global food markets are growing rapidly, in large part through upgrading value chains in processing, packaging, quality, and branding.⁷⁸ Traditional commodity markets remain important, yet over 80 percent of the value in the global food industry is in value-added components in increasingly “buyer-driven” value chains. These components range from sorting, cleaning, and packaging for fruits and vegetables to processing and branding foods and beverages. Although value-adding activities can require skills, financing, and scale, often higher value can be captured through relatively simple changes, such as canning, fruit drying, milk cooling, packaging, and even simple labeling. These additions can be an important step for a farmer or SME to expand commercial activity and access higher-value markets. The growth of the urban population and the establishment of supermarkets will propel demand for such products.

Value-adding activities can have an important impact on employment for men and women, both in domestic and export markets. For instance, activities such as cleaning and packaging fresh products (as well as freezing fresh products) are estimated to have increased Kenya’s export value in the fresh vegetable sector by as much as 250 percent.⁷⁹ In addition, these sectors are important to gender equity as they often employ women.

The development of agro-processing industries depends largely on the same business environment characteristics as other industries but must go hand-in-hand with the development of agricultural production. Issues with access to inputs (agricultural raw materials in particular), access to industrial land, access to finance, trade logistics, management capacity, and worker skills were found to be the main constraints to the development of a competitive light manufacturing sector in Africa (World Bank 2012b). Windows of opportunity often can be exploited, provided

⁷⁷ Rashid, Winters-Nelson, and Garcia (2011).

⁷⁸ Ponte (2011).

⁷⁹ Jaffee (2003).



Box 6.2: Major opportunities for upgrading livestock value chains

Livestock generate close to 40 percent of agricultural GDP in the Sahel and Horn of Africa, but livestock value chains remain overwhelmingly local. The continent's small meat export industry has virtually vanished, leaving Africa a net importer of meat. Along with demand for other food products, Africa's demand for meat is expected to triple by 2050, offering investment opportunities to private farmers and processors who can surmount the production, health, transport, processing, and marketing challenges.

Zambeef in Zambia is showing how to develop a successful, modern, integrated agribusiness company in Africa, focusing on the meat industry (beef, poultry, and pork). A home-grown company, it was incorporated in 1994 and listed on the Lusaka Investment Exchange in 2003 and the United Kingdom's AIM^a exchange in June 2011. Long-term loan financing came from the International Finance Corporation (IFC). With 87 own-brand outlets and concessionary agreements with the Shoprite supermarket chain under its belt in Zambia, the 5,000-employee company recently entered the Nigerian and Ghanaian markets under the Master Meats name. Master Meats already has 74 of its own meat-packing workers in Nigeria as well as skilled butchers working out of the Shoprite stores. Strengthening its domestic supply of meat, Master Meats has finalized a lease of 287 hectares in Ogun State, where it will soon raise its workforce to 200. Master Meat's managing director is enthusiastic about the "window of opportunity" and "changes taking place" in Nigeria, while being quick to point out the challenges of training a new workforce and transitioning to more productive breeds of cattle.

Source: Interviews with private investors.

^a London Stock Exchange Alternative Investment Market for Smaller Growing Companies.

that the business environment is conducive. For example, the expansion of brewing, livestock feed, and other industrial uses of cassava provides a major opportunity for cassava processing in Africa, including export opportunities (rapidly rising global demand is currently met by exports from Southeast Asia). As in other industries, in agro-processing, a reliable supply of quality raw materials is critical and can often depend on infrastructure upgrades such as the development of agro-processing parks, growth corridors, and industrial zones linked to raw material supplies. Increasingly, specialized processing investors are pioneering value chain improvements through upstream integration, as seen in the example of Zambeef (Box 6.2).

Trade protection should be used moderately, if at all, and in combination with other policies to stimulate the development of agro-industry. Many countries use differential import tariffs or export taxes on the raw material and corresponding processed product to stimulate domestic processing. In general this is a second-best approach. It risks establishing an inefficient processing sector while penalizing poor consumers (for import tariffs) or poor producers (for export taxes). For example, recent investments in tomato paste processing in Nigeria hide behind a 100 percent tariff. A modest tax may be easier to implement than other incentives, however, and may be appropriate where there is a clear comparative advantage in the processed product. Such a tax is especially relevant for labor-intensive, first-stage processing. In cashew processing, for example, a



US\$ 2 million investment using relatively simple technologies can generate 1,000 jobs. Even then, technical assistance and other complementary instruments may be more important to compensate first movers facing higher transaction costs and risks. One alternative is to allocate the funds from a small export tax or import tariff to finance business development services, R&D, and market promotion, provided that industry has a strong role in governance of the funds (see Box 6.1).

Meeting stringent market standards

As noted, producers of perishable higher-value products face increasingly stringent food safety and other standards, domestic and international, and they risk losing markets unless they comply with these new requirements. For higher-value export markets, compliance often involves investments in production, processing, and logistics; even for domestic markets, standards are increasing as Africa's supermarket revolution gets underway. Urbanization changes eating and cooking habits. The widening distance between rural producers and urban consumers also exerts profound changes on the structure of supply chains and imposes higher demands related to food safety and shelf life. Small-scale producers can find it both costly and complex to respond to those demands. Unless smallholders receive adequate support, those demands can constitute a barrier to market access.

Market development strategies for high-value products should recognize that there are many different markets in terms of quality and food safety standards, and they should target those markets appropriately. A useful way of differentiating markets is to classify them as traditional retail markets or small stores, small-scale domestic supermarkets, high-end domestic supermarkets, discount supermarkets in industrialized countries, and high-end supermarkets in industrialized countries. Figure 6.4 pictures the increasing demand for quality, food safety regulation, and other standards along the spectrum from lower-value to higher-value markets. These markets in turn represent opportunities for different types of farmers and processors.

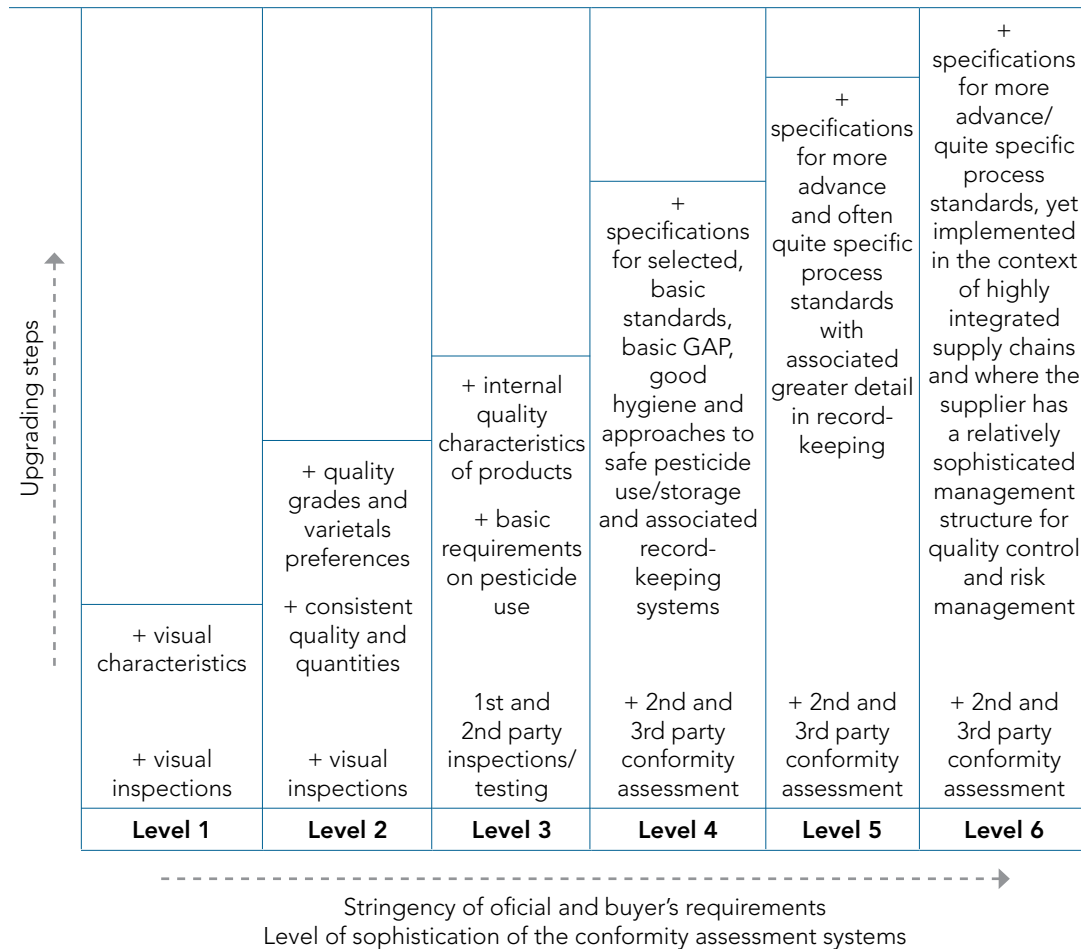
For producers and traders aiming for high-end markets, adhering to standards and certifying production is crucial. For exporters to EU countries, the main export market for most of Africa, this means complying not only with EU food safety legislation, including the implementation of HACCP and product traceability, but often with private standards. Many retailers require suppliers to be certified as meeting industry standards such as GLOBAL GAP. Compliance and certification require the producer and processor or packer to use appropriate inputs and to invest in cold storage and post-harvest handling equipment. In countries like Kenya, Senegal, and Zambia, some of the fresh vegetable exporters have highly advanced HACCP-certified cleaning and packaging facilities ("high-care pack houses") with strict hygiene practices. More commonly, such facilities are not in place, which means that costly investments and training are often necessary for farmers seeking to participate in high-end export markets. Certification costs are often high, especially for low-volume producers (see "Summary of value chain constraints," p. 56).

Smallholder integration generally has proven most successful in sectors where a mature industry is already in place and strong producer organizations facilitate aggregation (see also "Making agribusiness inclusive," p. 100). A good example is Blue Skies, an exporter of fresh-cut tropical fruit, whose main operation is in Ghana. Through extensive farmer training and quality



control, Blue Skies has succeeded in penetrating the rigorous European fruit market, while depending on outgrower farmers to supply fresh fruit. Often it will be much easier to export to less demanding but rapidly expanding markets in middle-income countries, such as those in the Persian Gulf.

Figure 6.4: Spectrum of regulatory and market requirements in agri-food systems



Developing countries				
Traditional retail markets and small stores	Small/local supermarkets	High-end/international supermarkets		
			Industrialized countries	
			Retail markets, local stores, discount supermarkets	High-end supermarkets

Source: Reproduced from Jaffee, Henson, and Rios 2011.
 Jaffee, S., S. Henson, and L. D. Rios. 2011. "Making the Grade: Smallholder Farmers, Emerging Standards, and Development Assistance Programs in Africa." World Bank and University of Guelph, Washington, DC.

Adding value and quality to products intended for domestic markets can be an important first step for smallholders in accessing higher-value markets. The increasing reliance of higher-value domestic markets on standards is predicted to expand with growing numbers of middle-class consumers in urban areas. As supply chains from producers to consumers become longer, food safety requirements become more important for individual as well as public health. They are especially important for livestock products. In general, experience shows that it is easier for farmers to move one or two steps along the “standards spectrum” than to jump directly to the most demanding markets. Public and donor support should therefore initially target domestic markets in which smallholders have a realistic chance of success. Investments should include support for greater capacity in wholesale markets to keep up with rapid urbanization, the provision of appropriate storage facilities (including cooling facilities), and improvements in cleaning and packaging.

Small-scale producers of traditional export products such as coffee and cocoa can also differentiate themselves and capture higher-value markets by upgrading quality, branding, and certification. In Rwanda, where half a million poor farmers grow coffee, liberalization of the coffee market in combination with public and private investments in wet processing of coffee, technical assistance for market development and cooperative management, and a strong focus on quality positioned Rwandan coffee as a specialty grade product on the world market, and prices and incomes have increased accordingly.⁸⁰ As discussed in “Cocoa in Ghana,” p. 46, social standards like the Fair Trade label can provide a basis for smaller-scale producers to further develop their businesses, even though such markets are quite small and premiums have largely disappeared with high commodity prices.

The provision of public services can play an important role in giving farmers and agro-businesses better access to markets. The public sector can make investments to strengthen food safety institutions. For example, it can finance private or public reference laboratories as well as privately operated certification bodies to help producers comply with standards. When this support is not available domestically, farmers often have to bring certifiers in from other countries and incur high certification costs. The public sector also has a role in monitoring and providing information on private standards to industry and in some case negotiating standards for products closely identified with a country.

Managing the supermarket revolution

The supermarket revolution is poised to take off to meet the demands of a rapidly expanding urban middle class in Africa. Though supermarkets are being established across Africa (see Box 6.3), their market share is still small. A study of supermarkets shows that they account for 16 percent of total food retail sales in Kenya and 9 percent in Zambia, whereas smaller stores, kiosks, and open markets remain important, especially for fresh produce.⁸¹ Supermarkets’ share of the fresh produce market will have to grow at 20 percent per year over the next 20 years to capture 20 percent of the market.⁸² Supermarkets in Africa currently appeal mainly to the upper-income segments of the

⁸⁰ World Bank (2011).

⁸¹ Tschirley et al. (2010).

⁸² Tschirley et al. (2010).



Box 6.3: Africa's expanding ranks of supermarkets

Witness the malls of Nairobi, Lagos, or Accra and see a "retail revolution" in the making, redefining how the middle class shops in Africa. The mall is replacing the central market as an important shopping venue for Africa's more affluent, dual-income families and for aspiring and emerging middle-class shoppers. Several standout supermarket chains are reshaping the food landscape, although smaller, often well-entrenched local chains that serve national markets exhibit strong staying power. The two most notable retailers are Shoprite and Massmart, both of South Africa. Shoprite is Africa's leading food retailer, with some 1,246 corporate and 274 franchise outlets in 18 African countries. Nipping at its heels is Massmart, running 9 wholesale and retail chains, with 288 stores in 14 African countries. Wal-Mart, the world's biggest retailer, acquired 51 percent of Massmart in 2011. Wal-Mart is determined to give Shoprite a run for its money and better serve the burgeoning consumer market by adapting to Africa many of the supplier-based and logistics practices that spurred its growth. Both retailers look to reach beyond national capitals and the rising middle class to serve interior points of sale and a broader customer base. One Shoprite official states that the retailing giant wants the less-endowed shopper to feel as at home within Shoprite's walls as in traditional markets. The large retailers are also steadfast in their attempts to develop local sourcing, going so far as to support direct farm procurement programs. In any case, competition for consumers' loyalty and naira, CFA, or shillings will be fierce, with (in the words of one retailing executive) "the customer being the ultimate winner in terms of better prices, selection, and quality."

Source: Company interviews and news reports.

population. In Zambia, for instance, the top income quintile of the population accounts for two-thirds of supermarket sales, and the bottom three quintiles account for only 12 percent.

Yet supermarkets are likely to influence more traditional retailing in terms of the range of offerings, product quality, and more organized supply chains. The presence of supermarkets often drives small retailers to upgrade their services. In Zambia, Shoprite was the impetus for popularizing certain fruits, such as apples, well beyond the ranks of supermarket customers. Similar spillovers have occurred for processed and branded products as well.

Building capacity for small farmers and their organizations is important if they are to benefit from the supermarket revolution. Supermarkets can bring benefits such as broader product supply, more streamlined supply chains, safer foods, economies of scale, and lower consumer prices. Their pace of development depends on policies such as the liberalization of foreign investment, a level playing field in tax incentives, well-defined and appropriate zoning laws, and flexible retail laws on opening hours. Supermarkets' procurement systems can profoundly change supply chains and challenge small-scale farmers, however. Procurement systems may vary from specialized intermediaries to direct contracting with processors and producers. Either strategy can provide substantial new opportunities for smallholders and smaller-scale processors, especially if they are well organized and supported through technical assistance. As discussed with respect to standards, enabling small-scale producers and processors to seize such opportunities may require substantial capacity building but may also have high payoffs.



Facilitating access to inputs and technology

Importance of input markets

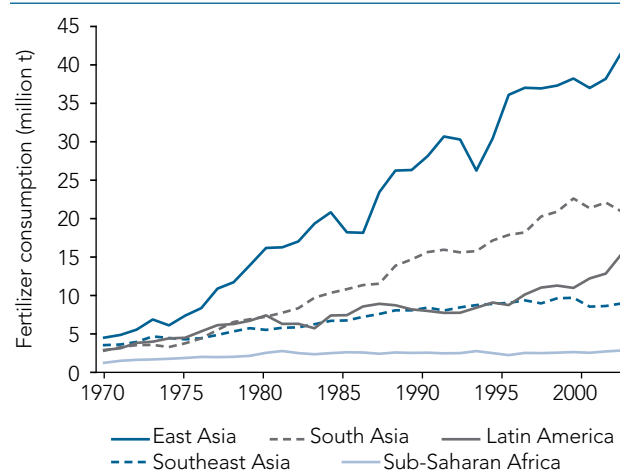
Better access to inputs is critical to agricultural success. In every region of the world, the intensification of agriculture has been associated with a major increase in the use of improved seed, chemical fertilizer, premixed animal feed, and other inputs. Growth in the use of these inputs has accounted for a large share of agricultural growth. Countries that have developed dynamic seed and fertilizer sectors, such as India and Thailand, have seen annual yield gains for rainfed crops of 2–3 percent since 1990, compared to about 1 percent in Sub-Saharan Africa. Likewise, widespread adoption of improved feed, breeds, and veterinary inputs has spurred the livestock revolution in fast growing countries.

The agricultural input industry in Africa badly lags the rest of the world. Low, inconsistent use of improved seed and fertilizer remains the single most important factor explaining low yields in Africa. In 2000, only 27 percent of Africa's food crop area was planted to improved varieties, relative to 82 percent in Asia and 52 percent in Latin America. The use of commercial seed is checkered across Africa—it is relatively high in Eastern and Southern Africa, low in most of West and Central Africa—while the use of fertilizer nutrients per hectare was less than 10, relative to about 100 in Southeast Asia and South America (where agriculture is also largely rainfed) (Figure 6.5). The fertilizer gap has grown in the first decade of the 21st century as the intensity of fertilizer use in Africa has declined. Low fertilizer use not only constrains yields in the present but causes them to decline in the future, as soil nutrients are mined continually.

Agricultural inputs represent a large agribusiness market. The production and distribution of agricultural inputs are primary opportunities for agribusinesses (local and foreign) to grow. Almost everywhere, the rise of commercial seed industries has been stimulated by the use of hybrid seed, especially of maize. The potential maize seed market in Africa is around 430,000 tons, with a value of at least US\$ 500 million. Only 100,000 tons are currently produced. Likewise, Africa cannot meet its agricultural growth targets without increasing fertilizer consumption from its current 1.5 million nutrient tons annually to at least 4.5 million tons by 2015. That market is estimated to be worth over US\$ 5 billion.

Relative to other sectors, agricultural input industries have specific challenges that impede their early development. Seed of new varieties

Figure 6.5: Fertilizer use lags badly in Africa



Source: Calculated from FAOSTAT.

must be suitable for the environment where it is grown or it will not yield well. Seed demand is seasonally variable, seed companies require specialized imported equipment, it is costly to establish an initial market for a dispersed clientele, and seed quality is unobservable before planting. The seed business is also technically complex, especially for hybrid seed, and requires skilled technical staff. The fertilizer distribution system has its own challenges—there are major economies of scale in manufacturing and procurement, bulky fertilizer imports require good logistics and large amounts of financing, and fertilizer purchases by great numbers of smallholders are highly constrained by their lack of cash. Fertilizer use, like the use of seed, is location specific, highly seasonal, and the quality of the product cannot be observed. Because farmers obtain the best results from using both seed and fertilizer, close coordination is needed in developing both sectors, complemented by improving farmers' and dealers' skills and access to information.

Parastatals still dominate input supply in many countries, where the potential of the private sector and agribusiness is yet to be tapped. Through the 1980s, most seed was produced by state seed enterprises. Liberalization has occurred since 1990, yet public seed companies still maintain dominant market shares in some countries. The Ethiopian Seed Enterprise, a fully state-owned company, is largely responsible for seed production and multiplication nationwide. In Eastern and Southern Africa, however, the number of private seed companies increased by 4–5 times in the past decade.⁸³ The privatization of fertilizer imports and distribution has seen some progress, but state intervention in the fertilizer supply chain remains pervasive in many countries. A company interviewed for this report complained that the Ghanaian government's fertilizer subsidy distorted the local market, crowded out the private sector, and instilled an "entitlement culture" in which farmers do not feel obliged to bear the cost of inputs or repay credit.

Seed markets

Major issues in seed markets

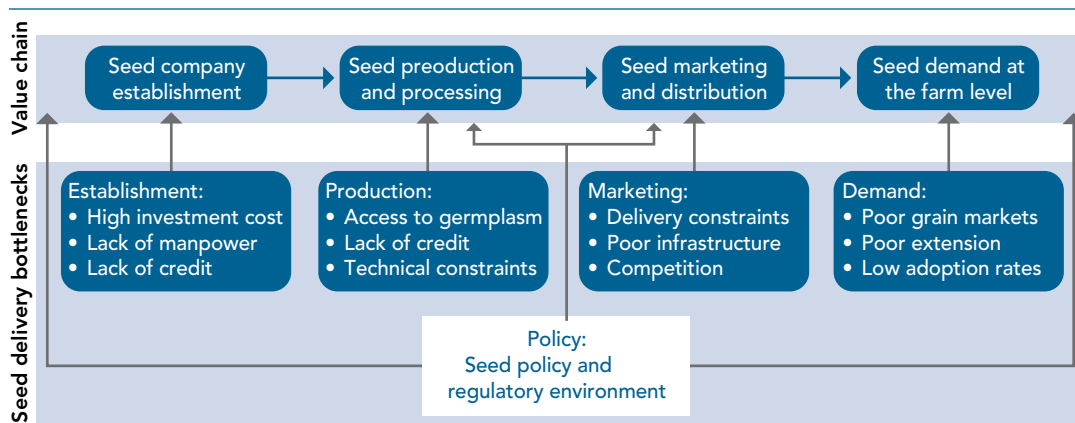
Constraints on growth of the seed industry are both generic to agribusiness and specific to the industry. A recent survey of 89 registered seed companies in Eastern and Southern Africa identified a number of generic constraints, such as access to finance, poor infrastructure, weak extension, and a shortage of skilled technicians. Industry-specific constraints topped the list, however, including lack of access to germplasm, high startup costs, and outdated and rigid seed policies (Figure 6.6).

Incomplete seed policies are a major constraint on growth of the private seed industry. At least five policy and regulatory areas are specific to the seed industry, including policies governing: (1) varietal release; (2) seed quality and certification; (3) intellectual property protection; (4) cross-border seed trade, which usually requires accreditation by the International Seed Testing Association; and (5) testing and release of genetically modified organisms, especially biosafety regulations. A recent review⁸⁴ indicates that very few countries have the requisite policies in place.

⁸³ Langyintuo et al. (2008).

⁸⁴ Setimela, Badu-Apraku, and Mwangi (2009).



Figure 6.6: Major bottlenecks along the seed value chain

Source: Langyintuo et al. 2008.

Langyintuo, A. S., W. Mwangi, A. O. Diallo, J. MacRobert, J. Dixon, and M. Banziger. 2008. *An Analysis of the Bottlenecks Affecting the Production and Deployment of Maize Seed in Eastern and Southern Africa*. Harare: International Maize and Wheat Improvement Center (CIMMYT).

Even when seed policies are in place, they are often outdated, unduly rigid, and difficult to implement. Releasing a new variety usually involves a long process—two years of national performance trials, followed by two years of Distinctness, Uniformity, and Stability trials—even if breeders have extensively tested the variety or if it is being imported from a neighboring country. After a variety is approved for release, seed can take up to a decade to become available to farmers in significant quantities. Seed certification is made compulsory, although no country in Africa has the capacity to implement such a regulation. National policies are not harmonized across countries, leading to fragmented markets and high transaction costs for companies looking to expand market size by selling varieties or trading seed across a region. Investors from the sector interviewed for this report were unanimous in their call for more streamlined, flexible seed policies.

Priorities for developing seed markets

Continue to reform varietal release and seed policies. Many donor and regionally led projects have focused on seed in recent years, both to reform policies and support emerging viable seed companies through stronger capacity and credit lines. Much progress has been made, but it varies highly by country, and seed policy reforms have been painfully slow. Priorities for seed policies in most countries are to:

- Reform national varietal registration laws to speed the release of new varieties. Specifically, relax rules on testing and gradually do away with variety controls for all crop species, as Kenya and Uganda have already done for vegetables and pasture crops.
- Level the playing field for access to public germplasm and release of varieties to all companies on a nonexclusive basis. Current procedures favor public research institutes, which dominate testing systems and release committees.

Table 6.3: Number of new varieties and hybrids registered with national seed authorities (2005–08)

Country	Maize area (000 ha)	Public	Private
Angola	884	8	0
Democratic Republic of Congo	1,484	2	0
Malawi	1,597	8	6
Mozambique	1,400	2	0
Tanzania	3,100	3	7
Zambia	664	3	53
Zimbabwe	1,730	2	20
Kenya (2000–08)	1,700	70a	67
South Africa	2,800	9	266

Source: MacRobert 2009 and Berhane Manna, personal communication.

^a Includes both Kenya Agricultural Research Institute and the parastatal Kenyan Seed Company.

- Relax rigorous and unrealistic seed quality regulations such as testing of all seed. License seed producers to certify their own seed, and also allow truth in labeling.
- Complete policies on intellectual property rights and biosafety in countries with emerging seed markets. Such policies will facilitate the entry of private companies and strengthen the negotiating position of public research programs that have access to local germplasm.

Liberalization in some countries caused private sector investments in plant breeding and the seed sector to rise sharply. The number of private seed companies, especially local companies, is expanding rapidly, auguring well for the long-run development of a competitive sector. A review of maize varieties released in 13 countries (excluding South Africa) found that of 250 varieties and hybrids released during 2002–06 (or nearly four per country per year),⁸⁵ over 60 percent were hybrids developed by private seed companies, with most activity focused on Kenya, Zambia, and Zimbabwe.⁸⁶ Little private sector activity was evident in other countries of the region that had not yet implemented needed policy reforms (Table 6.3). In cotton, an appropriate regulatory environment was important for the Burkina Faso private sector to become the leader in genetically modified cotton seed for the region, although Africa still seriously lags other regions (Boxes 6.4 and 6.5).

Liberalize the release of varieties and seed trade across countries. Allowing varieties and seed to flow more easily across borders would be a major stimulus for private investment in the seed industry. Priorities are to make seed laws and regulations compatible across countries, to introduce reciprocal recognition of national certification standards and labeling, and to move toward free regional trade in seed. Common standards and approval processes are especially important for

⁸⁵ Setimela, Badu-Apraku, and Mwangi (2009).

⁸⁶ South Africa, with 266 varietal releases in five years, is an example of a mature seed industry (albeit targeted at commercial farming).

Box 6.4: Private involvement grows in Africa's seed sector

Use of hybrid and improved open-pollinated seed is spotty across Africa. Pioneer Hi-Bred, one of the companies surveyed for this overview and a global producer of maize hybrids, recognized the enormous potential of commercial seed in Africa, where yields are very low and where underutilized farmland is available. The challenge is to help smallholders close the gap between their yields of less than 2 tons per hectare and the 6–7 tons per hectare seen in other emerging markets (a three-fold increase). For more than 50 years, Pioneer has operated in Africa, primarily Southern and East-Central Africa. It has research centers in Delmas, South Africa and (since 2009) Eldoret, Kenya, and maize seed production facilities in Lusaka, Zambia. Yet Pioneer recognizes that it has just scratched the surface in terms of meeting Africa's seed and food needs and realizing its own commercial potential. As a result, Pioneer recently organized a Regional Leadership Team to determine how best to exploit sustainable opportunities in Africa, focusing new attention on the West African market, where Pioneer was less active in the past.

On the other side of the spectrum, Freshco Kenya Limited is one of several local seed companies that grew out of the 1996 liberalization of Kenya's seed industry. Leveraging prior collaborations with seed giants Pioneer and Monsanto, Freshco has for the past 10 years worked on its own to produce and sell hybrid maize and other seed. Its credo is to work with smallholders, a strategy that is starting to pay off as its client base gradually blossoms and its small market share and profits steadily inch up.

Source: Company interviews.

costly regulations such as those governing the approval of genetically modified varieties. In other cases, rather than trying to achieve full regional harmonization, which may result in highly restrictive policies to fit the least liberalized seed market, countries should be encouraged to liberalize unilaterally. For example, when Bangladesh liberalized imports of hybrid maize seed from Thailand and other countries around 2000, yields increased 200 percent and production skyrocketed from 10,000 to about 1 million tons in 2009 to feed a rapidly growing poultry industry.

Fertilizer markets

Major issues in fertilizer markets

Fertilizer is costly in Africa. Farmers in Africa pay 1.5–2.5 times FOB prices relative to 1.3 in Thailand (a country that also imports most of its fertilizer). Retail prices are consequently 25–50 percent lower in Thailand than in African coastal countries, and even more relative to landlocked countries (Figures 6.7 and 6.8). High fertilizer costs are partly caused by the low volume procured. Shipping costs to Africa are about double those to Thailand, and inland transport costs are the single largest cost item, accounting for 20–40 percent of farm gate costs. Mozambique in particular, even though it is a coastal country, has both low volume and high inland transport costs. Other costs, such as port logistics, finance charges, and margins, are also higher in Africa but do not greatly affect final

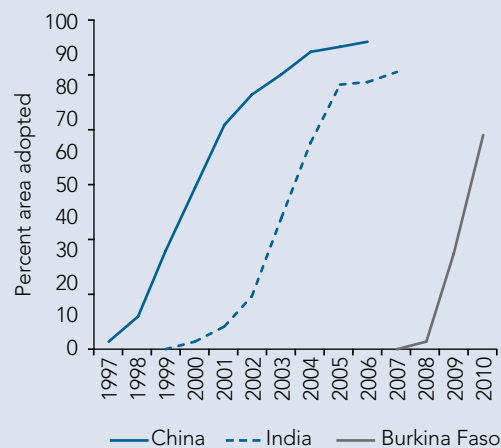


Box 6.5: The importance of policies to facilitate access to modern technologies: Bt cotton in Burkina Faso

Cotton production declined by 22 percent in Africa over 2000–09. At the same time, it rose by 31 percent in China and 51 percent in India, where genetically modified Bt cotton was almost universally adopted. After a Bt cotton variety was released in Burkina Faso in 2008, its use expanded rapidly. The variety was introduced under a license agreement between the public research organization and Monsanto. Farmers gained an estimated two-thirds of the benefits of US\$ 80 million in 2010. To date only Burkina Faso and South Africa have released Bt cotton. Although adoption has been impressive, Africa has been losing competitiveness in cotton relative to countries such as China and India that adopted Bt cotton on most of their cotton area 6–8 years previously.

Source: James 2010.

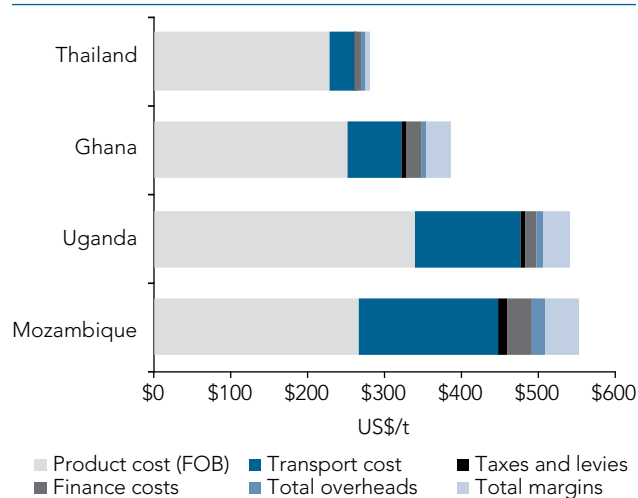
Adoption of Bt Cotton



costs. High costs are also due to continued government intervention that exacerbates fertilizer costs and risks, or to monopolistic markets in small countries.

Fertilizer supply systems often have hidden costs. Tendering processes and in some cases the exclusion of foreign companies from importation reduce competition and add opportunities for collusion and corruption. In one West African country, it is estimated that corruption adds 20 percent to retail prices.⁸⁷ Countries such as Ethiopia still depend largely on the state to import and distribute fertilizer. Other

Figure 6.7: Comparison of fertilizer value chain costs, Africa and Thailand (2006)



Source: IFDC and Chemonics Int. 2007.

⁸⁷ IFDC (2007).

countries manage subsidy programs in ways that undermine private initiative. A further legacy of parastatal input distribution is the slow development of input dealer networks to complete the fertilizer supply chain from the port to farm gate. Especially in areas of low population density, the cost to farmers to access fertilizer may add significantly to its price.

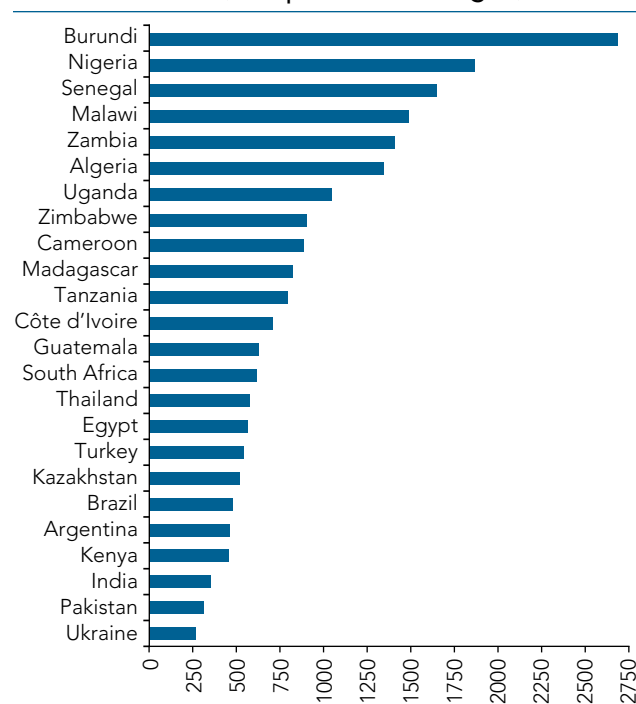
Priorities for building fertilizer markets

Privatize fertilizer procurement.

Although Africa is finally moving toward some local fertilizer production (Box 6.6), most fertilizer will be imported for the foreseeable future. Even where parastatals have withdrawn from fertilizer importation and distribution, governments often maintain a tendering process for imports

that breeds corruption. In countries where private companies negotiate import prices directly with exporters, prices have been generally lower, especially if companies can negotiate volume discounts and if the industry is competitive. Kenya stands out as a country that has successfully liberalized and expanded fertilizer markets (Box 6.7).

Figure 6.8: Nitrogen-based fertilizer prices in 2010 (US\$ per ton of nitrogen)



Source: Brenton (2012); FAOSTAT.

Box 6.6: Investment plans for fertilizer production in Africa

Two new flagship fertilizer plants should dramatically alter the availability of fertilizer for Nigeria. Nigeria imports nearly 95 percent of its fertilizer needs and suffers from some of the continent's most depleted soils. Dangote Group has announced that it will build Africa's largest fertilizer plant in Edo State. By 2014 the plant is scheduled to start producing up to 7,700 tons per day of ammonia-urea fertilizer, using Nigeria's gas supply as its main input. Eleme Petrochemicals Company of Port Harcourt, backed by Indorama Corporation of Indonesia, also recently announced plans for a 2,500 ton per day ammonia-urea plant. Dangote claims that its plant alone will meet Nigeria's urea needs and that its excess capacity will serve neighboring countries. In Gabon, Olam is reportedly making a US\$ 1.2 billion investment in urea production. Together these investments should sharply reduce West and Central Africa's dependence on imported fertilizer.

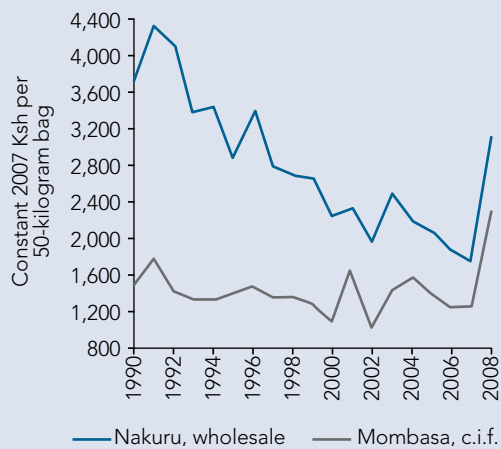
Source: Media reports and interviews.

Box 6.7: Kenya fertilizer sector reforms benefit smallholders

In the early 1990s, Kenya embarked on a program of reform that liberalized fertilizer imports, eliminated parastatal operations, removed price controls, and eliminated subsidies. By 2001, Kenya had 500 wholesalers and 7,000 input dealers. The margin between the port price and the upcountry wholesale point at Nakuru fell steeply, in part because inland transport was coordinated with the availability of trucks, competition increased, and economies of scale were attained in procurement (see figure). At the same time, an input dealer training program was initiated along with other business services. From 1997 to 2007, the average distance from the farm to an input dealer declined from 8.4 kilometers to 3.4 kilometers. With lower fertilizer prices and more accessible supplies, smallholders' use of fertilizer increased from 56 percent in 2006 to 70 percent of farmers in 2007, eventually reaching an average of 59 kilograms per hectare of product, nearly three times the African average. There is also evidence that yields may have also increased by almost 20 percent.

Source: Ariga and Jayne 2010.

Price of diammonium phosphate in Mombasa and Nakuru, Kenya 1990–2008



Source: Kenya Ministry of Agriculture. FMB weekly fertilizer reports for c.i.f. Mombasa.

Note: Nakuru is a maize-producing area in the Rift Valley of Kenya, 400 miles (645 km) by road from the port of Mombasa.

Transform fertilizer subsidies into market-smart and sustainable systems. As articulated in the 2008 World Development Report (World Bank 2007d), there are good arguments for providing modest subsidies on strategic inputs such as fertilizer in the early stages of market development. However, the way that subsidies are administered matters a lot. First, they should be designed to build markets by providing input vouchers that are redeemed through private input dealers. Second, the vouchers should be targeted as far as possible to those who do not currently use fertilizer because they lack credit, knowledge, or the ability to withstand risks. Third, the subsidy should be modest in relation to other critical public expenditures such as R&D, and there should be a clear exit strategy. This effort should include strengthening financial and risk markets to reduce the costs and risks of commercial use of fertilizer (see “Financing agribusiness,” p. 87) for farmers graduating from subsidy programs. Although some input subsidy programs have some elements of this approach, most have failed on all of these criteria.

Reduce transport and logistics costs through targeted infrastructure improvement. Studies show that the single largest reduction in fertilizer costs comes from improvements in port logistics and internal transport systems. Poor infrastructure is a generic problem for all sectors, but it

is especially costly for a bulky input like fertilizer. Targeted interventions such as streamlined port clearance for fertilizer, blending facilities to produce locally suited fertilizer, and special warehousing facilities at the port to better coordinate with available truck transport could foster significant gains in efficiency. The International Fertilizer Development Center estimates that such measures could save US\$ 155–250 per ton in a landlocked country and US\$ 135–200 per ton in a coastal country, equivalent to about one-third of the retail price.

Make financing available to the fertilizer supply chain. Given the large amounts of short-term working capital required (around US\$ 10 million for one shipload), as well as the need for working capital downstream in the supply chain, a strong case can be made for financing qualified local enterprises to enhance competition in the industry. A credit line could be made available to prequalified importers meeting certain conditions. Downstream, a partial guarantee (50 percent) should be enough to stimulate commercial bank lending to distributors. Partial loan guarantees, combined with capacity-building networks, have been successful in building input dealer networks in a number of countries.

Build a strong network of well-trained input dealers. Given the technical complexities of agricultural inputs, participants all along the value chain require training. The Alliance for a Green Revolution in Africa (AGRA), with the International Fertilizer Development Center and the Citizens Network for Foreign Affairs, focuses on building capacity and fostering associations of input dealers with some success. For example, in Ghana, over 2,000 input dealers have been trained and licensed and organized into the Ghana Agro-Inputs Dealers Association. Combined with liberalization and better logistics, such programs can significantly increase fertilizer availability and reduce costs at the farm gate as in Kenya. Such an approach is more sustainable over the long term than poorly targeted subsidies (see Box 6.7).

Investing in R&D for tomorrow's technologies

Strong public R&D is needed to back private input supply, but public systems are fragmented and subject to low and unstable funding. Well-known market failures caused by the difficulty for private investors to appropriate profits from R&D have meant that agricultural R&D in Africa (as in nearly all low- and middle-income countries) is overwhelmingly publicly funded—over 95 percent.⁸⁸ Other sectors can to some extent bypass local R&D capacity by using imported technologies directly, but this option does not work so well in agriculture, because imported technologies must be adapted to local climates. In Africa, the adoption of technologies is complicated by the large number of food staples (at least eight), the heterogeneity of African rainfed cropping systems, and the small market for new technologies in most countries. The power of public R&D in revolutionizing tropical agriculture is demonstrated by the experience of the Brazilian Agricultural Research Corporation (Embrapa). A comparison of Sub-Saharan Africa, India, and the United States, all of which have similar crop areas, reveals the degree of fragmentation as well as the

⁸⁸ A recent review indicates that outside of South Africa, private R&D may amount to only US\$ 20–25 million (Pray, Gisselquist, and Nagarajan 2011).



Table 6.4: Comparison of research systems in Sub-Saharan Africa, India, and the United States around 2000

	Sub-Saharan Africa	India	United States
Arable and permanent crop area (million hectares)	147	160	175
Number of public agricultural research agencies	390	120	51
Number of full-time equivalent scientists	12,224	8,100	9,368
Percentage of scientists with PhD	25	63	100
Annual spending on agricultural R&D (million 1999 international dollars)	1,085	1,860	3,465
Spending per scientist (thousand 1999 international dollars)	89	230	370

Source: World Bank 2007c.

overstaffing of African research organizations in relation to the resources available, which results in very low spending per scientist (Table 6.4). Evidence points to low returns to public spending on R&D in small African countries because they lack a critical mass of research capacity.⁸⁹

Investment in public R&D programs in Africa increased rapidly from the 1970s but was stagnant by the 1990s. Spending on R&D fell in about half of the countries of Sub-Saharan Africa during the 1990s and in 13 of 29 countries from 2001 to 2008.⁹⁰ Fiscal crises and dependence on donor funding also destabilize funding, sometimes very seriously. Low salaries and other incentives have depleted human resources, and scientific personnel are aging.⁹¹

Africa has little choice but to rely on public funding for much R&D, especially for smallholders and SMEs. The priorities are to stabilize funding, provide sufficient autonomy to R&D organizations to raise funds and reward good science, and to more closely align with the market. For commercial agriculture and agribusiness, there are additional options.

Producer funding offers much potential to provide new and more stable sources of funding for commercial agriculture. Countries as diverse as Australia, Colombia, Uruguay, and Malaysia have established global competitiveness based on industry production levies often matched by public funds for R&D on commercial crops. A similar system is used to fund research in Kenya and Tanzania on tea, the most successful cash crop in Africa in terms of yield and export performance. Reviews have generally shown that when commodity associations are in the driver's seat, R&D is more efficient and relevant.⁹² In Côte d'Ivoire, producer organizations support R&D for coffee, cocoa, oil palm, and rubber through the Fonds Interprofessionnel pour la Recherche et le

⁸⁹ Fuglie and Rada (2011).

⁹⁰ Beintema and Stads (2011).

⁹¹ Two of the three maize breeding programs recently reviewed, those in Ghana and Malawi, have lost all of the senior maize breeders who were instrumental in developing their earlier successful maize varieties. Only Kenya—with six maize breeding programs and six PhDs in maize breeding—had substantial public sector capacity in maize breeding. Over half of Kenya's scientific personnel are older than 50, however.

⁹² Reports in Byerlee and Echeverria (2002).



Conseil Agricoles (FIRCA). At present, this type of funding mechanism has been realized only for about 20 percent of commercial crop production in Africa and needs to be scaled up.⁹³

Among small countries, organizing research along regional lines provides much scope to enhance efficiency. Given the high fixed costs of R&D, most countries in Africa are too small to carry out a comprehensive R&D program. Under regional agreements, African countries are building (rebuilding in many cases) regional research organizations. For example, under the West Africa Agricultural Productivity Program, Mali (rice), Senegal (sorghum and millet), and Ghana (roots and tubers) are building regional centers of expertise for specific commodities. Clearly such specialization works only where countries within the region commit to liberalize the exchange of technologies across borders—a condition of this program.

South–South transfers and partnerships with the private sector. These country-level initiatives need to be complemented with strengthened regional R&D collaboration, global public-private partnerships to access new technologies, and concerted efforts to tap investors who can facilitate South–South technology transfers. A number of tropical countries in Latin America and Southeast Asia have become globally competitive in agribusiness through investments in R&D, providing opportunities for sharing technologies and knowledge across regions. The Africa-Brazil Agricultural Innovation Marketplace, a fund established specifically to foster the transfer of technologies and know-how between Embrapa and Africa, was initiated in 2010. Transfers through the private sector also result from recent investments by Brazilian companies in sugarcane in Mozambique and Angola, and by Asian oil palm companies in several countries of West and Central Africa, including Gabon, Liberia, and Ghana.

Enhancing access to land and tenure security for both smallholders and investors

Major issues in land markets

Land is one of Africa’s most abundant resources, and while a smallholder model has a proven track record in promoting equitable development, in some situations access to significant tracts of land must accompany agribusiness investments. Farming has few economies of scale, and family farming is widely recognized as an efficient organizational model for agriculture. However, some types of agribusiness investments do need access to larger land areas than would be the case for other manufacturing and service industries. They include:

- Certain industries such as tea, sugar, oil palm, and some export horticulture, where the harvested product spoils quickly, requiring close coordination of harvesting with processing or shipping and favoring large contiguous land areas centered around a processor.

⁹³ Byerlee (2011a).



- Products requiring high initial capital to improve land (irrigation is one example) or other infrastructure (greenhouses, for instance) that are beyond the resource capacity of smallholders.
- Areas of very low population density, where larger-scale mechanized or semi-mechanized production may be relatively more efficient, given the lack of local labor supplies.
- Seed companies with specialized needs for contiguous land areas to maintain seed purity and protect intellectual property.

The lack of formal land markets and tenure in Africa greatly increases transaction costs and risks for investors. Investors often cite difficulty in accessing land as a key constraint. The situation varies depending on local land policies in each country, but gaining access to land may involve protracted negotiation with local traditional leaders who may or may not represent local community interests. More often, large land transactions are mediated through government agencies using nontransparent processes that neglect local rights and breed corruption. Where land is provided free or at nominal costs through government channels, the economic benefits of investments are often compromised by investors who lack technology and local knowledge and who engage in land speculation. Investments in Africa have too often failed as a result, with lasting damage to communities and the environment (Box 6.8).

When they ignore local users' rights, consult inadequately with local communities, and fail to provide fair compensation, large land transactions reduce tenure security for local communities, threaten local livelihoods, invite conflict and fundamentally undermine business viability. Unclear land rights also reduce the value of community assets in negotiations with investors and discourage long-term investments by smallholders themselves.

In brief, the current situation combines the worst of all worlds. “Good” investors have difficulties accessing land, and “bad” investors are trampling on the rights of smallholders and communities.

Priorities for improving land access

Better access to land and tenure security will require a concerted effort over the long term to improve how African land markets function. Rights to land and natural resources need to be recognized, clearly defined, identifiable on the ground, and enforceable at low cost. This systematic approach ensures that local people benefit from investments and investors enjoy secure tenure, which encourages long-term investments such as irrigation infrastructure. Part of Thailand's success in agribusiness results from decades of investment in formalizing property rights that have provided collateral, improved access to finance, and stimulated investment.⁹⁴ Facilitated by information technology, low-cost and participatory tools now greatly reduce the time and costs of formalizing property rights at either the individual or group level. For example, Ethiopia has successfully provided titles that recognize inheritable use rights by both husband and wife to millions of farmers over the past decade at US\$ 1–2 per plot. The movement toward formal use rights is slowly

⁹⁴ See Feder (1988).



Box 6.8: High risks of large-scale mechanized grain farming in Africa

Large-scale farming of grain and oilseed crops has fared poorly in Africa. Partially mechanized sorghum and sesame production in Sudan, which captured investors' attention after the 1970s global food crisis, illustrates the risks and holds lessons for current investors. The scheme expanded rapidly when financing from Persian Gulf states aimed to transform Sudan into a regional breadbasket through favorable access to land and subsidized credit for machinery. The scheme, which widely neglected prevailing land rights, attracted civil servants and businessmen, most of whom hired managers for their new farms of 1,000 hectares or larger. Statistics indicate that some 5.5 million hectares were "officially" converted to arable land under the scheme, while up to 11 million hectares were encroached upon informally.

Partly because of the resulting tenure insecurity, most of Sudan's semi-mechanized farms rely on a low level of technology. The limited use of fertilizer, rotations, or livestock to maintain fertility points to soil mining in a system that is neither ecologically sustainable nor economically competitive. In an agro-ecological environment comparable to that of Australia, where yields are 4 tons per hectare, sorghum yields are only 0.5 tons per hectare and have been stagnant or declining. Land rights of traditional users, both small-scale farmers and pastoralists, have been neglected, and encroachment by mechanized farms has contributed to serious conflict. Natural vegetation has been destroyed, land degraded, and farms abandoned.

A similar lack of success has occurred with large-scale production of food grains in other parts of Sub-Saharan Africa. Efforts to introduce mechanized production of rainfed wheat in Tanzania on some 40,000 hectares (once prime grazing area for pastoralists) illustrate the challenges. Pastoralists used litigation to force a benefit-sharing agreement with wheat farmers, with limited success. After a US\$ 45 million investment, production became only marginally profitable, without accounting for the social costs associated with the loss of livelihoods and increased land conflicts. Wheat cultivation was ultimately deemed unprofitable, and production has been declining (Lane and Pretty 1991; Rogers 2004). Similar schemes during the 1970s and 1980s in Nigeria to grow irrigated wheat on a large scale using mechanization have largely been abandoned.

The experience of recent investors has also been mixed, as evidenced by case studies assembled by the World Bank, the Institute of Development Studies, and others. Some experienced investors with good access to technology show potential. Examples are Mpongwe's irrigated maize and soybean farms in Zambia (building on several previous attempts) and GADCO's investment in producing rice in Ghana under irrigation and employing Brazilian specialists.

Source: Deininger and Byerlee 2011.

leading to a rental market, including rentals of land to agribusinesses, although the government has yet to recognize private land ownership.

In the meantime, to ensure better outcomes of investments involving the acquisition of farmland, investors and governments need to screen investments for responsible practices to maximize opportunities and minimize risks in terms of economic, social, and environmental outcomes. Several international organizations, including the World Bank Group, have identified



Box 6.9: Principles for responsible agro-investment

Principle 1: Respecting land and resource rights. Existing rights to land and associated natural resources are recognized and respected.

Principle 2: Ensuring food security. Investments do not jeopardize food security but strengthen it.

Principle 3: Ensuring transparency, good governance, and a proper enabling environment. Processes for acquiring land and other resources and then making associated investments are transparent and monitored, ensuring the accountability of all stakeholders, within a proper legal, regulatory, and business environment.

Principle 4: Consultation and participation. All those materially affected are consulted, and the agreements from consultations are recorded and enforced.

Principle 5: Responsible agro-investing. Investors ensure that projects respect the rule of law, reflect industry best practice, are viable economically, and result in durable shared value.

Principle 6: Social sustainability. Investments generate desirable social and distributional impacts and do not increase vulnerability.

Principle 7: Environmental sustainability. Environmental impacts of a project are quantified and measures taken to encourage sustainable resource use while minimizing and mitigating the risk and magnitude of negative impacts.

Source: <https://www.responsibleagroinvestment.org/rai/node/256>.

seven principles for responsible agro-investment, which are being refined through consultations with a range of stakeholders. These principles relate largely to issues surrounding land acquisition and the rights of local communities and land users (Box 6.9). Effective implementation of the principles will require a broad effort to develop capacity and raise awareness among potential investors and government investment agencies.

To the extent feasible, investors should focus on enhancing the productivity of existing land users. Many investors fail to recognize that the most efficient (and equitable) way of investing is through arrangements with existing land users. Such investments can sidestep land transactions, help to close large yield gaps, and promote wider sharing of benefits while reducing capital and management overheads for investors. For example, contracting and outgrower schemes can supply working capital through value chain financing provided by the investor or the investor's financing partners. The Ghana Oil Palm Development Company in Ghana's Eastern Region depends on about 21,000 hectares of plantation, of which 8,000 form part of its own "nucleus estate" and 13,000 are farmed by outgrowers and smallholders. Another approach, using equity partnerships between investors and communities, works best for investments requiring considerable upfront capital for land improvement such as tree plantations, irrigation, and soil amendments. For example, the state of Sarawak in Malaysia has developed a model in which local communities' land rights are recognized so that they



receive a share of the profits generated by investors in exchange for granting investors access to land for a fixed period for oil palm plantations. The section on “Making agribusiness inclusive” (p. 100) provides a fuller discussion of the opportunities and constraints presented by these arrangements.

An initial focus on “brownfield” projects can sometimes provide “quick wins.” Many governments hold considerable land in prime locations previously used as state farms. Across Africa, many plantations and private farms may have been held under formal property rights but have subsequently failed or been abandoned during civil strife. Identifying and publicizing these areas and auctioning rights to use them through a transparent system may be a relatively quick way to bring in private investors. Caution is advised, because the legal rights to such properties are not always clear, especially for abandoned plantations, which local communities may be using even for low-intensity activities such as grazing. Special care is needed to recognize their stake in these lands.

The Democratic Republic of Congo, for example, has almost 1,500 abandoned state and private farms covering about 2 million hectares, or 27 percent of currently cultivated land. A process to clear up legal issues surrounding property rights for these farms, combined with strategic investments in roads and other infrastructure, could gradually make some of this land available both to investors and local communities.

For state-owned and abandoned land, governments need to implement competitive, incentive-based allocation processes. Public agencies need greater capacity to process land investments with less red tape and to ensure that transactions are administered transparently, with due consultation of local communities. Peru’s auctioning of public lands is an example of good practice in implementing a transparent, accountable public system (Box 6.10). Monitoring of investments against agreements and processes for liquidation of nonperforming investments are also required.

Before opening “new land,” available land and existing use rights should be carefully identified and mapped. A critical step to better investment outcomes is to map areas by crop suitability, irrigation potential, environmental sensitivity, and available infrastructure in order to indicate

Box 6.10: The auction system for public land allocation in Peru

Peru uses a public auction mechanism to divest public land for investment. The government first regularizes any land rights to determine if anyone has claims to the land. When the government initiates the auction, the intention to divest the land and the terms of the bidding are posted publicly for at least 90 days. Bidders must prequalify for the auction by posting a bond of at least 60 percent of the minimum bid price plus the intended amount of investment. The successful bidder must deposit the land payment and a letter of credit covering the proposed investment amount with the government. Where an investor expresses interest in public land, the investor is required to present a business plan to a board of public and private sector specialists. If the project is considered viable, the proposal is published for at least 90 days to allow other investors to present offers. If any investor comes forward, the public bidding process above is initiated. If no other investor shows interest, the initial investor can proceed.

Source: Endo 2010.



where investments can provide the highest benefits based on agro-ecological endowments and existing land use intensity. For example, Brazil has demarcated areas for sustainable oil palm cultivation, and financial and tax incentives for establishing oil palm plantations are tied to those areas. This exercise should be combined with mapping and documenting existing rights on a systematic basis, as well as building capacity of local populations on how to manage their land assets most effectively. In some cases, with full community participation and agreement, “land banks” of available land and associated holders of rights to that land can be identified to facilitate access by investors.

Transfers of land rights should be based on users’ voluntary and informed agreement, compensate them fairly, and not involve expropriation for private purposes. To create these preconditions, local people need to be aware of their rights, the value of their land, and ways to negotiate land transfers. International agencies, governments, and civil society can help build capacity in analyzing investment proposals, negotiating with investors, monitoring performance, and ensuring compliance. To provide a basis for negotiating fair compensation in the absence of land markets, communities need to be able to assess the return to the land to be used by the investor.

If they are to perform their respective functions effectively, all stakeholders need access to accurate and transparent information on opportunities, actual transfers, and the technical details of large investments. Information on prices, contracts, rights, and land use plans should be publicly available to help local people monitor the performance of investments and of public institutions to do their jobs properly. Public availability of information on rights and written agreements will help communities and civil society to ensure that contracts are enforced and promises kept. In an inclusive, transparent way, representative and accountable local authorities should drive the process of making land available to investors. Central governments with the support of development partners should provide technical assistance to help local authorities get the most out of investors’ growing interest—for example, by developing a formal inventory of land rights/cadastre, a development master plan, negotiation skills, and model lease contracts. Investors should be willing to commit to long-term investments, pay (to the local communities) rents on land and water, and provide other economic and social benefits in exchange for secured and tradable land rights.

Financing agribusiness

Major issues in financing

Limited access to finance is widely recognized as a perennial constraint on agricultural performance for smallholders or even larger agribusinesses. The peculiarities of agriculture, such as its high seasonality and risks (related to weather and policy); lack of secure property rights; heterogeneity across commodities, farmers, and regions; and bankers’ inexperience in the sector severely limit formal lending to the sector. In many instances, the only financial services available are provided by informal agents or mechanisms, which offer a narrow range of financial services to a limited number of customers (Figure 6.9). Even larger and, at times, agriculturally focused commercial banks have shied away from agribusiness lending due to their own funding constraints (which



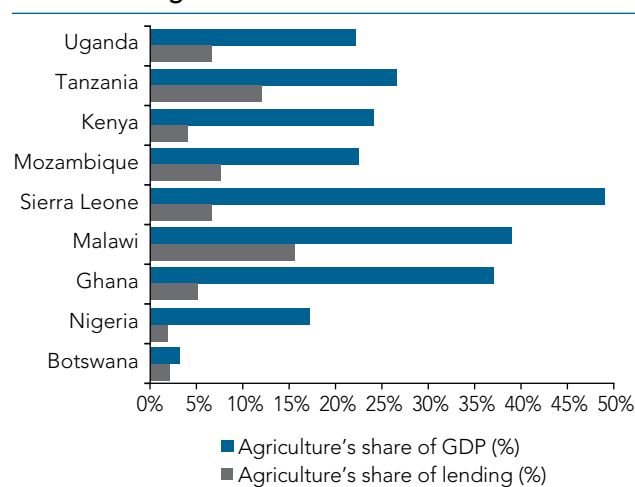
are typically short term), capitalization impediments, or experience with poor repayment of agricultural loans.

The agribusiness sector requires finance from various sources for working capital and to build equity.

Some firms are able to finance their needs with retained earnings, family income, and a variety of finance providers such as commercial banks, agricultural banks, microfinance institutions, and input suppliers. Generally, large commercial firms in Africa benefit from inward foreign direct investment, while others can obtain credit from commercial banks, largely based on relationships built over time. In comparison, SMEs find it more challenging to access finance and use a

variety of instruments to reduce their risk to a level acceptable to domestic financial institutions.

Figure 6.9: Share of commercial banks' lending to agriculture relative to share of agricultural GDP



Source: Figure 7.6 in UNIDO 2010.

UNIDO (United Nations Industrial Development Organization). 2010. African Agribusiness and Agro-Industries Development Initiative (3ADI), High-Level Conference on the Development of Agribusiness and Agro-Industries in Africa (HLCD-3A), March, Abuja.

Main sources of financing

Foreign direct investment

Foreign direct investment in African agribusiness is growing, but there is much potential to attract a higher share of global resources. Africa's inward foreign direct investment stock in agriculture accounts for just 7 percent of the total stock in developing countries, compared to 78 percent for Asia and 15 percent for Latin America. These foreign direct investment figures reflect the high risk of investing in commercial agriculture in Africa. In response to rising commodity prices and strong market growth, however, the appetite is growing among investors, private equity, and investment and sovereign funds to tap into Africa's agriculture and agribusiness markets. Government partnerships such as BRAZAFRICA are fostering South–South foreign direct investment. Investors' motives and successes are mixed, but some bring powerful and continent-sensitive management and financial resources to the fray. For example, investments by companies in emerging economies provide significant opportunities to transfer knowledge and technologies from other tropical regions with more advanced agro-industrial sectors operating in similar agro-climatic zones—Brazil and South Africa for sugarcane, Brazil and Thailand for cassava, Indonesia and Malaysia for oil palm, India for cotton, and Kenya and Andean countries for horticulture and floriculture. The rush of private investors into Africa has also generated considerable negative publicity, especially with respect to the large-scale acquisition of land, which requires stronger safeguards for governments and investors (see “Enhancing access to land and tenure security,” p. 82). Interventions that

Box 6.11: South–South investment fund targets agribusiness and consumer goods

Tana Africa Capital joins the forces and experience of South Africa's E. Oppenheimer & Son International Ltd. and Temasek, the giant, AAA-rated, Singapore-based sovereign investment fund. Announced in August 2011, this 50/50 joint-venture fund targets Africa's agribusiness value chains and fast-moving consumer goods sector, where it sees high business and developmental potential, given the continent's population and urban and economic growth. Tana brings its localized know-how, vast networks, and experience from Southeast Asia and seeks, in particular, to support African companies and the African investment community. Along with the resources to help companies optimize commercial performance and returns, both partners bring a long-term perspective to the initial US\$ 300 million "evergreen investment fund" (in other words, not a fixed-term private equity fund). The fund managers note concern, however, over "too much money chasing too few bankable deals in Africa," raising the specter that investments may not be properly vetted or structured, miss their operational and financial targets, and in the end discourage willing investors.

Source: Interviews with companies.

partner domestic and foreign investors should be promoted and financed if Africa is to exploit the potential and achieve sustainable development in the agribusiness sector.

At least 31 agribusiness investment funds, with target capitalization ranging from US\$ 8 million to US\$ 2.7 billion,⁹⁵ target Africa. Several other global agribusiness funds and multi-sector funds also invest in African agriculture. Increasingly these funds are based in emerging economies (Box 6.11). Notably, many of the targeted agribusiness funds are underwritten in part by donors and international financial organizations to provide risk capital.⁹⁶ For example, the Africa Enterprise Challenge Fund (AECF) and the African Agricultural Capital Fund were established with donations from private foundations and donors to provide catalytic finance for agribusiness companies. AECF provides co-financing grants of up to US\$ 1.5 million to support business plans selected on a competitive basis. AgDevCo is a foundation that provides social venture capital to reduce startup costs. It structures viable, investment-ready opportunities that can attract both domestic and foreign investors.

Financial institutions

Recent experiences show that financial services for agriculture and agribusiness can be profitable for established banks. The range of products available for supporting agriculture and agribusinesses is slowly increasing, aided by some innovative delivery mechanisms. Information technologies have widened opportunities for banks to reach remote rural areas, reduce risk, and increase aggregation in ways that benefit the farmer, the financial service provider, and the investor.

⁹⁵ Miller et al. (2010).

⁹⁶ Miller et al. (2010).



Mexico's commercial bank, Banorte, demonstrates how a bank's agricultural portfolio can thrive. Banorte built partnerships with agro-industrial corporations to bring down the cost of credit and developed a number of indicators for closely monitoring its agricultural portfolio. As a result, these operations have become very profitable. After starting with an agricultural portfolio of 418 million pesos in 1999, Banorte had pushed the balance up to 10.8 billion pesos (nearly US\$ 1.1 billion) by December 2004, and only 1 percent of those loans were in default (Martinez 2007).

Similarly, Ghana's state-owned Agriculture Development Bank has tried to build its balance sheet by diversifying its portfolio away from agribusiness. Its agribusiness portfolio in 2008 comprised only 30 percent of its portfolio, compared with 65 percent in 2003. Whereas many potential agribusiness clients' needs are longer term, only about 10 percent of the Agriculture Development Bank's portfolio consists of longer-term loans, reflecting risk and funding considerations (short-term lending is about 65 percent of the portfolio, and medium-term about 25 percent). In other cases, the privatization of state-owned banks has been necessary to put agribusiness lending on a sustainable footing, as shown by the National Microfinance Bank of Tanzania, now with majority ownership by Rabobank, a global agribusiness financial giant.

Targeted technical assistance can often reduce the risks of agribusiness financing. Several commercial banks in Africa are participating in the World Bank-implemented Agriculture Finance Support Facility (AgriFin), in which technical assistance is provided to these banks and other regulated financial institutions to innovate on delivery mechanisms, products, and systems essential for profitable agricultural financing, including agribusiness. In this program, banks co-finance half of the costs, demonstrating that they are serious about entering the market. For example, AgriFin provided technical assistance to the Centenary Bank of Uganda to expand agricultural lending by creating five new service centers in rural areas, upgrading staff skills, and reinforcing key systems such as agricultural risk management. In four years, the agricultural lending portfolio is expected to double to US\$ 34 million, and the number of agricultural finance clients is projected to increase by approximately 30,000.

Efforts to improve the technical capacity of financial institutions should be accompanied by financial literacy campaigns. The sector needs to build potential clients' knowledge and skills so that they can make more effective financial decisions. The core of a financial-education agenda includes budgeting, saving, managing debt, managing financial products such as insurance or remittances, and making use of bank services.⁹⁷

Value chain financing

Value chain financing can be effective for some types of value chains. Value chain finance allows borrowers to benefit not only through higher lending at better terms but also by obtaining loans that reflect the cash flow pattern of their producing, processing, or trading activities.⁹⁸ In Brazil, 70 percent of financing to commercial agriculture is provided through this mechanism. In Africa, an example of the multiple instruments that can be used in value chain finance is the Caisse des

⁹⁷ Cohen (2010).

⁹⁸ Santana (2007).



Affaires Financières (CAF) Isonga, which finances rice production in the Gitwe region of northern Rwanda.⁹⁹ CAF has introduced multiple instruments, such as production and marketing loans, voucher systems, and leases for transport. Their adoption has led to productivity increases of around 30 percent between 2007 and 2008, side selling has been eliminated, a farmers' cooperative has acquired a truck to reduce transport costs, and all farmers have a bank account compared to only 3 percent in 2003. The farmers' cooperative retains 10 percent of profits. Such arrangements, of course, require contracts and effective enforcement, which do not work with many value chains, due to the nature of processing or markets (see "Making agribusiness inclusive," p. 100).

Reducing the risk of lending to agribusiness

Financial institutions have to manage their portfolios by taking the inherent risk of the agricultural sector into consideration. Portfolio diversification can reduce the risk related to agricultural investment, and banks can also use innovative instruments to reduce the risk within the agricultural portfolio. As the following sections indicate, each instrument has had some initial success, but much remains to be done to make each sustainable and to scale up.

Collateralization

In the absence of titled fixed assets, other types of collateral are sometimes just as effective. The lack of collateral explains a significant part of the mismatch between supply and demand in agricultural finance. Land is the asset traditionally used as collateral for bank financing, but few African farmers have formal title to their land, and even agribusinesses have only temporary use rights that do not provide collateral. Some financial institutions overcome this problem by using moveable assets. Colombian Livestock Bonds are an arrangement in which farmers sign irrevocable contracts yielding ownership rights to unfattened animals, which they commit to fattening by grazing over the following 11 months. The Exchange then issues bonds for 75 percent of the value of the assets.¹⁰⁰

Warehouse receipt systems provide a potential instrument for financial institutions to secure collateral that can be liquidated easily. These systems have several advantages aside from providing access to finance. They improve marketing functions and the consolidation and storage of commodities in value chains; sometimes they make it possible to benefit from better farm prices as the post-harvest season continues;¹⁰¹ and they improve the quality of stored products through the enforcement of standards. Yet no warehouse receipt system in Africa stands out as a clear success that would be easy to emulate. Part of the difficulty lies in the challenging policy and institutional framework, especially for politically sensitive grain crops, which are subject to erratic government interventions that preclude the development of warehouse receipt systems.

⁹⁹ Miller and Jones (2010).

¹⁰⁰ Santana (2007).

¹⁰¹ Meyer (2011).



Even so, a few promising efforts are instructive. Niger initiated an informal inventory/warehouse receipt system (warrantage) in 1998, jointly administered by the Ministry of Rural Development and MUTECH, the financial institution that provides the loan and grades the goods. This informal warehouse receipt system has reduced the credit risk and increased the loan portfolio of local rural financial institutions, and in 2009, all loans granted under the inventory credit model were fully repaid with interest.¹⁰² The system has resulted in a 25 percent average increase of the value of the stored produce, a net profit of 8 percent on the additional income-generating activities, and a total capital increase of approximately 33 percent. Ethiopia is experimenting with warehouse receipt systems for coffee, beans, maize, and wheat. The tradable value of the commodities involved in these systems reportedly is about US\$ 1.2 billion. Lastly, Uganda's warehouse receipt system links the warehouses to banks and the commodity exchange.

Leasing

Leasing is an alternative instrument for individuals and firms that want to acquire equipment but often lack the collateral that enables access to long-term credit. Where contract enforcement and property rights are weak, the establishment of a specific leasing law is generally a prerequisite for developing a leasing market. Other requirements include a well-functioning asset registry, reliable insurance and maintenance services for equipment, and an established market for used assets.

In Uganda, DFCU Leasing is one of the premier leasing finance houses. They finance major assets such as vehicles, maize and rice milling equipment, cotton ginning equipment, tractors, and cooking equipment for hotels and schools. DFCU Leasing charges interest rates similar to those offered by banks, but its leases are more attractive to SMEs because the financed assets themselves generally serve as the collateral, and leases offer longer payment periods (three to five years, compared with the typically short-term loans extended by banks).¹⁰³ Special donor programs¹⁰⁴ have enhanced the capacity of DFCU Leasing to increase its market penetration by broadening its services outside its current market niche (loans of US\$ 25,000–250,000) and extending them to rural areas. One of the most noticeable impacts of DFCU Leasing is the provision of appropriate transport, which has enabled producers of perishable food products to access markets in urban centers (Kisaame 2003).

Partial credit guarantees

The use of partial credit guarantees (PCGs) accompanied by technical assistance can offset the market failure caused by weak information. PCGs are especially effective where banks have little reliable information about the borrower and perceive that the agribusiness sector is too risky. PCGs share risks with selected commercial banks on portfolios of new loans in order to encourage the banks to assume greater lending exposure and thereby catalyze credit to the agribusiness

¹⁰² Miller and Jones (2010).

¹⁰³ Nair and Kloeppinger-Todd (2006).

¹⁰⁴ Including IFC's Women in Business program and USAID's Support Program for Economic and Enterprise Development (SPEED).



market. PCGs may also tap into banks' potential to accommodate longer-term exposures to complement their traditional focus on shorter maturities. In some cases, the training and technical assistance provided with the guarantee schemes are more important than the guarantees themselves to stimulate lending to a new clientele. Nonetheless, poorly designed PCGs can distort markets and/or encourage inappropriate risk taking. For example, Ethiopia's 100 percent guarantee to banks for fertilizer loans removes any incentive to screen borrowers or recover credit.

The International Development Association (IDA) and International Finance Corporation (IFC) have found that PCGs can generate positive results, as in the IDA-supported Integrated Growth Poles Project in Madagascar. In this project, over three years two participating commercial banks approved over 1,200 new loans, valued at US\$ 30 million, to SMEs, of which 70 percent were first-time borrowers. The project created SME departments in the two participating banks. All bank staff (including loan officers) received training and on-site coaching in lending to SMEs. Nearly 400 SMEs attended training and promotion events to learn about financial statements and taxation, prepare business plans, and improve their negotiating skills with bankers.

Another example is the USAID Rural Savings Promotion and Enhancement of Enterprise Development (Rural SPEED) project in Uganda, where about 40 percent of the guaranteed loans went to agriculture in the first guarantee and 78 percent in the second. The guaranteed coverage of 50 percent on net principal losses was found to have increased lending. Repeat loans to microfinance institutions were larger than the original loans, suggesting that the guarantees helped cover the additional risk. Some banks reduced collateral requirements, others began to accept different types of collateral, and a few offered unsecured lending to proven clients (Meyer 2011).

Insurance

Agricultural insurance is growing in importance but, unless subsidized, its overall use in Africa is often low because of costs and moral hazard. A growing number of countries in Sub-Saharan Africa, including Mauritius, Nigeria, South Africa, and Sudan, provide agricultural insurance, although coverage is still very low.¹⁰⁵ Market and regulatory impediments are often invoked to justify public intervention in the provision of agricultural insurance.¹⁰⁶ One form of crop insurance for which private markets have flourished for more than a century in other parts of the world—with very limited public intervention—is insurance against hail, a risk that is largely nonsystemic. Argentina, for instance, has 23 private insurance companies supplying this product, for which the costs are low enough that farmers can afford to pay the premium themselves. Weather-indexed insurance schemes being piloted in Africa pay out for a defined rainfall level to overcome moral hazard. A growing practice is to include weather-indexed crop insurance as part of loan packages provided by agricultural banks and microfinance institutions, as currently done in India. In Sri Lanka, access to insurance is packaged with facilitated access to markets (supermarkets), which increases farmers' willingness to pay the insurance premium.

¹⁰⁵ Mahul and Stutley (2010).

¹⁰⁶ Mahul and Stutley (2010).



Upgrading infrastructure, using public-private partnerships where possible

Investment in infrastructure is a high priority for jump-starting agribusiness throughout Africa. It will require sharply increased public investment in partnership with the private sector to the extent possible. Best bets for infrastructure investment are irrigation, roads, and markets.

Irrigation

Predictable access to water is key to increasing productivity in the agricultural sector. Access to irrigation infrastructure to provide predictable and affordably priced water often has a central role in increasing investments and improving productivity in agriculture. Irrigation allows producers to take full advantage of productive inputs and opportunities for high-value agriculture. It also decreases risks for credit institutions and for buyers of produce, and hence helps secure contract obligations. With climate change, the need to improve management of water resources will increase.

Irrigation in Sub-Saharan Africa is low. Africa has substantial water resources but uses only about 3 percent for irrigation. Around 9 million hectares of the 200 million currently cultivated (less than 5 percent) are irrigated, and if current investment rates persist, irrigated area is expected to expand only at about 1 percent annually.¹⁰⁷ In contrast, 44 percent of Asia's cultivated land is irrigated.¹⁰⁸ Most of the irrigation schemes in Africa are delivering well below potential.

Public-private partnerships offer potential to accelerate and better manage investments in irrigation. Given the private nature of irrigation as a productive input, the private sector has a role in investing in irrigation. Yet the high initial costs and risks involved—especially in the absence of secured, tradable land rights for investors and smallholders—often make it necessary for the public sector to provide irrigation services. Because water is a critical and limited resource, the public sector also has a role in regulating its sustainable use.

Identifying the current and future needs for irrigation in the sector as well as potential investors is the first step. Large irrigation investments need to be based on an assessment of current and future needs for water in the area, available water resources, market opportunities, and expected impacts of climate change. This assessment forms the basis for developing water rights and also determines the scope for private sector involvement in sharing some of the risk and cost. Public-private partnership in irrigation is a relatively recent model, and much piloting and learning is required in the African context. Experience from Brazil suggests a number of key questions. Do potential investors have sufficient capacity to invest in larger schemes? How can fair shares of co-financing and co-management be negotiated between the public and private entities? How can public co-financing be designed to ensure equitable and sustainable outcomes? How can investors be granted secure and tradable land rights while ensuring that local communities also benefit (as discussed earlier)?

¹⁰⁷ FAO Aquastat.

¹⁰⁸ FAOSTAT.



Box 6.12: Morocco's Guerdane Project—A pioneering public-private irrigation project

In June, 2004, a consortium led by Omnium Nord-Africa was awarded the 30-year concession to co-finance, construct, and manage the irrigation infrastructure in Guerdane, Morocco. The project included construction of canals from a dam some 40 miles from the area, as well as water distribution infrastructure. The total cost of the project was US\$ 85 million, of which the government provided about US\$ 50 million, partly as a grant and partly as a subsidized loan, and the rest was provided by the private sector.

Risks were divided among the stakeholders. The concessionaire, government, and farmers all carried a share of the risk of water shortage. Risks related to water demand and payment of water fees were mitigated by initiating a subscription for water services among farmers before the project was underway and by requiring the concessionaire to initiate construction only when the subscription level had reached 80 percent. Because the government's primary interest was to assure an affordable water supply for farmers in the area, the only criterion for selecting the concessionaire was the lowest water tariff.

Source: IFC 2010.

There are several different irrigation models, with different degrees of private sector involvement. Regardless of the size of the systems, the structure of the public-private partnership and the extent to which risk is shared will depend very much on whether the government or the private sector makes the investment in the infrastructure. Under the Utility Model, the public sector invests in and owns the irrigation infrastructure but outsources the operation and maintenance to the private sector. Outsourcing can be transparently implemented through public auctions. Used in other regions, this model is still under development in Africa, notably under a World Bank investment that is planned for Ethiopia and is based on a model funded by the IFC in Morocco (see Box 6.12). Alternatively, irrigated land can be developed through public investment and leased to large producers, who agree to support the access of neighboring smaller producers to technology and markets. This model has been piloted successfully and is being expanded under the Chiansi irrigation project in Zambia. With proper land titles, smallholders in the region have agreed to long-term leasing of their unused land to professional farm companies. The companies pay operation and maintenance costs for the entire irrigation system, including irrigation provided to smallholders. In addition to the rent paid by the farm companies to the land owners, smallholders will over time also have the option of buying shares in the company.¹⁰⁹

Under other models, the private sector makes the main infrastructure investments, and the public sector's role is to provide an enabling environment that includes the facilitation of large-scale

¹⁰⁹ InfraCo (2010).



financing and secure and tradable land tenure and water rights. This model seems to work best where primary irrigation channels are already in place and the private sector then invests in the secondary and tertiary irrigation infrastructure.

Public-private partnerships in irrigation are not limited to large-scale infrastructure but can also work in the *provision of low-cost irrigation equipment*. The most common strategy is to provide matching grants to co-finance small diesel pumps that are privately operated by small-scale farmers or groups of farmers.¹¹⁰ For more entrepreneurial farmers with growing businesses, individual loans may be more cost-effective.¹¹¹

Rural roads

High transport costs are a major constraint for agriculture, and poor infrastructure is not the only cause of the problem. Africa's high transport costs are widely documented. Frequently they result in high producer-to-consumer margins and create fragmented markets, with regions of food scarcity and surplus existing alongside one another within the same country.¹¹² Donor and government investments in infrastructure have reduced transportation times significantly along major roads in Africa in recent years, but truck freight rates can still be two times higher than in Latin America and Asia because of high fuel costs, uneconomic and one-way payloads, limited competition in trucking, logistical delays, and road blocks. Costs are particularly high for traffic from seaports to the interior.¹¹³ Rents extracted at checkpoints within countries, and receipted and "un-receipted" fees collected at border posts, can raise the price of duty-free goods by 10–30 percent within a common trading zone such as ECOWAS, depending on the goods shipped and the corridor used.

Inadequate rural roads pose an additional obstacle to farmers' access to markets and increase post-harvest losses. An estimated 75 percent of farmers are located more than four hours away from the nearest market by motorized transport, compared to 45 percent in Asia.¹¹⁴ One study indicates that rural road transport costs 3–5 times more than main road transport, so that 45 percent of transport costs are incurred in the first 28 percent of the distance transported from the farm.¹¹⁵ Poor rural roads also cause post-harvest losses, especially during rainy seasons. It is estimated that it would cost approximately US\$ 110 billion (including maintenance) to provide 75 percent of the

¹¹⁰ World Bank (2007a).

¹¹¹ World Bank (2008).

¹¹² World Bank (2010, 2012a).

¹¹³ A recent study benchmarked the cost of trucking a 20-foot container (TEU) from Tema, Ghana to Ouagadougou, Burkina Faso (1,050 kilometers) and from Newark to Chicago in the United States (1,130 kilometers), trips of comparable distance but admittedly much different circumstances. The Tema–Ouagadougou trip cost an average US\$ 3,200/TEU, and the time ranged between 13.5 and 22 days. The Newark–Chicago route cost US\$ 654/TEU and took 5 days. Due to lower truck payloads returning from Ouagadougou and Tema, rates are discounted at US\$ 1,755/TEU, compared with US\$ 765/TEU for Chicago–Newark.

¹¹⁴ Sebastian (2007).

¹¹⁵ World Bank (2012a).



rural population in Africa access to an all-season road within 2 kilometers.¹¹⁶ The private sector sometimes contributes by building access roads to large plantations, but it has few financial incentives for more general financing of rural roads. Instead, the lack of roads and other basic infrastructure is seen as an impediment for private actors to invest in rural areas. Public investment is critical, but communities themselves, through community-driven development grants, can also contribute to strategically upgrading rural roads.

Market infrastructure

Public-private partnerships are often considered in the context of traditional infrastructure such as irrigation and roads, but they can also help fill important gaps in market infrastructure. To come to terms with underutilized storage left over from the parastatal era, the Government of Uganda provided storage facilities to Uganda Grain Traders Ltd., a company formed by 16 national grain trading companies for coordinating processing, storage, and quality control for export markets. Public investment to set up more advanced and strategically located wholesale markets can stimulate the growth of regional and urban wholesale markets and make it easier to improve quality and safety standards, especially for burgeoning fresh produce markets. These investments in hardware can be most effective when combined with market software (market information systems, for example) and collective action by traders themselves (as discussed in “Improving market performance,” p. 60). Similarly, with the need to maximize the shelf life of fresh fruits and vegetables, public-private partnerships have worked to overcome the high startup costs involved in building cold chains. Two examples are Kenya’s fresh fruit and vegetable terminal and Ghana’s cold storage facilities at the main port, each financed partly by government and privately managed. As with public-private partnerships in irrigation, successful partnerships to support markets require a generally advantageous business environment that provides access to markets and finance for private sector participants.

Despite emerging signs of success, experiences with public-private partnerships remain limited and challenges remain. Public-private partnerships are still limited in number and often too recent for impact evaluations, yet they appear to help reduce constraints on private investment where the public counterpart is an international organization or donor agency.¹¹⁷ It can be problematic to develop appropriate models, however—to identify complementary incentives for public and private investment and to sustain interest in sharing the investment risks. The success of any infrastructure investment also depends on factors beyond the investment project itself, such as the markets available and the prevailing regulatory environment (especially land regulations). For these reasons, it is important that any public-private partnership such as those described here is seen as part of a wider effort to engage agribusiness in tapping market opportunities.

¹¹⁶ Carruthers and Krishnamani with Murray (2008).

¹¹⁷ Poulton and Macartney (2011).



Building skills and entrepreneurship

Issues in building skills

Commercial farming and agribusiness today are managerially and technically complex. Managers and decision makers need new skills, mentoring, and ongoing access to information to cope with rapidly changing technology, pests, and markets, within an environment of climatic risk and price volatility.

Interviews with agribusiness leaders also widely note the lack of well-trained university and diploma graduates with skills in communication and team work and practical skills in business management, marketing, and finance. Originally designed to facilitate public sector employment, many programs give scant attention to skills required in market-driven value chains, such as post-harvest handling, processing, agribusiness management, entrepreneurship, rural finance, and standards. A World Bank review of agricultural education and training found that “few institutions have so far made the major changes required to produce significantly different types of graduates for agribusiness.”¹¹⁸ At the same time, the more educated youth require greater incentives to enter agriculture; when they do, they require support (skill development, capital) to become an emerging class of entrepreneurs—farmers as well as owners and managers of small and medium agribusinesses.

Priorities for skills

Build the range of agribusiness skills. A range of training is needed (Figure 6.10). Now there are some good examples of African universities that have revamped their curriculums and partnered with private firms to provide the skills demanded in the labor force; Makerere University’s Masters in Agribusiness is one. Programs that focus on women can be especially effective in building the next generation of human resources. Again in Uganda, the African Rural University for Women aims to “produce entrepreneurs who are self-motivated and innovative.”

Agribusinesses often seek very specialized skills that can be provided through highly focused short-term training. The lack of particular skills can be a major constraint to establishing new industries. For example, despite favorable conditions for floriculture in East Africa, companies in Uganda and Ethiopia lacked well-trained middle managers and technical workers. At the request of the growers’ associations, experts from the Netherlands worked with African academic institutions to provide short-term training in specific skills to farm supervisors and assistant managers of various departments, including skills in greenhouse, fertigation (fertilization and irrigation), post-harvest handling, and pest management. In many cases, an obsolete curriculum had to be replaced by new processes and problem-solving approaches, especially using the internet.

¹¹⁸ World Bank (2007b).



Building the future generation of entrepreneurs requires innovative training and support services.

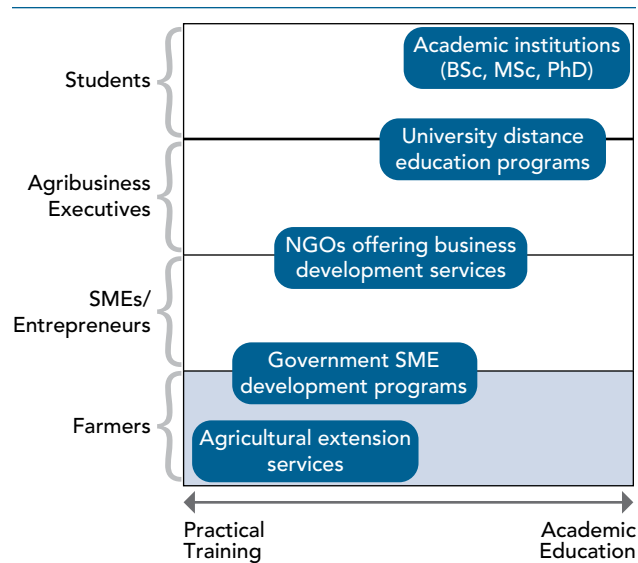
Several nongovernmental and private organizations provide entrepreneurial training focusing on agribusiness. Market Matters Inc. provides a one-week intensive program to SMEs, followed by three months of aftercare. One rigorously evaluated program is the Business Plan Competition managed by Technoserve to build entrepreneurship for businesses looking to grow. This program, which focuses on agribusiness, provides training to develop a business plan and then judges and rewards the best plans through seed capital. In Central America, this program fostered an average 250 percent increase in sales within two years for those trained and nearly 500 per-

cent for those winning the competition. Although the results were quite variable, women on average performed better than men. Over time, the program has improved its performance by more rigorously selecting candidates for training and providing aftercare to competition winners. The program is now being scaled up in Sub-Saharan Africa.¹¹⁹

A big challenge is to encourage rural youth to enter agriculture and to provide the training and services for them to succeed as commercial farmers or small and medium entrepreneurs. One of the most successful examples is the Songhai Center in Benin, founded by Father Nzamujo and now graduating 300 young people annually in agribusiness through practical training involving private partners. The center also facilitates access to finance and advisory services to start a business. To date, graduates have achieved a success rate exceeding 70 percent when monitored after five years. The center is now setting up similar Rural Youth and Agribusiness Development Centers in other countries in West and Central Africa.

A major gap in the commercialization of agriculture is the absence of continuing information and advisory services for farmers and small businesses. The demise of public extension systems in Sub-Saharan Africa since the 1990s has opened opportunities to experiment with more market-driven advisory services. Many systems are moving to pluralistic approaches. Often different models are used within a country depending on the type of farmer and commodity.¹²⁰ Although

Figure 6.10: Agribusiness training is needed at many levels



Source: Reproduced from Mabaya, Christy, and Bandama (2010). Mabaya, E., R. D. Christy, and M. Bandama. 2010. "The Current State of Agribusiness Education and Training in Africa." Contributed Paper presented at the Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa (AAEASA) Conference, September 19–23, Cape Town.

¹¹⁹ Technoserve (2009).

¹²⁰ Davis (2008).

extension is still largely publicly funded, funds often flow through local governments, NGOs, and farmer organizations that have a controlling interest in fund allocation. Uganda's National Agricultural Advisory Services empowers farmer organizations by providing grants that they use as co-financing to contract pre-certified NGOs and private providers to deliver specific advisory services. This program significantly increased gross farm revenues from 2004 to 2007, but its impacts have differed by region and have been greater for high-value enterprises and male farmers.¹²¹ The increase in contract farming has also given rise to private advisory services. Dunavant, for example, hires and trains its own extension agents from local communities to deliver advisory services to its contract cotton producers in Zambia. New ICTs have major potential to fill the information gap (see "Improving market performance," p. 60). The challenge now is to scale up successful innovations to fill unmet demands for such services.

Making agribusiness inclusive

While private agribusiness investment is essential to growth, the design of such investments can strongly influence employment and equity outcomes. Agribusiness investments should not be assumed to have positive development impacts. Large enclave projects such as fully mechanized farms may create few jobs or local benefits, while increasing social and environmental risks. With the world's youngest and most rapidly growing population, Africa has a daunting challenge to create jobs, especially good jobs—some 25 million will enter the workforce annually by 2025.

Agribusiness development programs need to pay particular attention to inclusive growth that integrates market-oriented smallholders and rural communities into dynamic value chains through contract farming and the generation of jobs. This strategy makes good business sense, given the complementary character of the assets of each party—investors with access to capital, technology, and markets, and smallholders with access to land, labor, and local knowledge. The way these assets are combined will vary widely according to the industry, type of market, local institutional context, and factor endowments. The principles for responsible agricultural investment provide broad guidance (Box 6.9).

Facilitating contract farming and outgrower schemes

Various contract farming and outgrower schemes have provided opportunities to smallholders in a range of settings, but they are not a panacea. Contract farming is an agreement between a downstream processor or buyer and farmers, either individually or in groups, that guarantees a market and/or price for a product of specified quality. The contractor usually provides inputs and advisory services, and some contracts fully specify all management practices to be applied. Contract farming works for products that have to be processed or shipped quickly or products that

¹²¹ Benin et al. (2011).



provide a price premium for demanding standards, so that contracts can be enforced readily by processors or shippers with quasi-monopsony powers. Contracts are used widely in sugarcane, oil palm, dairy, poultry, and export horticulture, and most evaluations indicate positive benefits for smallholder participants and sometimes positive spillovers to other farm enterprises and neighbors. Recent attempts to extend contract farming to grains are interesting and should be monitored closely for sustainability (Box 6.13). In outgrower schemes, investors finance crop establishment up front and agree to process the product, but these arrangements may or may not involve contracts for input supply and technical assistance (Box 6.14).

Governments and donors sometimes have a role in facilitating contract farming. Contract farming is essentially a private arrangement between farmers, or preferably their associations, and processors or shippers. Governments and donors can reduce startup risks to investors, however, by co-financing initial investment costs for smallholders, such as tree crop establishment or irrigation, provided that beneficiaries are selected in an open and transparent manner. A recent review of mostly successful contract farming and outgrower schemes in Ghana revealed that donors had in each case co-financed startup costs for smallholders.¹²² Alternatively, governments can decree that agribusiness investment projects include a certain percentage of smallholders, in return for concessions on land or tax incentives, as in Indonesian and Liberian oil palm, although these arrangements are subject to rent seeking. Another approach is for governments to provide model contracts and facilitate public-private arrangements that assign underutilized public extension agents to provide advisory services.

Governments can also implement actions to strengthen farmers' bargaining position. The bulk of evidence suggests that contract farming raises incomes of smallholders relative to neighboring farmers without contracts. However, given that companies may have monopsony buying power, there is a risk that farmers will be "exploited" (Box 6.15). These risks can be mitigated through actions that strengthen farmer organizations and their ability to negotiate fair deals with companies. Provision of information (market prices, for example) and an independent facility to test compliance with standards can also support farmers' bargaining position. Governments could also provide an informal dispute mechanism in areas where seeking redress through the court system involves high transaction costs and time, beyond the reach of smallholders.

Strong producer organizations can reduce companies' transaction costs and increase producers' bargaining power. Strong producer organizations play many roles in strengthening value chains, especially the links between producers and processors and shippers. Some francophone countries in West Africa, such as Senegal and Mali, have made good progress in this area by providing enabling legislation and long-term capacity building for producer organizations through training and advisory services. Cooperatives in Kenya's dairy industry have also had some success in establishing and managing collection stations with cooling facilities. Government-initiated producer organizations and cooperatives or those with high levels of government dependency have not proven sustainable.

¹²² FAO (2011).



Box 6.13: Will contract farming work for grains in Africa?

Traditionally, contract farming has not been employed for staple food crops. Investors have few incentives to pursue contract farming for staple grains because they can be procured on the open market, and the risks of contracting are high because it is difficult to enforce contracts with many processors and buyers. Some promising models are emerging, however. They were first developed in Mexico but are now extending to Africa.

Partnerships between Mexican agribusiness, nongovernmental organizations (NGOs), and *ejiditarios* (people having shares in an *ejido*—communally held land): Following the 1990 reform permitting the renting and sale of ejido land and partnerships with the private sector, a number of contractual agreements have been brokered between input supply companies, maize-processing companies, organizations of small-scale farmers, and NGOs. The NGOs manage these contracts, facilitate access to inputs from suppliers, arrange the contract with the processing companies, and provide technical assistance. Experience to date has been mixed. More success has been seen in the state of Chiapas, where farmers achieved maize yields of around 5 tons per hectare. The difficulty of enforcing contracts for a widely traded commodity like maize has undermined credit repayment, however.

The Ghana Grains Partnership. This partnership, initiated in 2009, brings together a multinational fertilizer supplier (Yara), a major Ghanaian input supplier and grain trader (Wienco), and an association of farmers (Masara N'Arziki). The partnership focuses on the maize value chain in northern Ghana, a relatively poor area that nevertheless has substantial production potential. Underwritten by a startup grant of US\$ 1 million from the Africa Enterprise Challenge Fund, the companies work with farmer associations to provide inputs, credit, and advisory services. Groups of 5–10 farmers are encouraged to plant hybrid maize in blocks (of about 2 hectares per farmer). Each farmer group signs a contract with the association, which in turn signs a contract to supply the maize to Wienco. Peer pressure within the group is used to enforce credit repayment. Participation in block farms has been lower than anticipated, and the program is moving toward supporting fewer but larger farms. Wienco also provides a central buying facility with driers. In 2010, nearly 3,000 farmers planted a total of 5,600 hectares, with average yields of 4 tons per hectare—more than double the average for the region. The target is to scale up to 200,000 tons of maize. Financial institutions committed US\$ 10 million to the association for working capital for 2011. As in Mexico, side selling to independent traders is a problem—about 20 percent of farmers practice side selling. It is not clear how sustainable the model will be on scaling up, given that current high maize prices encourage side-selling, the association is relatively inexperienced, and the startup grant is due to expire.

Lessons: Contract farming for grains may work in specific situations with a specialized market (for example, maize for poultry feed, sorghum for breweries). It is likely that a broader approach, built around the emergence of small and medium commercial farms, will be needed to meet market demand.

Source: Guyver and MacCarthy 2011; author interviews.



Box 6.14: Outgrower schemes for plantation crops

Many plantation crops such as sugarcane, oil palm, and tea are especially amenable to outgrower schemes, since they require a high initial investment to establish a processing facility to serve several thousand hectares of a crop that may not provide a harvest for several years. These crops may also require processing within a narrow window after harvest. Investors usually like to include a nucleus plantation to ensure a minimum feedstock supply for their processing facility, but they may lack the financing, labor, and management resources to establish a larger plantation. At the same time, smallholders rarely have the capital to invest over several years prior to the first harvest, so an agreement with an investor to develop the plantation for later transfer to smallholder management and ownership is often in the interest of both parties.

Mumias Sugar Company and contract farming in Kenya: In Kenya, some 100,000 smallholders grow sugarcane and supply about 85 percent of all cane to millers. Smallholders dominate sugarcane production because of the dense rural population and the fact that the crop is produced without irrigation. One of the few companies with prospects of becoming competitive is Mumias Sugar Company, established in 1973 as a government-led joint venture but now operating under majority private ownership. In 2004, smallholders' average yield was 78.5 tons per hectare—higher than yields of 65.6 tons per hectare from the nucleus estate. Prices are fixed by the government, and harvesting and transport are organized centrally. Outgrowers perform the less time- or quality-sensitive operations, such as fertilizing and weeding. The operation has been a success, but high production costs prevent sugar from being competitive in world or even regional markets. This smallholder-based system could be competitive, however, with higher yields, better rural roads, and more efficient transport (transport costs account for 37 percent of production costs).

Zambia Sugar Company outgrower scheme: More than 80 percent of the cane in Zambia is produced on Zambia Sugar Company's (ZSC's) estate of 10,500 hectares at Nakambala. Cane is also supplied to ZSC by independent commercial farmers (4,400 hectares) and through the Kalaya Smallholder Out-grower Scheme (2,164 hectares) managed as an extension of the ZSC estate. The company provides a range of services to smallholders in its outgrower scheme, such as extension, irrigation, inputs, land preparation, planting, and training. Members of the scheme undergo six months of hands-on training in cane production. After the training, each farmer is given 4 hectares of cane to manage and 0.5 hectares for homestead and food crop production. Farmers are paid 40 percent of the value of the delivered sugarcane, since input costs (water, fertilizer, chemicals, and cutting) account for the remaining 60 percent.

Source: World Bank 2009; Tyler 2008.

Other ways to make agribusiness more inclusive

Small is not always beautiful. Involving smallholders is usually the most equitable way to spread the benefits of agribusiness investments, since smallholders receive returns to both labor and land. Yet in some situations, scale economies, high fixed costs, and demanding production practices give large-scale production a strong efficiency advantage. Large-scale operations can still generate



Box 6.15: Contract cotton farming links smallholders and multinationals

Since Zambia fully liberalized its cotton sector in 1994, it has experienced the most rapid growth of cotton production in Africa, increasing production by six times and generally being regarded as a highly competitive producer. Nearly all cotton is produced under contract to two and sometimes more multinational firms, which have their own geographical jurisdictions. The largest company, Dunavant, works with 150,000 smallholders, each with an average of 0.4 hectares of cotton. Dunavant provides inputs and advisory services to farmers through contracts with local distributors. Distributors are rewarded according to the rate of credit repayment, with a minimum of 80 percent required to retain the distributor franchise. Credit recovery has been high, averaging 85 percent, enforced through the strong incentives and local knowledge of the distributors. The share of the export cotton price received by farmers has fallen from 65 percent to 45 percent, however, indicating that companies may be exercising some monopsony powers.

Source: Aksoy and Anil 2011; Tschirley, Poulton, and Labaste 2009.

substantial benefits for local communities if they create good jobs, especially if competitive wages are complemented by training programs for employees and educational and health benefits for families. Many such jobs are in the processing sector; cashew processing employs many thousands of largely poor women in Nigeria, for instance. The responsibility for investors is to ensure that labor standards are enforced, including farm safety measures.

Governments and donors can encourage equity shares by local communities in emerging companies. Even where production is on a large scale, there are a growing number of examples of smallholders and local communities owning equity in agribusiness companies. These arrangements, often promoted by the companies themselves or underwritten by donors, may be part of land deals with local communities (see “Enhancing access to land and tenure security,” p. 82) or designed to build and reward employee and local community support. Equity shares have a proven track record in the tea industry, a highly labor-intensive enterprise and one historically plagued by problems of labor relations. The farmer-owned tea companies are reported to provide additional incentives to smallholders to deliver quality produce (Box 6.16).

Equity shares can have broader participation than employees. In 2009, Socapalm, Cameroon’s largest oil palm producer, floated shares on the fledgling Douala Stock Exchange to raise funds, build local loyalty, and give an opportunity to financial institutions, the general public, and employees to share in the risks and rewards of the expanding company.

Investor agreements can transfer technology, skills, and social services to local communities, even without contract farming or outgrower arrangements. Some investors such as Emergent Asset Management in Southern Africa and Altima in Zambia have proactively initiated programs to share technology and skills with local communities and have also supported local schools and health clinics. Other agreements remunerate local communities through negotiated deals on land transfers (see “Enhancing access to land and tenure security,” p. 82). In the short run, these actions may be regarded as a form of corporate social responsibility, but in the long run, the companies



Box 6.16: Smallholder equity in the tea industry

Tea has been one of Africa's few export and productivity success stories. Smallholders have played a central role in this success, often through co-ownership of the tea-processing sector. The Smallholder Tea Company in Malawi (STECO), the Nshili Tea Company in Rwanda, and the Kenyan Tea Development Agency (KTDA) all have significant equity held by smallholders, varying from 30 percent for Nshili to 100 percent for STECO and KTDA. At various times, these companies have also received startup funding from donors. In Kenya, by far the largest tea producer, smallholders account for a 62 percent share of national tea production. Significantly the yield gap between smallholders and estates has fallen from 68 percent in 1980 to 18 percent today. KTDA, which was privatized in 2000, under ownership of smallholder tea producers, has played a critical role in this success. KTDA provides inputs and advisory services to 550,000 smallholders with an average of 0.4 hectares and management services for 63 smallholder-owned factories. KTDA and other smallholder tea schemes have built on the infrastructure, technology, and know-how provided from initial investments in large-scale estate production.

Source: Mitchell 2011.

view them as good business practice for reducing conflict and widening market opportunities. Governments sometimes decree such arrangements as part of foreign investment packages, but they often lack the capacity to ensure that meaningful programs are put in place.

Profitable investors may also benefit communities by providing infrastructure and tax revenue. Large investments often provide improved infrastructure for local communities. A large sugarcane-ethanol investment projected at US\$ 280 million in Mozambique includes about US\$ 2.7 million to construct a bridge over a river where none existed before. While not a large part of the total investment, the bridge should provide considerable benefits to local communities, giving them better access to markets and social services.

In a decentralized governance system, local businesses can be a major source of revenue for infrastructure and other purposes. Kenya, in addition to collecting local land taxes, levies a 1 percent tax on commercial production of cash crops under the Agricultural Produce Cess Act to develop and maintain roads and other infrastructure. Although very few countries in Africa are presently sufficiently decentralized or have the means to generate local revenue in this manner, large agribusiness companies can still represent a significant source of fiscal revenue for national governments.





Getting the job done:
Implementing the agenda

Putting agriculture and agribusiness at the top of the agenda

A central message of this report is that agriculture and agribusiness should be at the top of the agenda in much of Sub-Saharan Africa, and this requires strong leadership and commitment from both the public and private sectors. African governments and investors together need to construct a bold vision for agribusiness and mobilize talent and resources accordingly. A well-coordinated approach to promote agribusiness can be orchestrated through a broadly owned national strategy that defines priorities for upstream and downstream industries and services as well as for agricultural production. Backed by analysis and evidence, a successful strategy actively engages the private sector to diagnose investment constraints and opportunities and prioritizes those that can be addressed in the short to medium term.

While most countries have developed agricultural strategies either as part of their own planning processes or as part of CAADP processes, these strategies are generally weak in (1) articulating the role of private investment for achieving competitiveness and (2) addressing issues beyond the farm gate in inputs, processing, logistics, and retail. CAADP Pillar 2 has noble objectives: raising competitiveness; seizing opportunities in domestic, regional, and international markets; developing value chains; and strengthening the capacity of producer and trade associations. Translated into concrete investment plans, they should begin to fill this gap.

Even with a broadly owned agribusiness strategy, how can the agribusiness agenda be implemented? This final section begins by reviewing experiences from other regions and provides guidance for proactive implementation of an agribusiness agenda in Africa.

Taking a proactive stance: Lessons from success in other regions

The development of competitive agro-industry in other regions provides useful lessons on how the state can be proactive in driving agribusiness investments and also on the risks involved. Over the past 20 years, countries from Latin America and Southeast Asia have captured the lion's share of the increase in global food and agricultural exports, which have tripled (in nominal value terms). During that period, several of those countries developed highly competitive new industries and became world leaders in a specific product. A big question is what roles governments played in stimulating growth of these new industries, beyond standard prescriptions of providing a good macro-economic and business environment, and investing in public goods such as infrastructure and supporting institutions. A further question is what downside risks, if any, were linked to those state interventions.

To provide examples of state roles and risks, a number of cases were reviewed and are summarized in Box 7.1 for a small, well-governed country and for a large country that has rated low in the past on governance. As far as possible, state roles were categorized in a range from providing a conducive macro-economic and business environment to providing incentives and resource transfers specific to the industry or even to specific firms within the selected industry. In all cases, the industries were largely new but showed spectacular growth (Table 7.1).



Box 7.1: Case studies of competitive agribusiness

Uruguay—soybean, rice and plantation forestry: This small country (3.5 million people) has increased its world market share in 8 of its 10 top agricultural exports over the past 20 years. During this period, it has maintained a stable macro-economic environment and an open policy toward foreign direct investment. It had the highest score for governance indicators among the countries reviewed—although it scored relatively poorly in the Doing Business Indicators. It has also developed two significant new export industries. The new soybean industry garnered US\$ 327 million in foreign exchange earnings in 2008; the new pulp and paper industry, based on plantation forests, provided US\$ 902 million. Uruguay also increased rice exports nearly four times to 1 million tons, worth US\$ 461 million in 2009, with significant exports to Africa in recent years.

The state has played different roles in the development of these industries. The soybean industry received no specific government incentives and was not jump-started through a special program. Large Argentinean agribusiness companies, which are highly taxed on soy exports in their own country, were able to import seed to Uruguay (thanks to flexible regulations) and openly acquire land through rental or purchase (thanks to Uruguay's well-defined property rights and well-functioning land markets). For rice, Uruguay forged a unique public-private partnership to finance rice research and technology transfer, with co-financing shared equally by producers and the government. This highly effective rice innovation system has achieved one of the highest national average rice yields in the world (around 8 tons per hectare) and a benefit-cost ratio of 7.9 on the investment in research and development.^a

In contrast, the government played a very activist role in developing a new forest policy and passing a forestry law that provided special incentives to the sector and to some firms. Incentives included a 50 percent subsidy and land tax exemption for plantations on land designated as low-quality pastures and tax-free status for five export pulp mills. The rationale for special forestry incentives appears to relate to (1) the long gestation period of about 10 years from forest establishment to harvest, which ties up capital; (2) the very large scale of processing investments (more than US\$ 1 billion per mill); (3) the need to coordinate the investment in the feed supply to pulp mills with the investment in the mills; and (4) the fact that neighboring countries were offering equivalent or higher subsidies for plantation forestry.

A study by Morales (2007) estimated an internal rate of return on investments in the forestry industry of 32 percent, including subsidy investment provided by the government. The program attracted about US\$ 4 billion in private investments, including the largest single foreign investment in Uruguay's history. Risks appear to be minimal. Plantation forestry and downstream processing were estimated to have provided four times the jobs per hectare relative to the low-productivity cattle ranching that it replaced. Environmental impacts have likely been neutral or positive. The plantation subsidy was removed in 2005.

The downside was that soy, rice, and forestry industries greatly increased wear and tear on rural roads as they moved millions of tons of new product to mills and ports. In 2011, Uruguay was debating a special tax on large land owners to finance road maintenance.

(continued on next page)



Box 7.1: Case studies of competitive agribusiness *(continued)*

Indonesia (and Malaysia)—oil palm and plantation forestry: World exports of palm oil have increased dramatically since 1990, driven by burgeoning demand from China, South Asia, and the European Union. Indonesia and Malaysia provide over 85 percent of these exports; in fact, their exports of palm oil and derived products now exceed the value of *all* food and agricultural exports from Sub-Saharan Africa, the region where the oil palm originated.

Since 1990, the industry has grown especially rapidly in Indonesia, whose share of world exports has risen from around 10 percent to around 45 percent today, contributing around US\$ 14 billion in foreign exchange. The ready availability of know-how and foreign direct investment from Malaysia played a key role, in a relatively open economic environment. However, the Indonesian government also provided a range of incentives directed to the industry, especially an export tax (to encourage downstream processing), credit lines, and allocation of around 12 million hectares of forest estate land at prices well below opportunity cost. The government also actively promoted smallholders by supporting their investment costs, and smallholders now provide over one-third of production. The available evidence points to Indonesia's strong competitive position in oil palm with high economic returns to producers and to the country. It is estimated that some 3 million jobs have been created.

An even stronger set of incentives was provided to plantation forestry in Indonesia, where pulp and paper product exports have increased from virtually zero in 1990 to over US\$ 4 billion today. A special reforestation fund channeled over US\$ 1 billion dollars of grants and interest-free loans to the sector to subsidize establishment of plantations and mills, in addition to an eight-year tax exemption and the provision of cheap land. Much of this funding was directed to specific firms with close ties to the Suharto government. The estimated benefit-cost ratio of these investments is questionable, however, especially if environmental and social costs are considered.

Investments in both oil palm and forestry have been widely associated with environmental and social costs. In Indonesia, about half of the increased plantation area encroached on tropical forest land with high biodiversity and carbon sequestration values, adding to Indonesia's poor record in preserving tropical forests and mitigating greenhouse gas emissions. Poorly defined land rights made it possible to establish both large estates and small holdings in disregard of the rights of existing land users.

Finally, in contexts where governance is relatively poor (and Indonesia in the 1990s had very low governance indicators), transfers of state resources to specific firms can be associated with significant corruption. Large areas of land allocated for oil palm and plantation forestry in Indonesia were left idle once the commercial timber was extracted. Many loans have not been repaid and are classified as nonperforming. Governance has improved in Indonesia under recent democratic governments, although much corruption has been "decentralized" to the local government level.

Source: Byerlee 2011b.

^a IICA (2011).



Table 7.1: Indicators of sector growth, case studies of competitiveness

Country/industry	Growth indicator: Exports (US\$ million)	
	1990	2009
Uruguay		
Soy	6	456
Rice	104	461
Pulp and other forest products	14	823
Indonesia		
Palm oil	327	11,460
Pulp and paper	187	4,748

Source: FAOSTAT.

A review of the cases in Box 7.1 leads to several observations:

1. Stable macro-economic policies, a tolerable business environment, and a major emerging market opportunity (often led by China) are common to all cases.
2. In most cases, except soy in Uruguay, the government decided which new industry to foster. Yet in all cases, with the exception of plantation forestry in Indonesia, the pre-selected industry apparently enjoyed a strong comparative advantage based on natural resources and location. In nearly all cases, the industry was not entirely new, but built on a small existing base, sometimes serving only the domestic market.
3. State support has varied widely—taking the form of tax or subsidy incentives specific to the industry, special credit lines, provision of cheap land, funding of R&D, and even outright grants to pioneer firms. Even within the same country, different incentive systems have been used for different industries.
4. State-directed support has been largest in cases with high upfront investments in processing and for tree crop establishment, combined with the need to closely coordinate production and processing.
5. Incentives that distorted relative prices, especially for production factors, have had significant welfare costs. Cheap land in Indonesia favored environmentally destructive deforestation rather than intensification.
6. The more that state support is directed to individual firms, without well-defined rules determining eligibility for that support, the greater the risk of rent seeking. The best results were obtained when strong, rule-based governance prevailed, as in the case of plantation forestry in Uruguay.
7. Public-private partnerships directed at including smallholders have been successful in realizing a more equitable distribution of benefits. For example, smallholders now produce nearly 40 percent of the palm oil in Indonesia.
8. Neighbor effects—for example, when investment and technology spill into a country from nearby countries—were important in nearly all cases in reducing the costs of establishing

the industry. In this sense, liberal policies on foreign direct investment and technology transfer can often be critical to success.

These cases, while illustrative, are not conclusive. They are a fertile area for much-needed future research. They do not consider failures from state-led initiatives, and even for the successes, no counterfactual was considered—that is, would the industry have developed in the absence of state interventions?

Still, the successful emergence of competitive value chains has generally been predicated on a pragmatic approach that often involves pre-selection of specific industries and the provision of specific incentives for development of the industry (often with differing levels and types of incentives for different products within a country, as mentioned). Caution is needed, however. The state must not overstep its mandate or capacity, undermine private initiative, or facilitate the emergence of ultimately noncompetitive firms and even industries. The considerable downside risks of a more activist state are also apparent in terms of rent seeking and negative social and environmental outcomes.

This brief review also clearly demonstrates that no “one-size-fits-all” approach exists to stimulate the development of competitive agribusiness. Some broad guidelines on emerging good practice are helpful, however; they are discussed in the remainder of this report.

Learning from failures in Africa

International financial institutions and donors have invested heavily in agribusiness in Africa. Two recent evaluations highlight the riskiness and some lessons from these investments.

Investment in agribusiness is risky, but over the long term—with suitable learning—they can provide significant benefits. The Commonwealth Development Corporation, an arm of the British government that promotes economic development through support to private investors, has invested nearly US\$ 6 billion from 1950 to 2000 through 179 projects, two-thirds of them in Africa. Investments commonly included agricultural production, especially plantations, as well as processing. Very few were in food crop production. Evaluations judged that only 30 percent were at least moderately successful as measured by achieving an internal rate of return of 12 percent on the investment. However, the successes included highly profitable ventures such as oil palm in Southeast Asia and tea in Kenya, which stimulated rapid expansion with widespread economic benefits. Failures were most often ascribed to poor design, although conflict and poor policies also contributed. Many of the projects were later restructured under new ownership, and in the long term 70 percent were judged to provide significant economic benefits. The highest success rate was obtained from investments in established businesses versus startups and for certain business models, especially a nucleus estate combined with outgrower arrangements.¹²³

¹²³ Tyler, G., and G. Dixie. 2012.



Support to agribusiness investment needs to put in place strong monitoring, learning, and evaluation mechanisms. From 1998 to 2010, the United States Agency for International Development (USAID) invested nearly US\$ 5 billion in support to agribusiness, through 240 projects, nearly half of them in Africa. The great majority provided support to specific or multiple value chains. A recent evaluation was unable to assess the performance of this very large portfolio because of weaknesses in the M&E of the individual projects. The evaluation did note that the investments involved high risk, occasioned by changes in market conditions and technological difficulties, and it highlighted the importance of including flexibility in the design.¹²⁴

Getting started by focusing on a few carefully selected priorities

Focus initially on a few cross-cutting issues, locations, and/or value chains with an established comparative advantage and strong market prospects. Initially resources are few and challenges are large. Experience has shown that a strong focus on a few locations or value chains provides an opportunity to pilot difficult reforms, demonstrate success, and learn from those efforts in scaling up the program.¹²⁵ The initial focus on specific locations and/or value chains is a way to channel scarce resources to tackle a critical mass of issues, whereas scattered reforms and public investments across regions and value chains may be frustrated, given the long list of constraints affecting agribusiness. A tight focus on a particular area or value chain may also increase the chances of achieving sensitive and complicated cross-cutting reforms (such as piloting fertilizer and land reforms) and dealing with vested interests (for example, Ethiopian leather manufacturers may agree to a lowering of import tariffs if the export ban on semi-processed leather is lifted).¹²⁶

Specific steps are required to limit risks associated with deliberate and selective agribusiness strategies. The choice of location and value chain should be driven by detailed, evidence-based analysis in which the main opportunities and constraints are identified through international benchmarking and a careful assessment of investor demand and needs. In general, locations and value chains with revealed competitive advantage and proven investor demand should be preferred over attempts to initiate new industries in new areas. Methods for value chain diagnosis and the development of an action plan are widely available from many sources (Box 7.2).¹²⁷ Key policy reforms should be enacted before committing to large public investments. For example, there is no point in investing in irrigation if appropriate improved seeds are not available. Priorities and action plans should be flexible enough to meet unanticipated opportunities and constraints that will inevitably emerge. Finally, and crucially, strong governance and monitoring systems should be put in place to correct or terminate failures and replicate and scale up successes.

¹²⁴ USAID, personal communication 2011.

¹²⁵ Ahmed et al. (2007).

¹²⁶ See World Bank (2012b).

¹²⁷ Humphrey and Memedovic (2006); Weber and Labaste (2011); Trienekens (2011); Subramanian (2007).



Box 7.2: Implementing initiatives for specific value chains

Most value chain initiatives are steered by a group of key stakeholders, such as an industry round-table, which sets priorities for upgrading specific elements of the value chain. This steering group should preferably be initiated and led by the private sector but involve agents from different stages of the value chain, including small, medium, and larger companies as well as key government officials. The group's major objective is to oversee the identification of the key opportunities for the value chain and diagnosis of the major constraints to realizing those opportunities. The Export Growers' Association of Zambia, for example, facilitates coordination in horticultural export chains and provides capacity building to small and medium enterprises to participate. In some cases, a well-managed, quasi-public body can play this role, as Cocobod has done in recent years for cocoa in Ghana. Horticulture development boards have also had some success in this role, as in Kenya.

Source: Authors.

Priorities will generally include policy reforms that are important for reducing costs and risks of doing business in the selected industries or growth poles, but which provide opportunities for much wider impacts across the whole sector. Much depends on the specific value chain and country context, but recurring themes identified in this review include:

- Deepening reforms of parastatals by transitioning state interventions in both input and product markets into consistent, rule-based approaches with clearly articulated objectives (most important for food staples and some traditional exports).
- Putting in place legal and regulatory reforms important to private investment, including contract laws, and other measures conducive to doing business. Reforms will also include sector-specific issues such as food quality and safety standards.
- Accelerating regional integration to allow free exchange of seed and other inputs, provide market scale for investors, and foster competition. Immediate priorities include eliminating export and import bans and liberalizing border processes (both formal and informal), complemented over the long term by better infrastructure and harmonized policies, regulations, and standards.
- Increasing public investment to fill key gaps in infrastructure, skills, and technologies, where feasible through public-private partnerships focused around specific value chains or growth poles.
- Providing complementary institutional development for competitiveness, especially capacity building for finance, risk management, and standards.

Even modest progress in these areas can often have wide-ranging impacts across several value chains.



Engaging strategic “good practice” investors

A common entry point is to support strategic first movers (both local and foreign) on key opportunities but always firms with an established reputation. Successful first movers provide positive externalities about the potential of an industry that may justify limited time-bound support to offset the initial high costs and risks of entry.

Given high climatic risks, volatile commodity prices, and the agro-climatic specificity of agricultural technologies, investors and governments need to recognize that many ventures offer high short-term risks as well as potential high returns, as seen from the CDC experience discussed previously. These experiences point to the need for governments to partner with strategic first movers to explicitly build in piloting and learning activities prior to scaling up.

Experience suggests that direct support to selected industries can sometimes succeed in developing a competitive industry but also carries significant risks in an environment of poor governance. This initial support can be justified by the high startup costs and risks associated with developing new agribusiness value chains. State support can also be important in underwriting the high transaction costs of linking investors to smallholders in the startup phase. The type of support provided is quite specific to the industry, and it depends on whether the existing industry is new or old, the need to reach economies of scale, and the extent of the initial investment required. The most obvious type of support is access to “last-mile” infrastructure—roads, power, and communication—as part of public-private partnership agreements. Successful examples of first-mover support include Ethiopian and Senegalese government support for the first rose farm (Box 7.3) and cherry tomato producers, respectively.

The state can also provide well-targeted investments and grants. Specific support may include business development services, such as investment promotion agencies, advisory services, market intelligence, access to technology, skill development, and value chain coordination. Such support must be designed in ways that do not distort market prices (for example, cheap credit), mitigate rent seeking, and provide an exit strategy—all daunting challenges for governments with weak capacity and little experience in engaging the private sector. One option is to auction such grants through a competitive, independent, and rule-based process to adjudicate among proposals and monitor progress (Box 7.4).

Strengthening safeguards: Screening investments for sustainable growth

Large-scale investments should be screened through transparent and rule-based procedures. Investment promotion offices have a role in ensuring that proposed investments are consistent with national priorities as articulated in a national strategy, and in vetting potentially harmful social and environment impacts (Box 7.5). Most governments have requirements for environmental impact assessment for investments above a certain size, but they need to build capacity to critically review such assessments. Where governments are co-financing related infrastructure or other components



of the investment project, a careful review of the business plan in terms of economic and social impacts in line with accepted principles for responsible agribusiness investment is also wise. Large investors should also make relevant information on potential impacts available to stakeholders and consult widely with them in order to allow informed decisions.

Box 7.3: Ethiopia's Golden Roses

Ethiopia's first rose farm, Golden Roses, was created in 2000. The farm triggered a competitive rose export industry that now employs more than 50,000 workers, and earns more than US\$ 200 million a year in foreign exchange. The idea came from the father of the farm's owner, Ryaz, the Indian head of a Ugandan conglomerate, after visiting Ethiopia to assess business opportunities. Favorable soil and climate (warm days and cool nights), competitive fuel and electricity costs, and, above all, competitive air freight costs—which account for more than half of export-related production costs—made rose farming an easy choice, despite Ethiopia's not having a strong flower industry.

The first challenge for Ryaz was finding seven hectares of usable land. Because Ethiopia has no land market, doing so took a year and required intervention from high-level authorities, who gave Ryaz's farm a 30-year lease on land abandoned by a nongovernmental organization. The second constraint was financing, because private banks were unwilling to lend money to a new venture in Ethiopia. The state-owned Ethiopia Development Bank eventually agreed to provide a loan for 30 percent of the project (US\$ 1 million) at an 8 percent interest rate. Ryaz would not have proceeded with the investment without this loan. Another concern was ensuring a reliable water supply, so Ryaz investigated his options with help from an Israeli company that specializes in irrigation systems. The final major challenge—a lack of specialized managerial capability—was overcome by convincing an Indian from Kenya and an Israeli to move to Ethiopia.

Ryaz's Fair Trade–certified farm made a profit almost immediately. In 2002, based on the farm's success, the prime minister agreed to support the industry by facilitating access to land and providing tax incentives, duty-free imports, and long-term financing for up to 70 percent of initial investment. With this support and the demonstration effect of Ryaz's farm, investors poured in, enabling the government to meet its goal of developing 800 hectares of rose farms by 2007. Since the government announced its support, more than 75 firms have entered the rose industry.

Ryaz and other floriculturists suspect that there is large potential for fruit production, but no one knows which fruits are smart investments for the region—peaches, apples, or something else. A feasibility study could cost more than US\$ 80,000 per fruit product, and several studies may be needed. With so many eager incumbents and potential entrants, even Ethiopia's pioneer rose farmer is unwilling to bear the disadvantages of being the industry's first mover.

Ryaz's story embodies the highs and lows of first-mover risks. It also shows how risks were reduced by government policies and high-level government interventions, and how continued growth of a business depends on steady reforms.

Source: World Bank team interview.



Box 7.4: Credit and competitive grant schemes around Europe and Central Asia

In a context of high interest rates and high collateral requirements among private financiers, government-financed competitive grant programs and credit lines have proven successful to spur private rural investments across the Europe and Central Asia region. A program can be managed either by private financial institutions or by government agencies, but the common feature is that the program co-finances a substantial share of the investment made by the entrepreneur. All the programs target small but entrepreneurial farms and agribusiness firms, which in Europe and Central Asia means that the minimum investments eligible for financing are often about € 5,000. Financing under the credit programs is repaid with interest by the beneficiary, enabling the programs to offer financing to additional farms and firms. Interest on the loans is lower and the maturity longer than loans normally offered through commercial lenders, which makes the financing more accessible to farmers and firms. Certain credit programs also provide matching grants that cover part of the investment for selected beneficiaries, such as small entrepreneurs, first-time borrowers, or cooperatives. The Rural Investment Services Project (RISP) in Moldova has financed over 1,700 rural enterprises, resulting in the creation of over 7,000 new jobs between 2002 and 2009. Due to its success, the project was recently extended into a second phase and allocated additional financing (financing to date amounts to US\$ 30 million). The average investment was around US\$ 50,000 for such items as greenhouses, livestock facilities, and processing equipment for a broad range of activities, from sausage production to vegetable canning and fruit drying. Important investments were also made to ensure that production and processing facilitated by the loans complied with EU standards, and many beneficiaries now sell on foreign markets. Technical assistance to the businesses was provided through both the extension agency and business development organizations.

Competitive grant programs, on the other hand, co-finance a share of an investment. Through a competitive application process, projects are selected based on a set of predetermined criteria that focus mainly on the profitability of the investments, although sometimes they also favor certain groups of disadvantaged farmers or businesses. The competitive grant model is similar to the EU support scheme in accession countries,^a which aims at increasing competitiveness and alignment with food safety and environmental standards. A grant program supported through the Montenegro Institutional Development and Agriculture Strengthening (MIDAS) Project co-finances 50 percent of on-farm investments between € 5,000 and € 70,000. Preference is given to farmers who are young, female, or farming in mountainous areas. The Montenegrin Extension Services play a key role in helping applicants develop their grant proposals, but the grant program also finances pre-investment services, such as architectural design and the development of more advanced business plans, which help smaller entrepreneurs to make more advanced investments.

Source: World Bank files.

^a Instrument for Pre-Accession Assistance for Rural Development.



Box 7.5: Investment promotion agencies

Investment promotion agencies have recently become ubiquitous on the African investment scene, but the jury is still out over whether they are meeting their potential to increase local and foreign private investment. Although these agencies often focus on market surveillance, investors are looking for favorable, transparent, and consistently applied national policies and “rules of the road.” They also seek a one-stop source of information on those rules.

The Sierra Leone Investment and Export Promotion Agency (SLIEPA) recently won accolades from investors for publicizing investment opportunities and then facilitating their implementation. One seasoned, Europe-based commodity investor with operations in several West African countries as well as Asia applauded the transparency and technical feedback of SLIEPA, especially with regard to land issues and national and global environment and social standards. Mali’s Agence pour la Promotion des Investissements (API) is completing (with support from the Investment Climate Team of the World Bank Group) an in-depth survey of the country’s sectors that offer the greatest comparative appeal to investors. API has identified agriculture, tourism, and nontraditional mining as the target sectors and is developing an investment promotion strategy. In interviews, API management emphasized that the agency is seeking to proactively attract quality, transformative investment that will also inspire the growth of the Mali’s smallholder sector, the bedrock for the country’s economic growth.

Source: Interviews with agencies.

Getting the job done through an agribusiness transformation team

The top level of government should entrust a dedicated team to lead the design and implementation of the agribusiness strategy. One of the hallmarks of agribusiness is that it transcends the responsibility of several ministries—agriculture, commerce, and industry at a minimum—as well as specialized units, such as investment promotion agencies. One approach with some success in emerging countries (such as Malaysia) is to set up a dedicated and highly skilled transformation team from the government as well as leading outside experts, within the prime minister’s office (or the equivalent). This team should have sufficient stature and experience to effectively dialogue with the private sector, including multinational firms. Coordination of donor efforts is also an important role for such a team. In Botswana, a Rural Development Council, reporting to the Vice President, coordinates rural, largely agriculturally based investments.¹²⁸ A high-level agricultural transformation unit has also recently been established in Ethiopia. For growth poles, an independent area development authority serves as the mechanism to attract and coordinate investments (including infrastructure investments) in the area, in addition to providing other services, especially the

¹²⁸ Hagglblade, Mead, and Meyer (2007).



identification and negotiation of suitable land and water resources (see “Enhancing access to land and tenure security,” p. 82).

The agribusiness transformation team has a key role to play in generating and leveraging knowledge. One cannot underestimate the value of knowledge in motivating and informing the right kind of actions on behalf of the government and the private sector. The knowledge that the agribusiness transformation team should generate and leverage falls under four categories:

1. Identification of the main agribusiness opportunities. This effort should entail: (a) identification of potential production areas by product, based on agro-climatic suitability; (b) a demand analysis to identify the most promising markets (both domestic and international); and (c) for specific agro-climatic zones and markets, a detailed productivity/cost benchmarking (starting with the leading players) to evaluate the competitiveness distance with the main competitors.
2. Identification of the main constraints standing in the way of realizing the main opportunities. The detailed cost benchmarking done in the previous step will help identify the steps in the value chains where productivity/cost need to improve the most, differentiating by type of player. The root causes (namely market and government failures along the lines discussed in this report) for the lower quality and/or higher costs should then be established in these areas through in-depth interviews of leading players with international exposure and comparative analysis.
3. Identification of practical solutions to remove the main constraints. Active dialogue with policy makers to remove key constraints is a core responsibility of the agribusiness team. The team can also collect information on how other countries have dealt with these constraints from a technical, financial, and political point of view.
4. Monitoring and evaluation of progress so as to take corrective actions. Last but not least, the agribusiness transformation team will need to put in place monitoring and evaluation systems to carefully assess implementation progress. These assessments will enable countries to terminate or correct failing initiatives while scaling up and replicating successful ones. The team can then identify successes for scaling up and also publicize opportunities.

Another leading role for the agribusiness transformation team is to mobilize and coordinate support from development partners. Most African countries have hundreds of agriculture and agribusiness projects supported by development partners and NGOs. At the regional level, CAADP processes (through its Pillar 2) are moving forward in articulating the central role of private investors and agribusiness. Several international agencies have partnered with the African Union in the African Agribusiness and Agro-Industries Development Initiative (3ADI). So far, this support has been fragmented and outside national systems. As a result, it often overtaxed the capacity in the public sector and limited the sustainability and scalability of projects. The agribusiness transformation team has a big role to play in mobilizing development partners’ support to focus on the main agribusiness opportunities and constraints.



There is much potential to share knowledge about how to get agribusiness moving. No recipe for jump-starting agribusiness exists. Much depends on initial conditions, capacity, and resources. Yet the burgeoning interest in agribusiness in Africa provides many opportunities for sharing experiences among countries and among companies. Part of the motivation of this report is to show that Africa has many local successes on which it can draw, as well as successes in comparable regions, to guide governments and investors toward positive economic, social, and environmental outcomes.



References

- Ahmed, R., S. Haggblade, P. B. R. Hazell, R. L. Meyer, and T. Reardon. 2007. "The Policy and Institutional Environment Affecting the Rural Nonfarm Economy." In *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*, edited by S. Haggblade, P. B. R. Hazell, and T. A. Reardon. Baltimore: Johns Hopkins. Pp. 237–53.
- Aker, J.C., 2008. "Does Digital Divide or Provide? The Impact of Cell Phones on Grain Markets in Niger." BREAD Working Paper No. 177, GiveWell, New York.
- Aksoy, A., and O. Anil. 2011. "Consensus, Institutions, and Supply Response: The Political Economy of Agricultural Reforms in Sub-Saharan Africa." Policy Economics Working Paper No. 5782, World Bank, Washington.
- Anderson, K., and W. Masters. 2009. "Sub-Saharan Africa and North Africa." In *Distortions to Agricultural Incentives: A Global Perspective*, edited by K. Anderson. Washington, DC: World Bank.
- Ariga, J., and T.S. Jayne. 2010. "Unlocking the Market: Fertilizer and Maize in Kenya." In *Millions Fed: Proven Successes in Agricultural Development, Report 14*, edited by D. Spielman and R. Pandya-Lorch. Washington, DC: International Food Policy Research Institute.
- Balasubramanian V., M. Sie, R. J. Hijmans, and K. Otsuka. 2007. "Increasing Rice Production in Sub-Saharan Africa: Challenges and Opportunities." *Advances in Agronomy* 94: 55–133.
- Beintema, N., and G.-J. Stads. 2011. *African Agricultural R&D in the New Millennium: Progress for Some, Challenges for Many*. Washington, DC: International Food Policy Research Institute.
- Benin, S., E. Nkonya, G. Okecho, J. Randriamamonjy, E. Kato, G. Lubade, and M. Kyotalimye. 2011. "Returns to Spending on Agricultural Extension: The Case of the National Agricultural Advisory Services (NAADS) Program of Uganda." *Agricultural Economics* 42(2): 249–67.
- Bentley, J. W., and P. S. Baker. 2000. "The Colombian Coffee Growers' Federation: Organised, Successful Smallholder Farmers for 70 Years." AgREN Network Paper No. 100, Overseas Development Institute, London.
- Binswanger-Mkhize, H.P., 2009. "Challenges and Opportunities for African Agriculture and Food Security." Paper presented at the Expert Meeting on How to Feed the World in 2050, Food and Agriculture Organization of the United Nations, Rome.
- Brenton, P. 2012. *Africa Can Feed Africa*. Washington, DC: World Bank.
- Brookfield Agriculture Group. 2010. "Farmland Investment Thesis: Why Brazilian Farmland Will Outperform." Brookfield Asset Management Inc., New York.
- Burke, W.J., M. Hichaambwa, D. Banda, and T. S. Jayne. 2011. "The Cost of Maize Production by Smallholder Farmers in Zambia." Working Paper No. 50, Michigan State University, Lusaka.
- Byerlee, D. 2011a. "Producer Funding of R&D in Africa: An Underutilized Opportunity to Boost Commercial Agriculture." Paper presented at the ASTI-FARA conference, Agricultural R&D: Investing in Africa's Future: Analyzing Trends, Challenges, and Opportunities, Dec 5–7, Accra.



- . 2011b. “Role of the State in ‘Successful’ Competitive Agro-Industries: The Good, the Bad, and the Ugly.” Paper presented to the Annual Meetings of the Agricultural and Applied Economics Association, July 24–26, Pittsburgh.
- Byerlee, D. and R.G. Echeverría. 2002. *Agricultural Research Policy in an Era of Privatization*. Wallingford: CABI.
- Byerlee, D., T.S. Jayne, and R.J. Myers. 2006. “Managing Food Price Risks and Instability in a Liberalizing Market Environment: Overview and Policy Options.” *Food Policy* 31: 275–87.
- Carruthers, R., and R.R. Krishnamani, with S. Murray. 2008. “Improving Connectivity: Investing in Transport Infrastructure in Sub-Saharan Africa.” Africa Infrastructure Country Diagnostic (AICD), Summary to Background Paper 7, World Bank, Washington, DC.
- Chapoto, A., and T. S. Jayne. 2009. “Effects of Maize Marketing and Trade Policy on Price Unpredictability in Zambia.” Food Security Country Working Paper No. 38, Michigan State University, Lusaka.
- Cohen, M. 2010. “Financial Literacy.” In *Innovations in Rural and Agriculture Finance*. Washington, DC: International Food Policy Research Institute and the World Bank.
- Davis, K., 2008. “Extension in Sub-Saharan Africa: Overview and Assessment of Past and Current Models, and Future Prospects.” *Journal of International Agricultural and Extension Education* 15: 15–28.
- De Hoyos, R., and R. Lessem. 2008. Food shares in consumption: New evidence using Engel curves for the developing world. Background Paper for *Global Economic Prospects 2009*, World Bank.
- Deininger, K., and D. Byerlee. 2011. *Rising Global Interest in Farm Land: Can It Yield Sustainable and Equitable Benefits?* Washington, DC: World Bank.
- Deuss, A. 2011. “The Economic Growth Impacts of Sugarcane Expansion in Brazil: An Interregional Analysis.” Paper presented to the Annual Meetings of the Agricultural and Applied Economics Association, July 24–26, Pittsburgh.
- Diao, X., P. Hazell, D. Resnick, and J. Thurlow. 2007. *The Role of Agriculture in Development; Implications for Sub-Saharan Africa*. Research Report No. 153. Washington, DC: International Food Policy Research Institute.
- Dolan, C. 2002. “Gender and Witchcraft in Agrarian Transition: The Case of Kenyan Horticulture.” *Development and Change* 33: 659–81.
- Endo, V. 2010. “Applying the Land Governance Framework to Peru: Substantive Insights and Local Follow Up.” Paper presented at the Annual Bank Conference on Land Policy and Administration, World Bank, April 26–27, Washington, DC.
- FAO (Food and Agriculture Organization). 2007. The African Export Industry: What happened and how can it be revived. Case study on the Cameroonian cocoa sector, AGSF Working Document 16, Rome.
- . 2011. Review of smallholder linkages for inclusive agribusiness development, Draft paper, Rome.
- Feder, G. 1988. *Land Policies and Farm Productivity in Thailand*. Baltimore: Johns Hopkins.
- Freund, C., and N. Rocha. 2011. “What Constrains Africa’s Exports?” *World Bank Economic Review* 25(3): 361–86.



- Fuglie, K. O. 2010. "Total Factor Productivity in the Global Agricultural Economy: Evidence from FAO Data." In *The Shifting Patterns of Agricultural Production and Productivity Worldwide*, edited by J. Alston, B. Babcock, and P. Pardey. Ames: Midwest Agribusiness Trade and Research Information Center. Pp. 63–95.
- . 2011. "Agricultural Productivity in Africa." In *The Food and Financial Crisis in Africa*, edited by D. L. Lee. Wallingford: CABI.
- Fuglie, K.O., and N. Rada. 2012. "Policies and Productivity Growth in African Agriculture." Paper prepared for the ASTI Conference on Agricultural R&D: Investing in Africa's Future, Analyzing Trends, Challenges and Opportunities, 5–7 December, Accra.
- Gockowski, J., and D. Sonwa. 2011. "Cocoa Intensification Scenarios and Their Predicted Impact on CO2 Emissions, Biodiversity Conservation, and Rural Livelihoods in the Guinea Rain Forest of West Africa." *Environmental Management* 48 (2): 307–21.
- Guyver, P., and M. MacCarthy. 2011. "The Ghana Grains Partnership." *International Journal of Agricultural Sustainability* 9(1): 35–41.
- Haggblade, S. 2010. "Unscrambling Africa: Regional Requirements for Achieving Food Security." MSU International Development Working Paper No. 107, Michigan State University, East Lansing.
- . 2011. "Modernizing African Agribusiness: Reflections for the Future." *Journal of Agribusiness in Developing and Emerging Economies* 1(1): 10–30.
- Haggblade, S., D. C. Mead, and R. L. Meyer. 2007. "An Overview of Programs for Promoting the Rural Nonfarm Economy." In *Transforming the Rural Nonfarm Economy: Opportunities and Threats in the Developing World*, edited by S. Haggblade, P. B. R. Hazell, and T. A. Reardon. Baltimore: Johns Hopkins. Pp. 254–92.
- Haggblade, S., and G. Tembo. 2003. "Development, Diffusion, and Impact of Conservation Farming in Zambia." Working Paper No. 8, Food Security Research Project, Michigan State University, Lusaka.
- Howard, J., and C. Mungoma. 1997. "Zambia's Stop-and-Go Maize Revolution." In *Africa's Emerging Maize Revolution*, edited by D. Byerlee and C. K. Eicher. Boulder: Lynne Rienner.
- Humphrey, J., and O. Memedovic. 2006. *Global Value Chains in the Agrifood Sector*. Vienna: United Nations Industrial Development Organization.
- ICCO (International Cocoa Organization). 2010. "The World Cocoa Economy: Past and Present." Published for the Executive Committee One Hundred and Forty-Second Meeting, 14–17 September 2010. London.
- IFC (International Finance Corporation). 2010. "Morocco: Guerdane Irrigation." Success Stories, Infrastructure Advisory 02/2010, IFC Infrastructure Advisory Services, Washington, DC.
- IFDC (International Fertilizer Development Center) and Chemonics International. 2007. *Fertilizer Supply and Costs in Africa*. Muscle Shoals: IFDC.
- ILRI (International Livestock Research Institute). 2011. "CGIAR Research Program 3.7: More Meat, Milk, and Fish by and for the Poor." Nairobi.
- InfraCo. 2010. "Chiansi Irrigation: Patient Capital in Action." Briefing Paper, March. <http://www.infracoafrica.com/images/library/files/Chiansi.pdf>. Accessed October 2012.



- Intelecon Research and Consultancy Ltd. 2011. "Kenya Case Study Report: Mobile Applications for Rural Development." Paper prepared for the World Bank, Washington, DC.
- IICA (Instituto Interamericano de Cooperación para la Agricultura. 2011. "Evaluación de los impactos económicos, sociales, ambientales e institucionales de 20 años de inversión en investigación e innovación agropecuaria por parte del Instituto Nacional de Investigaciones Agropecuarias (INIA)—Uruguay, Montevideo." San José, Costa Rica.
- Jaffee, S. 2003. "From Challenge to Opportunity: Transforming Kenya's Fresh Vegetable Trade in the Context of Emerging Food Safety and Other Standards in Europe." Agriculture and Rural Development Discussion Paper, World Bank, Washington, DC.
- Jaffee, S., S. Henson, and L. D. Rios. 2011. "Making the Grade: Smallholder Farmers, Emerging Standards, and Development Assistance Programs in Africa." World Bank and University of Guelph, Washington, DC.
- James, C., 2010. "Global Status of Commercialized Biotech/GM Crops: 2010." ISAAA Brief No. 42, International Service for the Acquisition of Agri-Biotech Applications, Ithaca, New York.
- Kaitibie, S., A. Omore, K. Rich, and P. Kristjanson. 2010. "Kenyan Dairy Policy Change: Influence Pathways and Economic Impacts." *World Development* 38(10): 1494–1505.
- Kirimi, L., N. J. Sitko, T. J. Jayne, F. Karin, M. Muyanga, M. Sheahan, J. Flock, and G. Bor. 2011. "A Farm Gate-to-Consumer Value Chain Analysis of Kenya's Maize Marketing System." MSU International Development Working Paper No. 111, Michigan State University, East Lansing.
- Kisaame, J. 2003. "Case Study of DFCU Leasing Company, Uganda." Prepared for Paving the Way Forward for Rural Finance: An International Conference on Best Practices, June 2–4, Washington, DC.
- Kolavalli, S., and M. Vigneri. 2011. "Cocoa in Ghana: Shaping the Success of an Economy." In *Yes Africa Can: Success Stories from a Dynamic Continent*, edited by P. Chuhan-Pole and M. Angwafo. Washington, DC: World Bank. Pp. 201–18.
- Langyintuo, A. S., W. Mwangi, A. O. Diallo, J. MacRobert, J. Dixon, and M. Banziger. 2008. *An Analysis of the Bottlenecks Affecting the Production and Deployment of Maize Seed in Eastern and Southern Africa*. Harare: International Maize and Wheat Improvement Center (CIMMYT).
- Leksmono, C., J. Young, N. Hooton, H. Muriuki, and D. Romney. 2006. "Informal Traders Lock Horns with the Formal Milk Industry: The Role of Research in Pro-poor Dairy Policy Shift in Kenya." Working Paper No. 266, Overseas Development Institute (ODI) and International Livestock Research Institute (ILRI). London and Nairobi.
- Leturque, H., and S. Wiggins. 2010. *Thailand's Progress in Agriculture: Transition and Sustained Productivity Growth*. London: Overseas Development Institute.
- Mabaya, E., R. D. Christy, and M. Bandama. 2010. "The Current State of Agribusiness Education and Training in Africa." Contributed Paper presented at the Joint 3rd African Association of Agricultural Economists (AAAE) and 48th Agricultural Economists Association of South Africa (AEASA) Conference, September 19–23, Cape Town.
- MacRobert, J. F. 2009. *Seed Business Management in Africa*. Harare: International Maize and Wheat Improvement Center (CIMMYT).



- Maertens, M., and J. F. M. Swinnen. 2009. "Trade, Standards, and Poverty: Evidence from Senegal." *World Development* 37(1): 161–78.
- Mahul, O. and C.J. Stutley. 2010. *Government Support to Agricultural Insurance*. Washington, DC: World Bank.
- Martinelli, L.A., R. Garrett, S. Ferraz, and R. Naylor. 2011. "Sugar and Ethanol Production as a Rural Development Strategy in Brazil: Evidence from the State of São Paulo." *Agricultural Systems* 104: 419–28.
- Martinez, E. 2007. "Banorte." In *Agricultural Value Chain Finance*, edited by R. Quirós. San José, Costa Rica: Food and Agriculture Organization, Academia de Centroamérica, Regional Unit for Technical Assistance, and Serfirural. Pp. 97–100.
- Mausch, K., D. Mithofer, S. Asfaw, and H. Waibel. 2009. "Export Vegetable Production in Kenya under the EurepGap Standard: Is Large 'More Beautiful' than Small?" *Journal of Food Distribution Research* 40 (3): 115–29.
- McKinsey. 2010. "Lions on the Move: The Progress and Potential of African Economies," McKinsey Global Institute, Washington, DC.
- Meyer, R. L. 2011. "Subsidies as an Instrument in Agriculture Finance: A Review," World Bank, Washington, DC.
- Miller, C., and L. Jones. 2010. *Agricultural Value Chain Finance: Tools and Lessons*. Rugby: Practical Action Publishing.
- Miller, C., S. Richter, P. McNellis, and N. Mhlanga. 2010. *Agricultural Investment Funds in Developing Countries*. Rome: Food and Agriculture Organization.
- Minot, N. 2010. "Food Price Stabilization: Lessons from Eastern and Southern Africa." Paper prepared for the Policy Symposium, Agricultural Risk Management in Africa, 6–10 September, Lilongwe.
- Mitchell, D. 2011. Kenya smallholder coffee and tea: Divergent trends following liberalization. Draft paper, World Bank, Washington, DC.
- Nair, A., and R. Kloeppinger-Todd. 2006. "Buffalo, Bakeries, and Tractors: Cases in Rural Leasing from Pakistan, Uganda, and Mexico." Agriculture and Rural Development Discussion Paper 28, World Bank, Washington, DC.
- Nelson, G. C., M. W. Rosegrant, A. Palazzo, I. Gray, C. Ingersoll, R. Robertson, S. Tokgoz, T. Zhu, T. B. Sulser, C. Ringler, S. Msangi, and L. You. 2010. *Food Security, Farming, and Climate Change to 2050: Scenarios, Results, Policy Options*. Washington, DC: International Food Policy Research Institute.
- Ngigi, M., M. A. Ahmed, S. Ehui, and Y. Assefa, 2010. "Smallholder Dairying in East Africa." In *Successes in African Agriculture: Lessons for the Future*, edited by S. Haggblade and P. B. R. Hazell. Baltimore: Johns Hopkins.
- Nin-Pratt, A., M. Johnson, E. Magalhaes, L. You, X. Diao, and J. Chamberlin. 2011. *Yield Gaps and Potential Agricultural Growth in West and Central Africa*. Washington, DC: International Food Policy Research Institute.
- OECD (Organisation for Economic Co-operation and Development) and FAO (Food and Agriculture Organization). 2011. *Agricultural Outlook*. Paris and Rome: OECD and FAO.



- Okello, J. J., C. Narrod, and D. Roy. 2007. "Food Safety Requirements in African Green Bean Exports and Their Impact on Small Farmers." Discussion Paper No. 00737, Washington, DC, International Food Policy Research Institute.
- Omore, A., H. G. M. Muriuki, M. Kenyanjui, M. Owango, S. and Staal. 2004. "The Kenyan Dairy Sub-Sector: A Rapid Appraisal." Smallholder Dairy Project (Research and Development) Report, Nairobi.
- Ponte, S., 2011. "Upgrading Value Chains." In *Agribusiness for Africa's Prosperity*, edited by K.K. Yumkella, P. M. Kormawa, T. M. Roepstorff, and A. M. Hawkins. Vienna: United National Industrial Development Organization. Pp. 87–134.
- Poulton, C., and J. Macartney. 2011. "Can Public-Private Partnerships Leverage Private Investment in Agricultural Value Chains in Africa? A Preliminary Review." *World Development* 40(1): 96–109.
- Pray, C., D. Gisselquist, and L. Nagarajan. 2011. "Private Investment in Agricultural Research and Technology Transfer in Africa." Paper presented at the ASTI/IFPRI–FARA Conference, Agricultural R&D: Investing in Africa's Future: Analyzing Trends, Challenges, and Opportunities, December 5–7, Accra.
- Rashid, S., A. Winters-Nelson, and P. Garcia, 2011. "Purpose and Potential of Commodity Exchanges in African Economies." Paper prepared for the Policy Symposium, Agricultural Risk Management in Africa, 6–10 September, Lilongwe.
- ReSAKSS (Regional Strategic Analysis and Knowledge Support System). 2011. *Monitoring African Agricultural Development: A Comparative Analysis*. Washington, DC: International Food Policy Research Institute.
- Roepstorff, T. M., S. Wiggins, and A. M. Hawkins. 2011. "The Profile of Agribusiness in Africa." In *Agribusiness for Africa's Prosperity*, edited by K.K. Yumkella, P. M. Kormawa, T. M. Roepstorff, and A. M. Hawkins. Vienna: United National Industrial Development Organization. Pp. 38–56.
- Ryan, O. 2011. *Chocolate Nations: Living and Dying for Cocoa in West Africa*. London: Zed Books.
- Sanchez, P.A. 2002. "Soil Fertility and Hunger in Africa." *Science* 295(5562): 2019–20.
- Santana, L. 2007. "UNCTAD." In *Agricultural Value Chain Finance*, edited by R. Quirós. San José, Costa Rica: Food and Agriculture Organization, Academia de Centroamérica, Regional Unit for Technical Assistance, and Serfirural. Pp. 109–12.
- Sebastian, K. 2007. GIS/spatial analysis contribution to 2008 WDR: Technical notes on data & methodologies." Background paper for the World Development Report 2008, World Bank, Washington, DC.
- Setimela, P. S., B. Badu-Apraku, and W. Mwangi. 2009. "Variety Testing and Release Approaches in DTMA Project Countries in Sub-Saharan Africa." Harare: International Maize and Wheat Improvement Center (CIMMYT).
- Smale, M., D. Byerlee, and T. Jayne. 2011. "Maize Revolutions in Sub-Saharan Africa." Policy Research Working Paper No. 5659, World Bank, Washington, DC.
- Staatz, J. 2011. "Enhancing Agricultural Productivity." In *Agribusiness for Africa's Prosperity*, edited by K.K. Yumkella, P. M. Kormawa, T. M. Roepstorff, and A. M. Hawkins. Vienna: United National Industrial Development Organization. Pp. 58–86.



- Subramanian, U. 2007. *Moving Toward Competitiveness: A Value Chain Approach*. Washington, DC: World Bank.
- Technoserve. 2009. "Business Plan Competition Study." Technoserve Practice Brief, Washington, DC.
- Trienekens, J. H. 2011. "Agricultural Value Chains in Developing Countries: A Framework for Analysis." *International Food and Agribusiness Management Review* 14(2): 51–82.
- Tschirley, D., M. Ayieko, M. Hichaambwa, J. Goeb, and W. Loesch. 2010. "Modernizing Africa's Fresh Produce Supply Chains without Rapid Supermarket Takeover: Towards a Definition of Research and Investment Priorities." MSU International Development Working Paper No 106, Michigan State University, East Lansing.
- Tschirley, D. L., C. Poulton, and P. Labaste. 2009. *Organization and Performance of Cotton Sectors in Africa: Learning from Reform Experience*. Washington, DC: World Bank.
- Tyler, G. 2008. "The African Sugar Industry—A Frustrated Success Story." World Bank, Washington, DC.
- Tyler, G., and G. Dixie. 2012. *Investments in Agribusiness: A Retrospective View of a Development Bank's Investments in Agribusiness in Africa and East Asia*. Washington, DC: World Bank.
- UNCTAD (United Nations Conference on Trade and Development). 2008. *Cocoa Study: Industry Structures and Competition*. Geneva.
- UNIDO (United Nations Industrial Development Organization). 2010. African Agribusiness and Agro-Industries Development Initiative (3ADI), High-Level Conference on the Development of Agribusiness and Agro-Industries in Africa (HLCD-3A), March, Abuja.
- . 2011. *Agribusiness for Africa's Prosperity*. Edited by K. K. Yumkella, P. M. Kormawa, T. M. Roepstorff, and A. M. Hawkins. Geneva.
- Vorley, B., M. Lundy, and J. MacGregor. 2009. "Business Models That Are Inclusive of Small Farmers." In *Agro-industries for Development*, edited by C. A. Da Silva, D. Baker, A. W. Shepherd, C. Jenane, and S. Miranda-da-Cruz. Wallingford: CABI. Pp. 186–222.
- Webber, C. M., and P. Labaste. 2011. *Building Competitiveness in Africa's Agriculture: A Guide to Value Chain Concepts and Applications*. Washington, DC: World Bank.
- Wilkinson, J., and R. Rocha. 2009. "Agro-industry Trends, Patterns, and Development Impacts." In *Agro-industries for Development*, edited by C. A. Da Silva, D. Baker, A. W. Shepherd, C. Jenane, and S. Miranda-da-Cruz. Wallingford: CABI. Pp. 46–91.
- World Bank. 2005. *Agriculture Investment Sourcebook*. Washington, DC. <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/EXTAGISOU/0,,menuPK:2502803~pagePK:64168427~piPK:64168435~theSitePK:2502781,00.html>.
- . 2007a. Africa Irrigation Business Plan. Doc No. 44165. <http://water.worldbank.org/water/publications/africa-region-irrigation-business-plan>, accessed October 2012.
- . 2007b. *Cultivating Knowledge and Skills to Grow African Agriculture: A Synthesis of an Institutional, Regional, and International Review*. Washington, DC: World Bank.
- . 2007c. Investment in Agricultural Water for Poverty Reduction and Economic Growth in Sub-Saharan Africa. Washington, DC.
- . 2007c. *World Development Report 2008: Agriculture for Development*. Washington, DC.



- . 2008, “Financial Services for Developing Small-Scale Irrigation in Sub-Saharan Africa.” Agriculture and Rural Development Notes, Issue 41, Washington, DC.
- . 2009. *Awakening Africa’s Sleeping Giant: Prospects for Competitive Commercial Agriculture in the Guinea Savannah Zone and Beyond*. Washington, DC.
- . 2010. *Africa’s Infrastructure: A Time for Transformation*. Edited by V. Foster and C. Briceño Garmendia. Washington, DC.
- . 2011a. “Cote d’Ivoire, 2011. The Growth Agenda: Building on Natural Resource Exports.” Report No. 62572-CI, Washington, DC.
- . 2011b. *ICT in Agriculture: Connecting Smallholders to Knowledge, Networks, and Institutions*. Washington, DC. <http://www.ictinagriculture.org/ictinag/node/105>.
- . 2012a. *Africa Can Help Feed Africa: Removing Barriers to Regional Trade in Food Staples*. Washington, DC.
- . 2012b. *Light Manufacturing in Africa*. Washington, DC.
- World Bank, Natural Resources Institute (NRI), and FAO (Food and Agriculture Organization). 2011. *Missing Food: The Case of Post-Harvest Grain Losses in Sub-Saharan Africa*. Washington, DC.
- Xu, Z., Z. Guan, T. S. Jayne, and R. Black. 2009. “Factors Influencing the Profitability of Fertilizer Use on Maize in Zambia.” *Agricultural Economics* 40: 437–46.
- Yumkella, K. K., P. M. Kormawa, T. M. Roepstorff, and A. M. Hawkins (eds). 2011. *Agribusiness for Africa’s Prosperity*. Vienna: United National Industrial Development Organization.





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