6. MAJOR DEVELOPMENTS AFFECTING AFRICA'S TRADE PERFORMANCE: A SUMMARY OF KEY LITERATURE

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Numerous regional and global issues, both within and beyond the agricultural sector, affect Africa's trade performance. Key issues include trends in national and regional production, consumption and demand; regional integration; international trade regimes; and constraints to linking farmers to markets. This chapter presents a summary of the current literature on these issues, answering strategic questions regarding opportunities and challenges affecting Africa's trade, some of which governments and other stakeholders can influence, and others which are less under the control of African countries and must be anticipated and responded to. As increasing agricultural production and cost efficiency are basic factors enabling the expansion of trade, productivity-enhancing interventions should play an important role in strategies to enhance trade, as well as actions to reduce the costs of trade and better integrate value chain actors. The chapter begins by summarizing key issues and trends in Africa affecting production, agroprocessing, and markets in the region. In the second section, it looks at broader global developments affecting Africa's agricultural trade performance. The third section presents interventions and mechanisms which could potentially be scaled up to allow Africa to take advantage of trade opportunities. The chapter concludes with recommendations for improving Africa's regional and global agricultural trade performance while increasing the resilience of agricultural producers.

Agricultural and Nonagricultural Developments Affecting Trade

Africa has undergone dramatic changes in the past two decades. After a long period of economic stagnation and rising numbers of poor, the continent embarked on years of strong economic growth in the 2000s, accompanied by rising living standards. Africa's agricultural trade expanded, with growth in exports and sharper increases in imports (see chapter 2, this volume); however, Africa's global and regional trade performance remains below its potential. Although the strong economic growth rates of the 2000s have decelerated somewhat, rapid socioeconomic and technological changes continue to occur, affecting the composition of demand, the structure of value chains, and prospects for future growth.

This section reviews developments occurring within Africa with the potential to affect its trade performance at the regional and global levels. These include socioeconomic changes affecting the volume and composition of food demand; the growth of domestic agribusiness; rising attention to sustainability in national development strategies; efforts to increase regional integration and raise the level of intra-African trade, which remains far below its potential; and the growth of information and communication technologies. In some cases, these developments may open up new opportunities to expand exports; in others they may affect Africa's trade balance by accelerating the growth in imports.

Growth in Consumer Demand and Rise of Agroprocessing

Rapid urbanization and an emerging middle class. Urbanization in Africa has risen rapidly over time. World Bank (2015) estimates that urban population growth will reach 56 percent by 2030, up from 36 percent in 2010, which presents significant opportunities for economic growth and social transformation. The demand for food in local, national, and regional markets is projected to increase fourfold by 2030, which will trigger demand for a wide range of

consumer goods and services. It is further projected that the African middle class will reach 1.1 billion people by 2060, up from 355 million people in 2010 (World Bank 2015). Such growth will bring significant challenges and opportunities for agricultural producers and the private sector, especially in the area of agroprocessing.

Rising incomes and urbanization have led to increased consumer spending. According to Hattingh et al. (2012), private consumption in Africa outstrips that of India and Russia combined. Africans living in urban centers are spending significant shares of their incomes on food compared with consumers in Brazil, China, India, and Russia. The study projects growth of more than US$419 billion on Africa's consumer-based industries between 2012 and 2020, signaling a major opportunity for business development and economic growth. Given African spending patterns, the study estimates that the textile and food sectors will account for about 45 percent of that amount, or US$185 billion.

Implications of dietary changes for agroprocessing and trade. Demographic changes are giving rise to shifts in diets and in the composition of food demand. Increasingly affluent consumers, subject to rising time pressures associated with urban lifestyles, are seeking higher-quality and more convenient foods. In addition to overall higher food demand, rising incomes have led to increased diet shares of processed foods and higher-value foods such as meat and dairy (Hollinger and Staatz 2015; Tschirley et al. 2015). These demand changes are creating opportunities for domestic producers and agroprocessing firms. Recent studies document rising numbers of local firms processing staples for urban consumption, including, for example, the rapid expansion of teff millers and retail shops providing teff flour and ready-to-eat enjera in Addis Ababa, and the development of branded ready-to-cook or ready-to-eat millet products in Dakar (Badiane and Ulimwengu 2017, Reardon et al. 2015).

However, rapidly increasing imports of processed and high-value foods are giving rise to concerns that the opportunities associated with rising demand in Africa will be seized by producers and firms in other regions (Traub et al. 2015). Projections of food consumption through 2040 in Eastern and Southern Africa (Tschirley et al. 2015) and in Western Africa (Zhou and Staatz 2016) suggest that overall food demand will continue to increase rapidly, and that much of this demand will be met by imports, in the absence of policy action and investments to raise productivity and upgrade domestic markets. In some cases, however, African agroprocessors are serving domestic markets by adding value to imported raw materials. Hollinger and Staatz (2015) point out that in West Africa, imports of unmilled wheat are growing faster than imports of wheat flour and processed wheat products including breakfast cereals and macaroni, suggesting that local firms are increasingly producing processed products themselves using imported inputs. Larger and more successful agroprocessors tend to be those which make use of imported inputs such as wheat, fruit juice concentrate, and powdered milk (Hollinger and Staatz 2015).

Growth in food demand also provides opportunities for the expansion of regional trade. An inventory of processed grain products for sale in Dar es Salam, Tanzania found that domestically produced processed products accounted for around 60 percent of the products inventoried, with products from neighboring countries accounting for another 10 percent (Snyder et al. 2015). In West Africa, strong projected growth in demand for meat in coastal areas offers potential for major expansion of intra-regional livestock exports from Sahelian countries (Hollinger and Staatz 2015). In general, the extent to which both regional and local producers and agroprocessing firms will capture the growing African food market will depend on African countries' abilities to raise productivity at all stages of value chain and increase the efficiency of markets and trade.

The Push for an Inclusive, Green Economy

Despite vigorous economic growth since the beginning of the 2000s, Africa's poverty rates are still the world's highest (ECA–AU–ADB–UNDP 2014). Increasing incomes and rapid population growth will increase stress on natural resources. Ensuring the inclusivity and

sustainability of the continued growth required to reduce poverty is a major challenge.

A number of African countries, such as Ethiopia, Ghana, Rwanda, Senegal, and South Africa, are already experimenting with green economic policies in order to ensure the environmental sustainability of economic growth, and several have developed green economy strategies (UNEP 2015). Green public procurement practices are enabling the development of markets for renewable energy, energy efficiency, and sustainably produced food in Ghana and South Africa (Hanks, Davies, and Perera 2008; Liebert 2012). Green development strategies have the potential to increase economic growth by addressing sustainability issues that would ultimately decrease productivity, as well as increasing employment opportunities (UNEP 2015). In addition, embracing green practices can open up new export opportunities. Global markets for sustainable products are growing faster than those for conventional products; African and other developing countries are likely to have comparative advantage in some sustainable natural-resource based products (UNEP 2013). In agriculture, opportunities for expanding exports include organic and fair trade products, as well as participating in sustainable sourcing efforts through business-to-business certification. Sustainable development of Africa's natural resources can also provide export opportunities outside of the agricultural sector; for example, Ghana is investing in increasing its capacity to export solar energy (UNEP 2016).

Advances in Regional Integration

Intra-African trade can create wealth and improve food security, and should be encouraged in response to global climate change and international food price volatility (Odozi 2015). Yet, at an estimated 20 percent, intra-regional agricultural trade in Africa is the lowest among world regions (see chapter 3, this volume). The Comprehensive Africa Agriculture Development Programme (CAADP), launched in Maputo in 2003 by the New Partnership for Africa's Development and the African Union, coordinates national agricultural strategies. Through the 2014 Malabo Declaration, Heads of State pledged to triple intra-African trade in agricultural services and commodities by fast tracking the creation of a continental free trade area by 2025. Meeting the Malabo goals requires the implementation of appropriate trade guidelines to assist intraregional trade in agricultural inputs and outputs (ECDPM 2014).

Deepening regional integration will help African countries both increase regional trade and more effectively participate in global value chains (Toledano 2015). This can be achieved by developing regional infrastructure to ensure a flexible agriculture and food sector that is able to respond to regional demand (European Union 2013).

Countries should also exploit current regional integration agendas to support crossborder trade and investments. Some countries and regional economic communities (RECs) have achieved more success in increasing economic integration than others and, consequently, have reaped rewards from lower trade barriers (Barclays 2015). The region's less industrially developed economies could learn from those already participating in global markets. Domestic enterprises have a higher probability of succeeding in regional markets initially. "Learning by doing" prepares these small businesses for the greater complexity of and competition within global markets (WEF 2015). As a result, lead firms in more regionally integrated countries are benefitting from economies of scale in production and distribution and enjoy expansive market access for end products. Many East African Community (EAC) and Southern African Development Community (SADC) countries are leaders in terms of regional linkages, having a propensity to work collaboratively in developing regional agricultural strategies and associated services. EAC has integrated quickly, largely due to opportunities arising from integrated trade policy and the willingness to enforce it (Barclays 2015).

Regional trade agreements and changes in trade barriers. An enabling environment is needed to increase the volume of agricultural exports both regionally and internationally through improved policies, regulatory frameworks, and institutional arrangements. The key strategic goal is to establish regulated and harmonized crossborder trade in agricultural produce. Regional trade and investment agreements (RTAs) are assisting in developing regional value chains and bolstering efforts to add value throughout Africa. Regional value chains exemplify the vast potential of RTAs to support broader cooperative efforts targeting trade liberalization, facilitation, and investment and the implementation of joint investment mechanisms and institutions (OECD, WTO, and UNCTAD 2013). A small number of RECs have achieved their intraregional trade targets, but—within Africa—the proliferation of multiple RTAs, institutions, and initiatives can at times constitute a barrier to progress on trade (Mbekeani 2013).

Reducing tariff and nontariff trade barriers is vital to increasing the competitiveness of African trade. Nontariff measures account for a large share of trade costs and limit the participation of African agribusinesses in global value chains, as well as hampering intra-African trade (WEF 2015; also see Chapter 7, this volume). Barriers range from trade policies, such as export bans, to regulatory failure that results in high transport, border-crossing, and agricultural input costs (Brenton, Portugal-Perez, and Regolo 2013). Lack of coordination across departments, onerous border procedures, weak crossborder cooperation, and corruption also constitute barriers to intra-African trade (Barclays 2015). To improve the unsatisfactory performance of Africa's logistics and transport sectors, deliberate efforts must be made to establish effective and more competitive licensing procedures (WEF 2015).

Some of Africa's RECs have played a role in increasing trade flows within Africa by reducing trade barriers. However, intraregional trade is still negatively affected by high tariffs; incompatible rules of origin; and issues with the implementation of trade policies and regulations (WEF 2015). To spur rapid growth, SADC is now promoting an agenda of industrialization by greatly reducing most tariffs. Member countries are enabling firms to take full advantage of the tariff reform by working to strengthen the enabling environment through improved port facilities, energy and water supplies, transport networks, and trade administration (Barclays 2015). ECOWAS is working toward achieving a free-trade area in the region by encouraging member state governments to remove barriers to trade (Hollinger and Staatz 2015).

Non-tariff barriers and regional trade. Policies related to standards and rules of origin can play significant roles in affecting market access and trade between countries. While liberalized agricultural markets require an effective standards system, enforcement regimes can present a barrier to trade in crops and farm inputs due to the low capacity of most countries to ensure adherence to regulations. In addition to the free movement of products across borders, regional food market integration would facilitate routine and less costly food safety checks, including control of disease and pests and plant health inspections (World Bank 2012).

World Bank (2012) reports that most African RTAs focus on harmonizing standards and instituting cross-country cooperation. Some RECs have begun developing frameworks for this purpose. The Common Market for Eastern and Southern Africa (COMESA), for example, has instituted regionally harmonized standards for around 300 commodities, including staple grains and cereals. In addition, the "COMESA Green Pass" is a harmonized sanitary and phytosanitary regime that includes a regional certification system. Other RECs—ECOWAS, EAC, and SADC—are also working to harmonize regional standards, but implementation is inadequate (within SADC, for example, as of 2012, only Swaziland and Namibia had adopted all 78 of the region's harmonized standards).

Current rules of origin unduly restrict market access among African countries. To increase foreign direct investment (FDI) and intra-industry trade within Africa, market access must be expanded; national-level reform is needed to streamline rules of origin and harmonize mutual standards (Mbekeani 2013). Promising initiatives exist but need development.

An example is the African Union's technical working group to evaluate the consistency of rules of origin in COMESA, EAC, and SADC (WEF 2015).

The rise of regional trade hubs and regional value chains. The expansion and advancement of strategic regional value chains offer significant trade opportunities. That is why most RECs have focused on regional value-chain development and market access as a means of promoting intraregional trade. As part of the Malabo Declaration, African leaders pledged to establish public–private partnerships to develop at least five strategic regional value chains strongly linked to smallholder agriculture (ECDPM 2014).

Given Africa's high and increasing level of food imports, significant scope exists to expand intra-regional food trade through greater integration of national and regional markets. Growing specialization of crossborder value chains presents further potential for development, growth, and job creation and has contributed to changes in trade and investment patterns and trade policy (OECD, WTO, and UNCTAD 2013). The growing importance of rice in national consumption and in trade in West Africa, for example, has enabled Nigeria to become the hub of a strategic regional value chain. Nigeria is a huge rice producer and consumer in the West Africa region and any policy actions it takes have impacts across the region.

The Barclays 2015 Africa Trade Index assesses African countries on their openness, market opportunities, and connectivity. Several East African countries receive high ratings, partly because of the region's economic growth and increasing regional integration. Kenya, which is ranked third in the index after South Africa and Nigeria, serves as a hub for East African trade and has a leadership role in facilitating intraregional trade and advocating for harmonized regulations and policies. Ethiopia and Tanzania also perform well in the index, reflecting the growing importance of East Africa as a global, as well as intraregional, trade hub (Barclays 2015).

The private sector is responding positively to the above developments. Private firms are increasingly investing in the infrastructure needed to expand their operations, which contributed to an 8 percent increase in intra-African investments during 2009–2013. Shoprite, a South African supermarket chain that has developed distribution centers, has helped to facilitate crossborder trade, including power generation and transport infrastructure (Barclays 2015).

Expansion of regional infrastructure and development of trade corridors. The development of effective regional infrastructure systems opens up opportunities and enhances competition. Greater investment in prioritized infrastructure at national and regional levels will promote trade, provided there is sufficient political will to do so. Multi-country resource-based development corridors can be an important tool to promote regional trade. By leveraging economies of scope, such corridors subsequently support investment in multiple types of infrastructure—such as electric power, fiber optic cables, and water distribution—and facilitate the development of other sectors, including agriculture (Toledano 2015). A study by Barclays (2015) showed that East and Southern Africa are frontrunners in the development of major strategic transport infrastructure, such as the Nacala corridor in Zambia, Malawi and Mozambique; the Beira corridor connecting several southern African countries with Mozambique's port of Beira; and the Lobito corridor linking the Democratic Republic of the Congo, Zambia, and Angola. Kenya's strategic development of the Northern Corridor Transport and Transit Authority is an important promoter of regional integration within East Africa. The country's location as a transport gateway to the region stands to create immense opportunities, especially for the region's landlocked countries (Barclays 2015). Kenya's LAPSSET corridor will link a new port at Lamu with South Sudan, Ethiopia, Kenya, and potentially Uganda. When other enabling elements are in place, such regional corridors can provide impetus for deeper regional integration (Toledano 2015).

Deepening regional financial integration. Most FDI to African countries originates outside Africa; however, intra-African FDI is growing. During 2009–2013, over 18 percent of announced crossborder greenfield investment projects (that is, those involving new construction and infrastructure) originated in other African countries, compared with under 10 percent during 2003–2008. A large share of intra-African FDI is subregional, remaining within the same REC. Intra-African investment is particularly important for non-oil exporting countries. Nearly all intra-African FDI flows to the service and manufacturing sectors, unlike investments from outside the continent (IMF 2015b). The banking sector, in particular, benefits from intra-African FDI, especially in the Economic Community of West African States (ECOWAS), where Nigeria and Togo have seen their banking sectors grow rapidly (Beck et al. 2014; IMF 2015a). The growth of crossborder banking has been an important vehicle for regional financial integration. The number of crossborder branches of African banks more than doubled between 2005 and 2012, increasing much more rapidly than branches of banks from outside the region. Most Pan-African banks are headquartered in Kenya, Nigeria, or South Africa; the largest is Ecobank, based in Togo (IMF 2015b).

Uptake and Upscaling of Information and Communication Technologies

New information and communication technologies (ICTs) have become highly effective tools driving agricultural development and transformation. Across Africa, innovation hubs are flourishing, nurturing future technologists (Africa Progress Panel 2014). Rapid expansion of ICTs in Africa in recent years has presented huge opportunities for agribusiness value chains and allowed major improvements in their performance (WEF 2015). More importantly, ICTs are attracting thousands of educated African youth into agribusiness value chains in countries like Kenya. Educated African youth value innovation, technology, and entrepreneurism. ICT-literate youth now operate intensive, efficient, and profitable climate-smart farms that produce a diverse array of products, both for supermarket chains and niche markets. They are also developing relevant, localized, and dependable mobile applications with potential to significantly increase farm profitability.

ICTs have revolutionized information access needs of smallholder farmers, other value chain actors, governments, and consumers. Agronomic information on inputs and planting seasons and advisory services can now be easily accessed via user-friendly ICT platforms. The impact of ICTs has been particularly strong for smallholder farmers, increasing their uptake of new technologies, expanding their economic opportunities, redressing some of the information asymmetries they face, and increasing their efficiency. ICTs are also connecting farmers to knowledge networks and providing real-time information on market prices, weather conditions, and financial resources and services including credit and insurance. The importance of social media as a tool for marketing and client interaction is rising. ICTs are also providing the means to track the progress of crops, animals, and products along the value chain, from farm to purchase, providing the necessary information for traceability by the increasing number of highly informed and health conscious urban consumers (Table 6.1) (KPMG International 2013).

ICTs, particularly mobile phones, have often been found to increase market efficiency and integration within a country and to facilitate farmers' access to markets (e.g. Jensen 2007, Aker 2008, Muto and Yamano 2009). The impact of ICT on international agricultural trade has been less studied. To the extent that they reduce production costs, ICTs can be expected to improve countries' trade competitiveness. ICTs can also reduce trade costs; for example, internet usage by businesses has been found to facilitate exports (Yushkova 2013). In addition, ICTs have the potential to help farmers access international value chains by improving their ability to meet traceability requirements (Karippacheril, Diaz Rios, and Srivastava 2017). Mobile and web-based virtual markets which connect buyers and sellers can facilitate and improve the efficiency of international as well as domestic trade. The virtual marketplace and

market information service operated by Esoko in Ghana and several other countries was found to simplify the procurement process for a plant product exporter and increase the producers' and traders' share in the export price (Donovan 2017).

Table 6.1. The use of information and communications technologies to transform African agriculture and trade

Stage/focus	Area of impact
Pre-cultivation	Selecting crops, enhancing land and water use, developing insurance products
Crop cultivation and harvesting	Generating information on crop health, land preparation, planting, input management (for example, fertilizer selection), water management, and pest management
Postharvest	Providing product and price information to address information asymmetries and increase market efficiency
Smart farming solutions	Facilitating precision agriculture through variable rate technologies for agricultural inputs, data-driven farming, field monitoring, soil sampling, and yield monitoring; supporting agricultural advisory services and extension; enabling enhanced market information, such as weather conditions; providing access to agri-webinars on subjects like farm business management, traceability of food and animal products, and market prices.
Digital finance Solutions	Providing easy access to financial services, mobile banking solutions, mobile transactions, rural savings, mobile crop insurance and remittances, and seamless cash payments; increasing smallholder participation in commodity exchanges, by allowing them to secure better commodity prices for their produce.
Value chain coordination	Increasing competitive advantages through ICT tools for marketing, procurement, distribution, logistics, and post-purchase e-services.

Source: Constructed by author based on WEF (2015) and Maumbe (2012).

Global Agricultural and Nonagricultural Developments Affecting Trade

Beyond developments occurring in African countries, trends at the global level have major impacts on Africa's ability to meet its trade potential. These include broad economic patterns and scientific developments; relationships with international trade partners and their food safety and quality requirements; and the global threat of climate change.

This section briefly describes some major global developments that can be expected to impact Africa's trade positively or negatively. In some cases, African countries have little control over the way these broader trends unfold, but have choices as to how they respond; in other cases they can usefully participate in international efforts to influence the trends and achieve better outcomes.

Integration within Global Value Chains

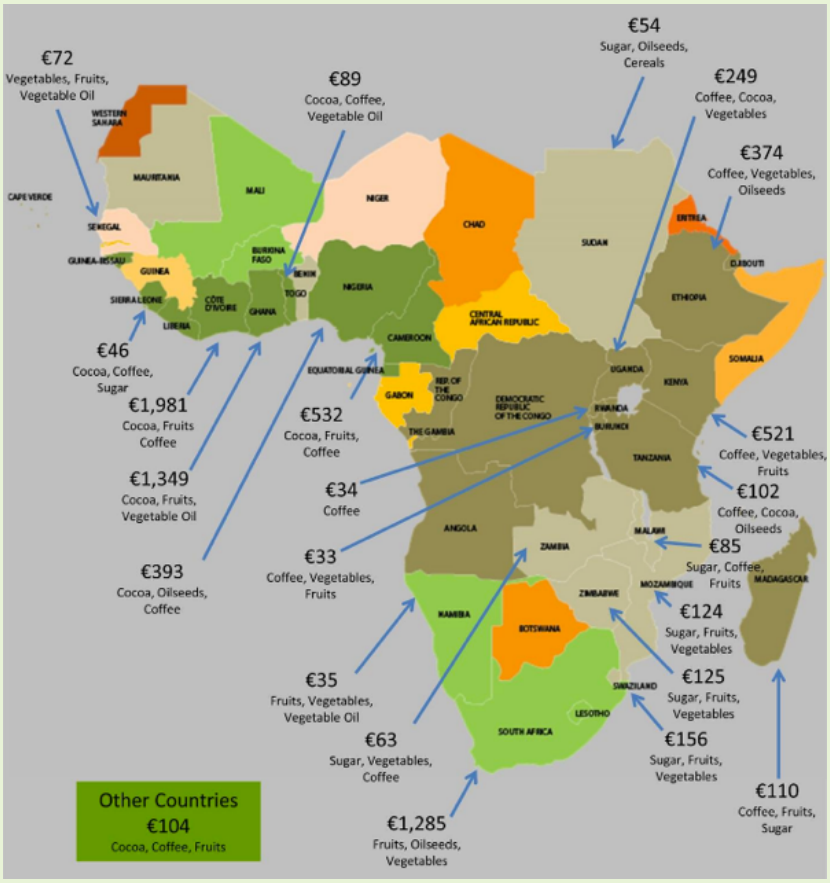
African countries have seen growing success in participating in global agricultural value chains, most often as providers of unprocessed products (Balié et al. 2017). Subsectors in which African countries have played major roles in global value chains include topical beverages; cotton, particularly from West Africa; cut flowers from Kenya and recently Ethiopia; and fruits and vegetables from Kenya and West Africa. However, the increasing complexity of requirements imposed by importing countries present new challenges in successfully accessing high-value markets. The ability of African countries to maintain and increase participation in global value

chains will depend on the ability of both private and public sector stakeholders to adequately coordinate sector activities and institutional arrangements as well as the provision of necessary services, including extension and capacity strengthening for producers; access to required inputs and equipment; and market and transport infrastructure.

Compliance with food safety standards and certification requirements. Global high-value food markets demand stringent compliance with international standards. Increased investment in agroprocessing and greater access to dynamic value-added markets would require the adoption of acceptable certification protocols. In efforts to comply with these global requirements, smallholder farmers are often unable to participate, as has been the case with Kenya's lucrative horticulture industry. A number of countries and private companies are assisting producers in implementing and applying international certification requirements (Africa Progress Panel 2014).

Growing concern over health risks associated with imported food products has prompted revisions in sanitary and phytosanitary (SPS) standards in industrialized countries. According to Brenner (2014), recent changes in aflatoxin standards in the European Union (EU) will likely reduce the export of African nuts, dried fruit, and cereals by 64 percent, resulting in a loss of US$670 million. In 2012, EU imports of SSA commodities that may be affected by standards compliance amounted to €7.9 billion (Figure 6.1). SSA is Europe's main supplier of cocoa and a major provider of coffee and tea. Several African countries exported millions of euros worth of cane sugar, molasses, and nuts and fruits to Europe in 2012.

Figure 6.1. African exports potentially affected by revisions to European Union food safety standards, three highest-value products by country, 2012



Source: Brenner (2014).

Compliance with international standards requires public and private sector participation. In Kenya, green bean producers and exporters have been successful in making the required adjustments to meet increasingly strict EU food safety standards (World Bank 2013). This has involved certifying producers according to the new standards and developing market infrastructure including cold chains and certified packaging facilities. The Kenyan government invested in road and air transport infrastructure and provided extension services and market information, while the private sector played a key role in coordinating producers. Originally, large exporters contracted with smallholder producers, helped them access inputs and equipment, and provided technical assistance and monitoring. Later, producer organizations took on the role of coordinating smallholders. As requirements grew more stringent, certification costs grew too onerous for smallholders, and the green bean export industry became increasingly dominated by larger producers. However, smallholders continued to produce green beans for the domestic markets, and employment opportunities on large farms have provided other income opportunities (World Bank 2013).

Imported inputs also played an important role in allowing Kenyan producers to meet international standards (World Bank 2013). Research suggests that governments can help producers and processors access higher-value processed food export markets by reducing tariffs that raise the cost of imported inputs and equipment (Fukase and Martin 2017).

Increased Multilateral and Bilateral Trade Negotiations

The recent signing of economic partnership agreements between the European Commission (EC) and Africa's RECs may encourage increased engagement with Africa from the United States and Asian countries, as they seek to keep or retain access to markets and suppliers (Barclays 2015). Key developments are discussed below, which offer major opportunities for African exports as well as potential challenges.

Economic partnership agreements. Economic partnership agreements (EPAs) between the EC and three RECs—EAC, ECOWAS, and SADC—were completed in 2014 (Barclays 2015). The agreements are reciprocal free trade agreements with development objectives that replace previous unilateral preference arrangements. The agreements ensure access to European markets for African exports, at the same time giving African countries the ability to protect certain products in their markets (Ramdoo 2014). Proponents of the EPAs suggest that they will support both global and regional integration of African countries and catalyse agricultural investments and economic transformation (EC 2016a; EC 2016b). However, others have argued that African industries could be harmed by competition from European imports (Njehu 2015) and that growth in trade with Europe may reduce intra-African trade—an effect that can be mitigated by more concerted efforts to establish a continental free trade area in Africa (Karingi, Mevel and Valensisi 2015). Capacity building support and value chain development initiatives can help African countries to derive greater benefits from the EPAs (Woolfrey and Bilal 2017).

Africa Growth and Opportunities Act. The U.S. Act allows duty-free entry for a wide range of imports from qualifying African countries. It was extended for another ten years in 2015. SSA's clothing industry has been considerably affected by the Act, which has played a key role in supporting the region's textile manufacturers. The Act has also helped African countries to increase exports of processed foods and other products to the United States and has contributed to significant growth in trade, with total African exports under the program quadrupling, and trade between Africa and the United States doubling since its launch. The Act is estimated to have created 300,000 jobs in Africa due to the growth of non-oil export industries, as well as 120,000 jobs in the United States (Thomas-Greenfield 2015).

Engagements with Asian giants. Chinese investors, who are beginning to see Africa as more than simply a source of resources, are turning their attention to the region's rapidly

expanding middle-class consumers. Chinese companies are initiating production operations in Africa to supply African markets, as well as Europe and the United States through their trade deals with Africa. India and Japan, in contrast, are scaling up involvement in Africa through the provision of technical and financial assistance in support of development goals. Gulf states and other Middle Eastern countries are also incresing their interactions with Africa in sectors including logistics, air transport, trade facilitation, and consumer goods (Barclays 2015).

The Impact of Oil Shocks on Agriculture and the Search for Alternative Energy Sources

Africa's major oil- and commodity-exporting countries have tended to rely on a few export products, demonstrating a lack of policy action toward open trade and diversification, which has negative implications for other sectors of the economy with trade potential. Aside from the recent period of shocks in international oil markets, oil-producing countries like Nigeria typically have been less interested than non-oil producing countries in investing in other productive sectors (Barclays 2015). After the drastic fall in oil prices in the recent past, the Nigerian government is looking to agriculture as a potential source of foreign exchange. However, incentives—such as the export expansion grant—need to be reviewed to encourage agri-food exports. In 2015, the EU placed restrictions on Nigerian agricultural exports based on perceived concerns over quality and safety. Both federal and state government support is therefore critical, not only in raising quality standards, but also in interacting with foreign agencies in addressing this trade mitigating issue (PricewaterhouseCoopers 2016).

Climate Shocks and Adaptation

One of the most important challenges to agricultural production is climate change (IPCC 2012). Countries that are heavily dependent on rainfed agriculture must strengthen their institutional and infrastructural capacities to cope with climate variability. This is necessary to reduce their vulnerability to seasonal shifts and unpredictable precipitation patterns. In the past several decades, temperature variability and extremes, rainfall, and drought have increased, especially in tropical and subtropical areas (IPCC 2012). Changing weather patterns are beginning to have effects on agricultural production in Africa, which will likely increase without significant efforts to adapt. The United Nations Environment Programme's Africa Adaptation Gap Report finds that yields in Africa south of the Sahara (SSA) could drop significantly by mid-century in response to climate change (Schaeffer et al. 2013). More than 10 million people were affected by the 2011 drought in the Horn of Africa and resulting famine, which cost 257,000 lives (Munang and Andrews 2014a). Climate change is also highly likely to affect Africa's trade potential.

Climate change will have far-reaching impacts on African trade, through its effects on infrastructure and trade routes, as well as agriculture. Rising sea levels are expected to result in significant damage to port infrastructure in a number of African cities (Munang and Andrews 2014b). Global trade routes will be affected both by damage to infrastructure and changing climatic conditions which could open new routes while rendering others non-viable. Increases in the costs of trade caused by these changes will affect everyone, in particular developing countries participating in global value chains (Tamiotti et al. 2009). Despite the expected negative impacts of climate change on African agriculture, effects on its agricultural trade are complex and will depend on climate impacts in other world regions and on countries' adaptation capacities. For example, IFPRI IMPACT model simulations suggest that Africa's net cereal imports will decrease in the presence of climate change, due to lower production in other cereal-producing regions and increased prices; reduced imports as well as lower cereal production in Africa will negatively affect cereal consumption and food security. However, impacts on hunger can be offset by investments to improve productivity growth, water management, and market efficiency (Wiebe et al. 2017).

In spite of the emerging threats, some smallholder farmers are finding innovative ways to adapt—increasing resilience by adopting "climate-smart" agricultural practices (Africa Progress Panel 2014). Simulations suggest that the adoption of climate-smart practices in Africa has the potential to increase net exports compared to expected trends by mitigating yield losses due to climate change (Haile et al. 2017). Increasing the capacity to anticipate and respond to the effects of climate change is a key requirement for developing countries. In addition, financial assistance and technology dissemination must be promoted in the context of any global agreement on trade and climate change (World Bank 2010).

Biotechnology and Genetically Modified Organisms

The biotechnology choices confronting Africa go beyond the issue of importing genetically modified organisms: biotechnology presents Africa with the opportunity to build technical capacities to take advantage of agricultural adaptation technologies. Biotechnology, alone, is not sufficient, however, and increasing biotechnology capacities should be combined with more comprehensive upgrades of agricultural production systems. Transgenic crops are currently grown in just four African countries (Burkina Faso, Egypt, South Africa, and Sudan), although several other countries are conducting research and development (Juma and Gordon 2014). In addition, Swaziland and Ethiopia approved the commercialization of transgenic cotton in 2018 (COMESA 2018), and Nigeria is expected to commercialize transgenic cotton and cowpeas in 2018 (Isaac 2017). Although wider use of productivity-enhancing technologies has the potential to increase agricultural trade, concerns that the presence genetically modified crops could affect access to European markets have slowed their adoption in Africa (Adenle 2012).

Potential Interventions to Take Advantage of Trade Opportunities

Africa is still performing below its potential, in terms of both global and intra-regional trade. Recent growth in trade provides a hint of the potential for further expanding Africa's role in global markets and enhancing regional integration. The global and local developments reviewed earlier present challenges and opportunities for expanding agricultural trade with and outside of Africa. In the context of these possibilities, this section reviews promising interventions and mechanisms which could allow countries to increase productivity, integrate value chain actors, increase market efficiency, and expand trade.

Accelerated Agribusiness and Value Chain Development

African governments have demonstrated renewed focus on agriculture in efforts to trigger economic transformation by constructively engaging the private sector. Research in some African countries demonstrates that agricultural growth has a far greater effect on poverty reduction than nonagricultural growth (World Bank 2008). Significant agribusiness opportunities are encouraging private-sector involvement and promoting economic growth and development through the creation of critical links between agriculture and industry to produce high-quality value-added products. Innovative "outgrower" programs, under which farmers are integrated into value chains through processing companies and other inclusive models of agricultural development, should be encouraged. For example, in one program in Malawi, contracted farmers produce sugarcane for a multinational South African company that exports to Europe. In Ghana, pineapple producers supply a company that sells to large supermarket chains (Africa Progress Panel 2014).

Improving market access for smallholders. Increasingly, globalized agricultural trade offers important opportunities for African agriculture, as shown by the success of horticulture

in Kenya. Nevertheless, as discussed earlier, many barriers prevent smallholders from accessing global value chains, including the high financial costs associated with meeting international standards. Cooperatives, government interventions, and private initiatives can help to link smallholders with other actors in the value chain and improve their access to financing. For example, challenge funds may be used by donors to improve market access for smallholders (Africa Progress Panel 2014). The Africa Enterprise Challenge Fund (AECF) provides grants and loans for private firms to invest in agriculture and agribusiness, renewable energy, and rural financial and communications services. The goals of AECF are to mobilize additional private investment and assist the rural poor through improved access to markets and technology (Africa Enterprise Challenge Fund 2016). In Sierra Leone, AECF funding aided in the founding of a company that purchases cocoa from thousands of farmers (AfricaProgress Panel 2014). The United Kingdom's Food Retail Industry Challenge Fund (FRICH) is another initiative that supports 25 projects for farmers in over a dozen African countries by bringing their produce to European markets. FRICH supports projects in the Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Malawi, Namibia, Rwanda, São Tomé and Príncipe, Senegal, Uganda, and Zimbabwe involving producers of coffee, tea, juice, beef, fish, flowers, palm oil, and other products (DFID 2013).

Development of Commodity Exchanges

Smallholder farmers face many obstacles in reaching markets, including lack of market information, storage capacity, and the ability to share risk and information with other farmers based on their geographical remoteness. Increasing access to markets and market information improves farmers' bargaining power and allows them to make better-informed decisions about production and marketing. The Ethiopia Commodity Exchange (ECX) demonstrates the potential of institutions to link smallholder farmers to markets, and share the benefits of agricultural growth more widely. In addition to facilitating agricultural commodity sales, ECX provides market information and manages a certification system that ensures a premium price for high-quality output. As of 2013, ECX had handled around US$5 billion in the trade of coffee, maize, legumes, wheat, and other commodities (Africa Progress Panel 2014). In addition, market data is provided through telephone messaging in four languages. Users make around 20,000 toll-free calls per day to receive information on prices (World Bank 2009). Similarly, the Kenya Agricultural Commodity Exchange (KACE) disseminates market information to farmers and other value-chain actors for multiple commodities via SMS and the Internet (Mukhebi et al. 2007).

Increasing the Use of Warehouse Receipt Systems

Warehouse receipt systems are an innovative risk management strategy that enables farmers to store their crops in private warehouses and receive a receipt—that can be sold or used as loan collateral—specifying the quantity and quality of the commodity as proof of ownership. The system helps farmers and buyers manage risk in several ways. First, the system can mitigate seasonal price fluctuations by allowing farmers to store commodities during periods of low prices and sell when prices are higher. Second, the system facilitates farmers' access to credit by providing receipts that serve as collateral. Third, the system makes large quantities of a given quality of agricultural produce available for governments, processors, or aid agencies (World Bank 2012). Similar systems have been in use for traditional export crops such as coffee but are less developed for cereal crops (CTA and EAGC 2013). Broader use of warehouse receipt systems could potentially facilitate international trade for a wider range of crops as well as increasing the efficiency of domestic markets. However, in order to preserve incentives for private sector storage systems, governments should refrain from actions including export bans and price controls which would negatively affect market stability and predictability (World Bank 2012).

Enhancing Agricultural Market Information Systems

Agricultural Market Information System (AMIS) is a global initiative of the G20 designed to enhance the availability of information on national and international agricultural markets and trade. Participants include the G20 countries plus Spain, as well as a limited number of non-G20 countries that play a large role in agricultural commodity trade, such as Egypt and Nigeria. AMIS monitors food availability and helps major agricultural exporters and importers to better coordinate trade policies (Agricultural Market Information System 2015). Regional market information systems would also benefit African countries by enabling them to enact trade policies that better account for regional food availability. Some progress has been made by African RECs, such as the regional food balance sheets being developed by COMESA and EAC. International partners can play a role in supporting these efforts to improve agricultural market information in Africa (World Bank 2012).

Developing Futures and Options Markets

Futures markets, which offer contracts for food commodities to be fulfilled at a future date, offer one method of ensuring that food supplies remain available without maintaining physical reserves. In order to allow for effective hedging against price risks, contracts must be credible and provide countries with the options (a) of buying given quantities for a previously determined maximum price, or (b) of declining to execute the contract in the event that existing food supplies are sufficient. African countries have very few high-volume futures markets, however. The best example is the South African Futures Exchange (SAFEX), which offers call options on futures contracts for yellow maize, white maize, sorghum, and wheat. Contracts are purchased and may be executed or closed according to a country's needs, and physical commodities do not change hands unless contracts are executed. The government of Malawi has used SAFEX contracts to save an estimated US$60 per ton over spot (that is, current) prices for imports (Nijhoff 2009). Futures and options markets present interesting potential to insure against food price risks. Sufficient funds must be available to purchase commodities from futures markets (which could take the form of a regional fund). Governments will need to determine whether the private sector can play a role in using futures markets to offset risk (World Bank 2012).

Fostering Domestic Financial Systems

Access to finance, especially trade finance, is cited by many developing-country firms as the top constraint to engaging with modern value chains and increasing their own value added. With financial costs barring many firms from importing and exporting, improving financial systems can increase trade by lowering costs and expanding access (WEF 2015). Governments seeking to link domestic agribusiness firms with global value chains should prioritize increasing access to export credits and trade finance (WEF 2015). Several African countries—including Kenya, Nigeria, and South Africa—have greatly improved the functioning of their financial systems, but systems remain limited and inefficient in other countries (Beck and Cull 2014). Further advancement in financial sectors will be required to facilitate the investments necessary to allow African firms to increase their value added and their access to value chains (WEF 2015).

Improving access to financial services through innovation. Kenya's experience demonstrates the potential for rapidly expanding access to financial services through mobile technology. M-Pesa, a virtual money transfer platform launched in 2007 by Safaricom, allows customers to make transactions using mobile phones. M-Pesa has more than 20 million subscribers, more than the combined total of Kenya's five largest banks; related platforms linked to M-Pesa provide access to insurance, loans and other services (Africa

Progress Panel 2014). M-Pesa is used not only for person-to-person transactions, but also increasingly for purchases of goods and services (Omondi 2016). M-Pesa has the potential to go beyond simplifying domestic payments in Kenya to facilitate crossborder trade in the Eastern Africa region. Member States of the East African Community are working to put the required regulatory framework in place to advance the development of a regional electronic payment system (ITC 2015).

New Approaches to Climate Risk Insurance

Governments in rich countries provide farmers with subsidized crop insurance that protects them from weather-related risk. As weather shocks increased, spending on crop insurance by the U.S. Federal Emergency Management Agency more than doubled between 2001 and 2012. Most African farmers, in contrast, have limited or no access to weather insurance, and largely rely on savings to cope with shocks. African farmers and other value-chain actors require innovative mechanisms to manage their risk (Africa Progress Panel 2014).

Uninsured risk creates a disincentive for farmers to invest in productivity-raising technologies, and represents a key constraint to agricultural development. Significant potential exists for scaling up affordable index-based insurance for weather risk, which provides payouts in response to climate variables measured at a weather station.

Promising examples of index-based insurance include the Index-Based Livestock Insurance program in Kenya, and Kilimo Salama ("Safe Agriculture") in Kenya and Rwanda (Africa Progress Panel 2014). In order to be compliant with World Trade Organization (WTO) rules, insurance programs for agricultural producers must meet a number of criteria, the most basic being that they have no or minimal impacts on production and do not distort trade. However, some of the WTO criteria may not be compatible with the needs of viable insurance programs, both in developed and in developing countries; changes have been proposed, including by the African Group of the WTO (Glauber 2015; Dhar 2009; Oduro 2009). Other efforts beyond insurance are needed to help farmers increase their resilience to climate risk, including encouraging the adoption of climate smart agricultural practices.

Significantly Reducing Postharvest Losses

According to estimates by the African Post-Harvest Losses Information System, as much as 10 to 20 percent of grain could be lost prior to processing. Sharply reducing postharvest losses is an important avenue for improving food and nutrition security. Agricultural extension can help to lower these losses by disseminating technical innovations at the harvesting, cleaning, and storage stages. In addition, action is required to facilitate transport, improve trade regulations, and streamline border procedures that in some cases result in unnecessary handling of and damage to commodities (World Bank 2012).

Building Capacity

Major strides are required in the development of requisite human capital to allow countries to participate more fully in global markets. This is in response to increased competition in a dynamic global marketplace that now focuses more on high-quality, safe, and nutritious food products that comply with international standards. One challenge is to enhance the capacity of smallholder farmers to understand and meet international standards. Beyond the farm level, capacity strengthening for multiple actors, including national governments, is necessary to improve trade regimes. The EU is working to help African countries raise SPS standards through its support of the Standards and Trade Development Facility (STDF), which works to help countries comply with international rules on SPS measures to ensure food

safety and protect plant and animal health. The STDF promotes the adoption of electronic SPS certification systems, disseminates knowledge on good regulatory practices to improve SPS implementation, and helps countries assess and prioritize SPS-related investments, among other interventions (STDF 2017). Improving food safety is part of the technical cooperation being provided to develop standards. The Pesticides Initiative Programme, for example, aims to assist private fruit and vegetable exporters from African, Caribbean, and Pacific countries to meet the Europe's stringent requirements for traceability and food safety (Disdier et al. 2008)

Key Recommendations

Africa has made significant progress during recent decades in accelerating agricultural growth and improving agricultural trade performance. Global agricultural exports have steadily increased. Efforts at the continental level and among RECs to advance regional integration and facilitate trade have enabled Africa to increase competitiveness in regional markets and expand intra-Africa trade. However, with regional trade shares remaining lower than other world regions, much work remains to be done. In addition, Africa's share of global agricultural trade remains low, and most major African exporters have seen little improvement in global competitiveness (see Chapter 4, this volume).

Several recent developments present the potential to allow the continent to further improve its trade performance. ICTs are enhancing the flow of production and market information, and countries are making progress on designing regulations to enable the deployment of biotechnology. Institutional innovations such as mobile financial services, climate insurance, commodity exchanges, warehouse receipt systems, and futures markets can help to increase productivity and lower trade costs. Examples such as Kenya's participation in global horticulture value chains have demonstrated the ability of the public and private sector to work together to improve agricultural and trade performance. Income growth at home and other demographic changes have led to burgeoning demand for food overall and higher value food in particular, offering income opportunities for producers and processors as well as potential for increased regional trade.

However, daunting challenges remain, including high trade costs, inadequate linkages between producers and value chains, and the increasing negative impacts on agricultural of climate change. The following recommendations are suggested to enable African countries to take advantage of new opportunities and build on recent progress in regional and global trade.

Agricultural productivity growth is central to improved trade performance. Income growth, demographic changes and burgeoning food demand in Africa present remarkable opportunities for local production, but to capture those opportunities, agricultural productivity growth must be sustained. Investments in agricultural productivity will catalyze broader economic growth and transformation, in addition to improving Africa's competitiveness in global markets. African governments should make greater efforts to meet the CAADP goal of allocating 10 percent of public expenditures to agriculture, and development partners should increase support to national agricultural strategies. Governments should also allocate greater expenditures to agricultural research and development in order to develop and adapt productivity-enhancing technologies.

Value chains development and upgrading is necessary to enable expanded trade. Taking advantage of opportunities to meet food demand and expand exports requires integrating smallholder farmers into value chains and enhancing productivity along the value chain. Innovative financial products should be scaled up to allow farmers to access inputs and other technologies. The potential of ICT products to link farmers to upstream service providers as well as downstream markets, and to enhance their productivity on the farm through better access to information, should continue to be explored. ICTs can also enhance connections between actors at all stages of the value

chain and facilitate adherence to traceability requirements for international markets. Farmers and agroprocessors need support to participate in global value chains, including capacity strengthening to meet food safety and quality standards required by global markets.

Governments can provide an enabling environment for value chain development and expanded trade through public investments in infrastructure: better roads are needed to reduce trade costs associated with transport, and expanded and more reliable energy would facilitate productivity-enhancing investments by producers and agroprocessors. In addition, governments have an important role to play in strengthening market institutions and providing leadership for the development and implementation of standards and certifications, provision of market information, and ensuring contract enforcement.

More needs to be done to remove barriers to trade and market integration. Countries and regions should continue to promote the free movement of people, goods and services across the continent. Further efforts are needed to enhance regional integration and increase trade flows in order to take advantage of the potential of regional trade to stabilize food markets. In order to meet the Malabo Declaration goal of tripling intra-regional trade in agricultural goods and services, Africa's countries and regional economic communities must advance efforts to harmonize food safety and quality standards and regulations as well as reducing other barriers to crossborder trade. Trade facilitation efforts should include streamlining customs and border procedures, reducing harassment costs to traders, and upgrading transport infrastructure.

Greater efforts to increase sustainability and resilience to climate change are required. Climate change is already affecting agricultural production in Africa, and extreme weather events as well as shifts in underlying climatic conditions will only increase in the future. African countries should expand efforts to enhance resilience to climate shocks and play a greater role in global efforts to address climate change. Smallholders need be provided with information and support to adopt climate-smart agriculture techniques to offset yield losses under climate change. Insurance products to protect farmers from climate risk, as well as expanded social safety nets, are important elements of efforts to increase resilience. In addition, African governments should continue early efforts to ensure the environmental sustainability of their development strategies.

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