



AFRICA AGRICULTURE STATUS REPORT 2020



Feeding Africa's Cities

Opportunities, Challenges, and Policies for Linking African Farmers with Growing Urban Food Markets



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Preface

Africa's cities currently provide the largest and most rapidly growing agricultural markets in Africa. Out of total urban food sales of roughly US\$200 to US\$250 billion per year, over 80% comes from domestic African suppliers. In the coming decades, demographic projections forecast rates of African urbanization as the highest in the world. Today — and even more so tomorrow — Africa's rapidly growing cities and food markets offer the largest and fastest growing market opportunity available to the continent's 60 million farms. One-half of these farms involve young people, contrary to widely held perceptions. AGRA and partners core commitment to smallholder agriculture must now focus on urban food markets, to position domestic suppliers as competitive, responsive and safe; to provide the right signals and inputs to those markets; and continue growing opportunities for young people in the agriculture sector.

Demand patterns, reviewed in Chapter 2 of this year's Africa Agriculture Status Report (AASR), clearly identify the most rapidly growing urban food markets as processed, prepared, and perishable foods — especially dairy, poultry, meat, fish, and horticulture. Given the emphasis on higher value of these growing market segments, both African farmers — and supporting partners like AGRA — will need to

diversify their portfolios out of starchy staples and into high financial and health-value products, as well as value addition activities in the food system. This recognizes both farmer aspirations and the continent's increasing burden of unhealthy diets.

In addition to the demand-side pull of urban food markets, Africa's cities shape the structure of agricultural supply systems in increasingly powerful ways. Most obviously, cities serve as purveyors of farm inputs, equipment, and related services as well as warehousing and cold storage for agricultural outputs. In particular, Africa's secondary cities — accounting for one-third to one-half of Africa's urban population — have become key suppliers of farm inputs, pumps, farm equipment, warehousing, transport, and repair services. Cities also serve as key governors of land and labor prices in nearby agricultural zones. Because of their growing scale, urban land, labor, and input markets generate pronounced spatial gradients in land valuations, wage rates and agricultural input prices that, in turn, affect spatial land-use patterns and on-farm technologies used. Given high peri-urban land prices, and water availability, farming in urban and peri-urban areas typically focuses on high-value products such as poultry, dairy, small ruminant fattening operations, and horticultural production.

Historically, ministries of agriculture are normally Africa's primary food and agricultural policy makers. This has given room to advance technologies, policies and programs to improve the productivity and performance of agri-food systems in Africa. Looking forward, as the center of gravity in Africa's agri-food systems shifts increasingly towards urban areas, city planners, mayors, district councils, trader organizations, and public health professionals are becoming key players in shaping and implementing agricultural policy. Effective governance of urban food systems needs a marrying of the 'old' and the new, across the rural and urban space, around food systems planning, management, and governance.

As in prior years, this year's AASR is the product of intense scholarly work on the core chapters that I hope will stimulate intense discussion and a productive synthesis of ideas that will lead us

forward in our ongoing work. We have involved a very diverse set of researchers and disciplines, including food safety, city planning, and urban food system governance. AGRA and indeed the AGRF Partners Group hope in the coming years to cultivate these connections with mayors, city managers, and specialists in urban food system governance. They are the key conduits for improving the efficiency and safety of urban wholesale markets, which in turn offer the major gateway through which smallholder farmers access Africa's growing food markets. I am most grateful to the contributors, and to a truly exceptional set of external reviewers, for their professionalism and guidance about promising pathways forward for improving the competitiveness of African farmers as well as the safety and efficiency of the distribution systems through which they feed Africa's growing cities.



Dr. Agnes Kalibata
President, AGRA

Foreword

The population of metropolitan Lagos recently passed 20 million. Across all of Africa, over the past several decades, rates of urban population growth have exceeded those of all other continents. And those trends are expected to continue for another several decades, at least. As a result, by 2015 Africa housed 42 mega-cities of over 2 million people. Small towns have grown rapidly as well. Currently, over half of Africa's urban population reside in towns and small cities of less than 500,000 population. Even towns under 100,000 population account for nearly one-third of the urban people. As a result of this explosive growth in urban population, Africa's cities currently provide the largest and most rapidly growing agricultural markets in Africa. Hence the importance of this year's Africa Agriculture Status Report (AASR) focusing on "Feeding Africa's Cities".

The COVID-19 pandemic has disrupted urban food systems worldwide, affecting food supplies, food prices, and the purchasing power of especially the vulnerable populations. Low-income informal sector laborers have suffered disproportionately in the face of lockdowns, business closures, job losses, and restrictions on labor mobility. The resulting compression of the purchasing power of the urban poor has placed severe additional pressure on often precarious populations already suffering from high rates of undernutrition. Food supply disruptions

have exacerbated these pressures. As a result, the challenges of feeding African cities have become more difficult, yet at the same time more important, than ever.

This year's AASR comes at an important time, as city mayors, national governments, and international institutions worldwide are all struggling to rebuild from COVID-19 in ways that ensure the long-term efficiency and safety of urban food supplies, and adequate protections for vulnerable populations. Given the scale and dynamism of Africa's urban food markets, the long-standing commitments of AGRA and the AGRF Partners Group to smallholder agriculture now requires a focus on the efficiency of urban wholesale markets, the smallholder's primary gateway to growing urban demand. Contributions to improved urban planning, food markets and food system governance will require building partnerships and programs to improve the efficiency, safety, and competitiveness of domestic agri-food systems.

I applaud AGRA and its many stakeholders and partners for addressing the challenge of feeding Africa's cities and for viewing this challenge as an opportunity to refocus efforts on the urban food systems that increasingly drive opportunities for African farmers.



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This year's Africa Agriculture Status Report (AASR) focuses on the growing challenge of feeding Africa's cities. Because urban food markets offer the largest and fastest growing commercial opportunity available to Africa's 60 million farms, the center of gravity in Africa's food system has increasingly moved to urban areas, where new actors — including mayors, city councils, district governments, urban planners, public health officers, and industry trade associations — have become central to the effective functioning of agricultural input and output markets, food processing, and food safety systems. As a result, the 2020 AASR has involved an unusually broad range of disciplinary specialties and institutional contributors. We recognize the consequent broad coalition of contributors who have helped conceptualize, assemble empirical evidence, and summarize the current critical issues and key findings in this report.

The 2020 AASR, *Feeding Africa's Cities: Opportunities, Challenges, and Policies for Linking African Farmers with Growing Urban Food Markets*, has received support and guidance from many contributors whom we wish to acknowledge. Agnes Kalibata, Andrew Cox, Adam Gerstenmier, Gaitano Simiyu, Jane Njuguna, and Josephine Njau, provided overall leadership for the development and production of this Report. I am particularly indebted to Jane Njuguna who served as Managing Editor, supported by Josephine Njau, Alice Thuita,

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The Africa Agriculture Status Report 2020 is an important accomplishment and we are grateful to all those who made it possible. We hope the Report serves as a useful contribution to the understanding of the opportunities



Andrew Cox

Chief of Staff and Strategy, AGRA

Acronymns

AASR	Africa Agriculture Status Report
ACGG	African Chicken Genetic Gains
AfCFTA	African Continental Free Trade Agreement
AfDB	African Development Bank
AFSI	Africa Food Safety Index
AGOA	African Growth and Opportunity Act (US)
AGRA	Alliance for a Green Revolution in Africa
AMU	Arab Maghreb Union
ARII	Africa Regional Integration Index
AU	African Union
AUC	African Union Commission
CEMAC	Central African Economic and Monetary Community
CEN-SAD	Community of Sahel-Saharan States
CET	Common External Tariff
CILSS	Club Inter-Etats de Lutte Contre la Sécheresse au Sahel (Permanent Interstate Committee for Drought Control in the Sahel)
CIRAD	Centre de coopération internationale en recherche agronomique pour le développement (French Agricultural Research Centre for International Development)
COMESA	Common Market for Eastern and Southern Africa
CRFS	City Region Food Systems
CSP	Comité Sahélien des Pesticides
DALY	Disability Adjusted Life Years
DRC	Democratic Republic of Congo
EAC	East African Community
ECCAS	Economic Community of Central African States
ECOWAS	Economic Commission of West African States
EPZ	Export Processing Zones
FAO	Food and Agriculture Organization of the United Nations
FAPRI	Food and Agricultural Policy Research Institute

FDI	Foreign Direct Investment
FSCs	Food supply chains
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation (GmbH))
IAPRI	Indaba Agricultural Policy Research Institute
ICBT	Informal cross-border trade
ICT	Information and Communication Technology
IECL	International Economics Consulting, Ltd
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IGAD	Intergovernmental Authority on Development
IGC	International Growth Center
IHR	International Health Regulations
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
IPM	Integrated Pest Management
IT	Information Technology
LMIC	Low and Middle-Income Country
MIS	Market Information Systems
MSME	Micro, Small, and Medium Enterprise
MSU	Michigan State University
MUFPP	Milan Urban Food Policy Pact
NGO	Non-Governmental Organization
NRI	Natural Resources Institute
NTM	Non-Tariff Measure
NUA	New Urban Agenda
OECD	Organisation for Economic Co-operation and Development
OIE	Organisation for Animal Health
PACA	Partnership for Aflatoxin Control in Africa
PPP	Purchasing Power Parity
R&D	Research and Development

REC	Regional Economic Community
RUAF	Resource Centre on Urban Agriculture & Food Security Foundation
SACU	Southern Africa Customs Union
SADC	Southern African Development Community
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SDG	Sustainable Development Goal
SEZ	Special Economic Zone
SIC	Small and Intermediary Cities
SME	Small and Medium Enterprise
SPS	Sanitary and Phytosanitary
TP4D	Territorial Perspectives for Development
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFPA	United Nations Population Fund
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

1 Overview | Feeding Africa's Cities: Opportunities, Challenges, and Policies for Linking African Farmers with Growing Urban Food Markets

Steven Haggblade¹

Key messages:

1 Urban food markets offer the largest and fastest growing commercial opportunity available to Africa's 60 million farms.

2 As the center of gravity in Africa's food system moves to urban areas, new actors — including mayors, city councils, district governments, urban planners, public health officers, and industry trade associations — become central to the effective functioning of agricultural input and output markets, food processing, and food safety systems.

3 As a result, effective urban agricultural policy requires new forms of governance, consultation, and coordination.

4 This report reviews the structure and scale of urban food markets, current challenges facing farmers and agribusinesses, and key policy prescriptions for ensuring affordable, safe urban food supplies, and broad-based expansion of rural economic opportunity.

1.1 Growing opportunity in urban food markets

Africa's² rapidly growing cities offer the largest and fastest growing market opportunity available to the continent's 60 million farms (Lowder, Skoet, & Raney, 2015). In the world's most rapidly urbanizing continent, African farmers and agribusinesses must find ways to source and deliver increased quantities of safe, nutritious food to feed steadily increasing populations in large cities and secondary towns (Figure 1.1).

Despite differing criteria for delineating urban areas — across countries and over time — demographers concur that urban population is currently growing faster in Africa than in any other continent (Box 1.1). Using national administrative definitions of urban areas, adopted by the UN agencies, Africa's urban population will grow at a rate of 3.5% per year over the decade from 2015 to 2025, nearly double the rate in Asia and triple that in Latin America (UN, 2018). According to these projections, the African continent will become majority urban by the mid-2030s (Figure 1.2)³. Using standardized geospatial

1 Michigan State University

2 Where data permit, this report covers all regions of Africa: North, West, Central, Eastern, and Southern subregions of the continent.

3 Differences, of course, exist across the continent. North Africa as a region became majority urban around 2010, while sub-Saharan Africa will become majority urban around 2050.

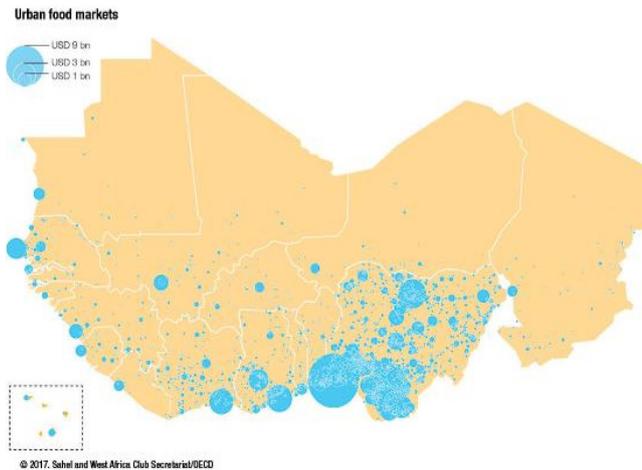


Figure 1.1. Retail value of urban food consumption in West Africa (US\$ billions)

definitions of urban, Africa became majority urban in 2015 (see Box 1.1 and Figure 1.3). Under either classification system, urban population growth will drive African demographics over the coming decades.

Growing urban food markets imply longer supply lines than those serving rural areas, expanded wholesale and retail distribution systems, and an

increased need for warehousing, cold storage, food preservation, processing, and packaging. Each of these additional value chain stages add costs, leading to generally higher food prices in urban areas. As a result, in many African countries, the value of urban food consumption already exceeds that in rural areas (Chapter 8, Figure 8.1). Looking forward, all indicators (demographic, economic, and consumer behavior) suggest that urban food markets will continue to grow rapidly in the coming decades.

Along with growing urban population, parallel increases in per capita incomes are triggering dietary changes, fueled by an emerging middle class (Economist, 2011; Tschirley, Reardon, Dolislager, & Snyder, 2015). By 2010, the African Development Bank (AfDB) estimated that Africa's middle class accounted for over one-third of the continent's total population, rivaling India's middle class in size (Ncube, Lufumpa, & Kayizzi-Mugerwa, 2011). Growing per capita incomes lead to pronounced dietary changes, including diversification out of starchy staples and into higher-value perishable products like dairy, meat, and horticulture as well as growing demand for prepared and processed foods (Popkin, 2014).

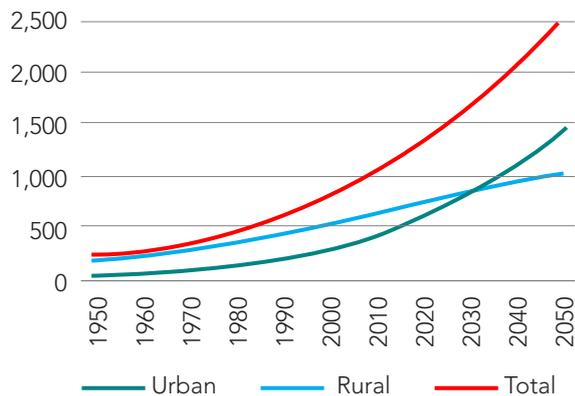


Figure 1.2. African population trends, 1950–2050: urbanization drives aggregate population growth

Source: UN-DESA (2018)

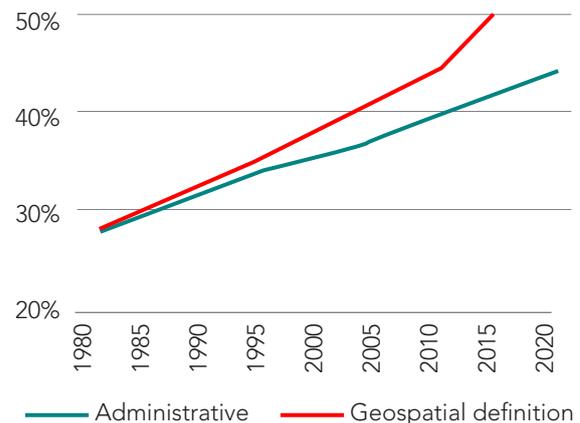


Figure 1.3. Urban share of African population: Using geospatial definitions, urban population substantially exceeds official counts within administratively designated city boundaries

Source: Moriconi-Ebrard, Heinrigs, and Trémolières (2020); UN-DESA (2018)

Box 1.1. What's urban?

African governments designate urban administrative jurisdictions using a variety of different criteria and legal structures. They incorporate urban areas as cities, townships, or municipalities according to a range of criteria (McGranahan & Satterthwaite, 2014). Typically, urban designations involve a minimum population threshold. However, urban size cutoffs vary significantly across countries — 5,000 or more inhabitants in Cameroon and Ghana, 10,000 or more in Côte d'Ivoire and Senegal, and 20,000 or more in Nigeria (Bricas et al., 2016). Sometimes, official urban designations also include additional criteria such as share of non-farm employment, population density, and availability of various administrative services.

Complicating comparisons further, urban boundaries often expand over time, leading to surprising changes in urban population density and economic activity. Expansion of Kisumu city (Kenya) limits in 1971, for example, resulted in roughly 80% of land within the newly expanded municipal boundaries being used for subsistence farming (Hayombe, Omondi, & Awuor, 2019; Kisumu City Council, 2003). Because of definitional differences and changing administrative boundaries, urban population comparisons are often not strictly comparable across countries or even over time.

In an attempt to standardize urban population comparisons across countries and over time, some researchers avoid administrative designations and instead construct their own spatial definitions of urban agglomerations using population density, built up spaces, and other criteria to construct analytically comparable units of "urban-like" spaces (Africapolis, 2018, Angel, 2012; GRUMP, 2019). The Africapolis database, for example, "defines an agglomeration as urban if its population exceeds 10,000 people and its built environment contains no unbuilt spaces greater than 200 meters" (Moriconi-Ebrard, Heinrigs, & Trémolières, 2020, p. 30).

Comparisons of the administrative and geo-spatial definitions reveal striking differences. Using geospatial definitions, urban population levels are larger and faster growing than official population counts within administratively designated municipal boundaries (Figure 1.3). In the case of Maputo and Matola, Mozambique, built-up areas of urban agglomeration spill over far outside of municipal administrative boundaries (Figure 1.4). Conversely, formal urban administrative jurisdictions often contain large open, green, and rural-like spaces that gives rise to significant amounts of urban agriculture.

Despite this heterogeneity in urban designations and definitions, official UN population figures (such as those reported in Figure 1.2) and most researchers accept national governments' official classifications of "urban" and "rural". Unless otherwise indicated, the chapters in this review follow standard practice and accept local administrative designations of "urban" and "rural". Nonetheless, where feasible, chapter authors make adjustments to improve analytical clarity. Chapter 2, for example, breaks out urban food demand patterns in large cities and secondary cities as well as rural areas.

Already in some West African cities, prepared foods account for up to one-third of food expenditure (Bricas, Tchamda, & Mouton, 2016). The combination of growing urbanization, rising incomes, and changing diets is collectively fueling rapid growth in urban food markets, making this arena the single most important commercial opportunity available to African farmers and agribusinesses over the coming decades.

1.2 Challenges

In their efforts to supply growing urban food markets, Africa’s farmers, agro-industries, and policy makers face multiple challenges. Farmers must find ways to intensify food production in the face of increasing land pressure and rising wage rates. They must simultaneously diversify production to meet shifting demand for high-value perishables such as poultry, dairy, livestock, and horticultural products. In the face of mounting food imports from overseas, African farmers, traders, and wholesalers must find ways to drive down domestic costs of production, storage, and distribution in order to remain competitive with external suppliers in Brazil, North America, Europe, and Asia.

Agribusiness firms anticipate continued growth in demand for processed and prepared foods. Yet they, too, must ensure food quality, food safety and competitive prices to out-compete global agribusiness giants. Growing urban food markets imply longer supply lines, expanded wholesale and retail distribution systems, increased warehousing, cold storage, food preservation, processing, and packaging. These, in turn, are attracting significant private sector investment from a broad array of small, medium, and large agribusiness entrepreneurs, despite widespread weaknesses in financing and public roads, power, and market infrastructure (Reardon et al., 2019).

Policy makers, too, must adapt to ensure availability of key public goods, policies, and infrastructure required for African farmers to successfully compete in growing urban food markets and at the same time ensure food safety and public health of urban consumers. Planning, financing, and coordinating key public infrastructure and a favorable policy environment become more complex in urban areas. Historically, ministries of agriculture have dominated as Africa’s primary agricultural policy makers. Looking forward, as the center of gravity in Africa’s food system moves to urban areas, new, non-traditional actors become central to the effective functioning of agricultural input and output markets, food processing, and systems



Figure 1.4. Urban agglomerations* sprawl beyond city administrative boundaries: Maputo and Matola, Mozambique

*Using geo-spatial tools, the Africapolis database defines urban agglomerations based on two criteria: a physical criterion (continuously built-up areas) plus a demographic criterion (more than 10,000 inhabitants).

Source: Moriconi-Ebrard, Heinrigs, and Trémolières (2020)

for ensuring food safety. Ministries of health and environment play key roles in ensuring food safety and public health. Mayors and district councils make zoning and licensing decisions that directly affect agribusinesses. They, likewise, build and manage urban wholesale market infrastructure through which small farms reach urban consumers. As a result, effective urban agricultural policy requires new forms of governance, consultation and coordination that effectively engage this expanding constellation of urban food system stakeholders.

1.3 Key objectives

This report tackles three key objectives. First, it quantifies the scale of the emerging commercial opportunity in Africa's urban food markets as well as the specific food commodity groups for which urban demand is growing most rapidly. Second, it assesses the principal challenges facing farmers and agribusinesses as they strive to respond to emerging changes in consumer demand, including growing interest in processed and prepared foods and growing demand for food quality and safety. Finally, the report identifies policies and collective actions — by public and private actors — required to improve the ability of Africa's farmers, food processors, and distributors to feed Africa's rapidly growing cities and drive rural prosperity.

1.4 Structure of issues addressed in this report

1.4.1 Urban food demand

These discussions begin by quantifying the scale and scope of urban food demand. Drawing on dozens of detailed household consumption studies from West, East, and Southern Africa, *Chapter 2* consolidates a wealth of empirical evidence from across the continent. It compares patterns of food consumption in large urban centers, small towns, and rural areas, highlighting regional differences as well as common trends towards packaged foods, prepared foods, and high-value perishables such as dairy, meat and horticulture. Changes over time and across income levels help identify the largest as well as the most rapidly growing components of urban food demand. These high-growth market

segments define the most significant commercial opportunities available to African farmers and agribusinesses over the coming decades. The remainder of the report examines how well African suppliers have responded to these expanding opportunities in growing urban food markets.

1.4.2 Import competitiveness

In a globalized world, African farmers and food processors striving to feed Africa's cities must compete with international agribusinesses from the Americas, Europe, and Asia. Growing levels of food imports — including wheat, vegetable oil, sugar, rice, dairy, meat, fish, and maize — raise questions about the competitiveness of African suppliers.

Chapter 3 looks at trends in Africa's food imports and exports to identify commodities and products for which African farmers and agroprocessors have proven most competitive and, conversely, where they may have lost market share to international suppliers. Through a series of commodity and product-specific case studies, the chapter explores key elements of African competitiveness — including quality, reliability, food safety, and price — in order to identify factors critical to the commercial success of African farmers and food suppliers.

1.4.3 Food system transformation

Domestically, African food systems have begun to respond to growing urban markets and shifting consumption patterns, including increased demand for prepared and packaged foods, growing interest in convenience and quality, as well as heightened awareness of food safety and quality. *Chapter 4* describes the responses by African retailers, food processors, and farmers to growing markets and shifting urban food consumption patterns. In doing so, the chapter draws on a wealth of recent marketing, agroprocessing, and value chain case studies. The chapter begins by presenting empirical evidence on shifting patterns in urban food retailing and the resulting impact on market shares of major food retail outlets, including classic open-air markets, itinerant vendors, small shops, specialty retailers, and supermarkets. Since open-air markets, hawkers, and food stalls source food through different supply channels than small shops

and supermarkets, trends in relative retail market shares translate into very different distributions of employment, income, and farm size for upstream suppliers throughout the food systems. Small-scale farmers, in particular, face special challenges in meeting the quantity requirements, pricing, and delivery schedules required by increasingly large and demanding urban food retailers.

1.4.4 Food safety

In order for African farmers and food processors to compete successfully in feeding the continent's growing cities, domestic suppliers will need to supply safe, quality foods at a reasonable price. Yet, Africa currently suffers from the highest per capita rate of food-borne illnesses in the world (WHO, 2015). Inadequate controls in animal husbandry and butchering raise risks of transferring animal-borne parasites such as tapeworm and cysticercosis to urban consumers. Aflatoxins and other fungal diseases on groundnuts and maize pose serious health risks, as do bacterial diseases such as *Escherichia coli*, salmonella, and cholera, commonly transmitted on a variety of uncooked foods. Growing pesticide use in Africa compounds food safety risks from residues in fish, water, milk, vegetables, and fruits. *Chapter 5* outlines the scope and scale of African food safety concerns as well as private and public responses to this growing challenge.

1.4.5 Governance of urban food systems

Urban areas house vital parts of African food systems, including its most important markets, food storage and distribution centers, agroprocessing and food preparation businesses, farm input supply depots, laboratory facilities, and scientific capacity necessary for monitoring and ensuring food safety. In many settings, on-farm production of high-value perishables such as vegetables, dairy, and poultry take place in urban and peri-urban areas (Kiambi et al., 2018; Minten, Mohammed, & Tamru, 2020; Box 4.2). Effective management of these urban agricultural functions remains key to ensuring efficiency of the overall food system as well as food security and food safety for final consumers. Efficient functioning of urban food

systems, likewise, requires a set of key public goods — including wholesale market infrastructure, price information, zoning, licensing, roads, traffic control, electricity, food safety, sanitation, and waste management. Currently, a patchwork of different agencies — including public (national and municipal) and private (formal and informal) sector actors — intervene in urban agriculture and food markets (Smit, 2019). Many face resource constraints that limit the personnel, budgets, and technical infrastructure available to ensure the efficiency and safety of urban food production, processing, and marketing. Improved governance models, therefore, will require expanded resources and more effective coordination among public and private sector governing entities. *Chapter 6* addresses these issues, first by outlining the key urban functions affecting agricultural production, processing and marketing. It then identifies the broad gamut of private and public agencies responsible for providing critical collective goods necessary for maintaining the efficiency and safety of urban food systems. The chapter concludes by outlining governance models and reforms that have proven most effective in improving the efficiency and safety of Africa's urban food systems.

1.4.6 Intra-African food trade

Mapping of food production and marketing flows in Africa reveal that political borders frequently separate Africa's surplus food production zones from the urban food markets they most naturally serve (Figure 1.5). They separate surplus maize in South African silos from deficit markets throughout Southern and Eastern Africa; surplus cowpea production in southern Niger and Burkina Faso from urban markets in Nigeria, Côte d'Ivoire, and Ghana; food surplus zones of northern Mozambique and southern Tanzania from intermittently deficit markets in Malawi, Zimbabwe, and eastern Zambia; and livestock exporters in Mali, Mauritania, and Niger from coastal markets across West Africa (Haggblade, 2013). Border posts and associated checkpoints along the way inflate transaction costs. Livestock exports from Burkina Faso transit 50 checkpoints along the 1,000-kilometer trade corridor between Sahelian herding zones and the

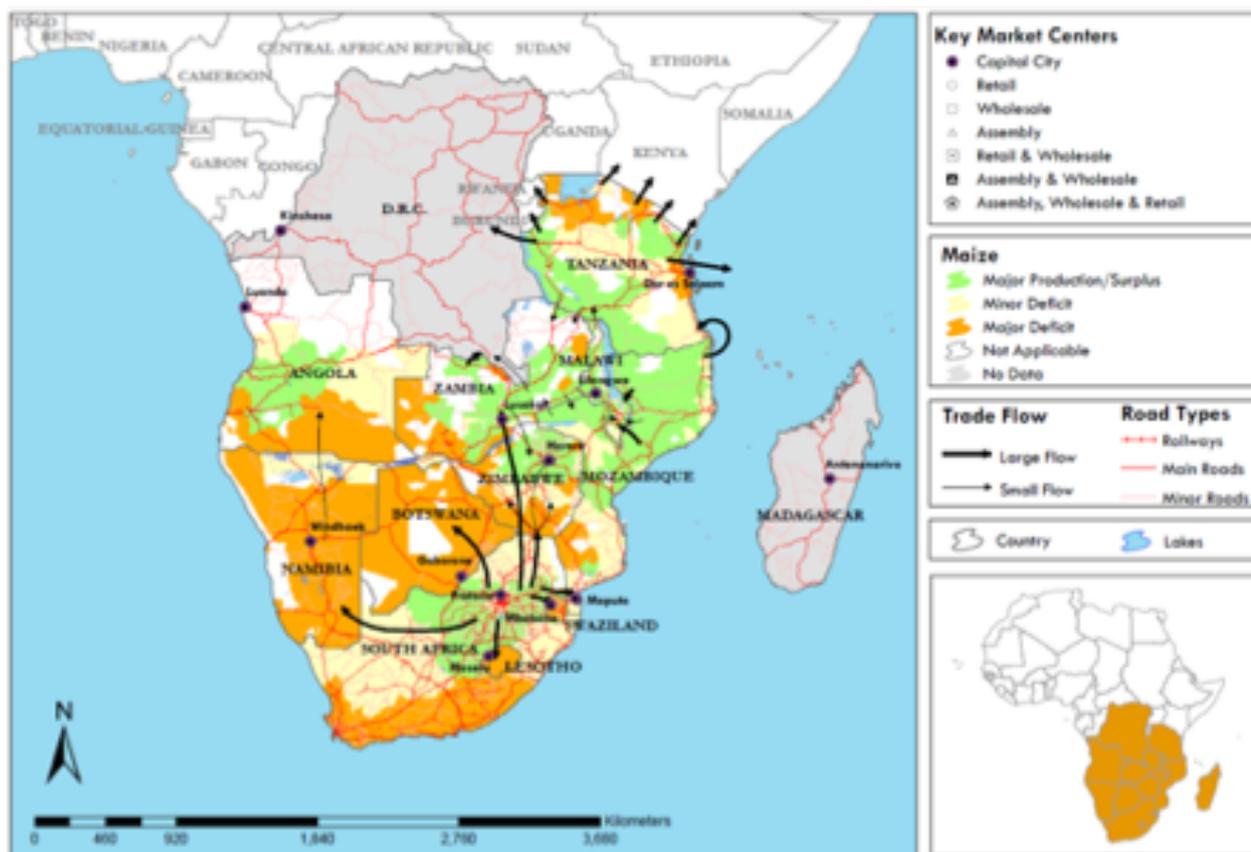


Figure 1.5. Regional maize trade in Southern Africa

Source: FEWSNET (2012)

terminal market in Accra (INSAH, 2015). Meanwhile, Brazilian and European suppliers ship poultry, dairy, and meat directly into coastal West African cities without any such impediments. *Chapter 7* examines the current scale of intra-Africa food trade, existing challenges, and policy solutions for more efficiently linking African farmers with growing urban food markets in neighboring countries.

1.4.7 Policy implications

Cities shape agricultural systems in powerful ways. They affect the structure, composition, spatial dispersion and technology used in Africa's agri-food systems. Patterns of urban food retailing govern the market share of competing upstream supply channels, thus determining which types of intermediary processors, traders and farmers participate in the most rapidly growing supply channels. While open-air retailers and urban wholesale markets provide key entry points for

small-scale farmers, the growing retail share of supermarkets favors medium and large-scale farms that can meet volume and quality standards (Reardon et al., 2009, 2019). Urban wholesale markets — along with associated zoning decisions, sanitation services, infrastructure provision, and traffic controls — affect food losses, food safety, marketing margins, urban consumer prices, and farm gate prices. Urban land prices, labor markets, and farm input distributors affect the spatial distribution of perishable food production, as well as the technology used, rates of input use, and mechanization in agriculture and agroprocessing (see Box 8.1).

As the center of gravity of Africa's food system shifts increasingly to urban areas, new, non-traditional actors become central to the effective functioning of agricultural input and output markets, food processing and food safety. Mayors, city councils,

and district governors hold responsibility for city planning, zoning, and spatial distribution of agribusiness and food retailing facilities. They are also responsible for building and maintaining urban wholesale markets, managing urban water supplies, managing traffic control, drainage, sanitation and waste disposal (Battersby & Watson, 2019). Private sector associations of food retailers, agricultural input suppliers, farmers, food processors, and street hawkers organize to improve business conditions, manage market places and, in some instances, help enforce regulatory controls. With interests that sometimes converge and other times conflict, they lobby for public services, key infrastructure, and policy protections. In urban food markets, they join public sector actors across half a dozen line

ministries and government agencies that regulate land allocation, water supplies, licensing of traders and retailers, transport regulation, customs controls, public health, environmental pollution, and food safety (Smit, 2019). As a result, effective governance of urban food systems requires inclusive models that coordinate and harmonize actions of the many diverse players now shaping African agri-food systems. **Chapter 8** pulls together key empirical and policy findings from this report in order to highlight the major opportunities emerging from growing urban food markets as well as the critical public goods required for enhancing the ability of African farmers and agribusinesses to feed the continent's rapidly growing cities.

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2 Opportunities in Africa's Growing Urban Food Markets

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Key messages

- 1 Africa's rate of urbanization has been faster, and its urban population is higher, than reflected in official data. Combined with substantial growth in real per capita incomes over the past 20 years, this has contributed to rapid transformation in the continent's agri-food system, presenting new challenges for farmers, consumers, and agribusinesses as well as a wide array of new opportunities.
- 2 Despite considerable variety in food cultures across Africa, changes in food consumption behavior across the continent have trended broadly towards more purchased, more perishable, more processed, and more prepared foods.
- 3 Employment in post-farm segments of the agri-food system (trade, processing, storage, distribution, retailing, and food preparation), which currently account for about 25% of all employment, will likely grow more rapidly than employment on the farm.
- 4 Expected shifts in farm production towards higher value crops — such as animal products (poultry and eggs, dairy, and meat), fresh fruit and vegetables — have proven spotty and modest to date, though over time these shifts are likely to become more pronounced and broad-based.
- 5 Serving Africa's urban food demand requires more capital intensity and greater knowledge, skill, and organization. As a result, only a small subset of the hundreds of millions of smallholder farmers and micro- and small-scale agribusiness entrepreneurs will be able to compete effectively in this new environment over the medium term.
- 6 Looking forward, the continent finds itself at a point of profound uncertainty, in the midst of a five-year stagnation of per capita income growth, and dealing now with the massive challenge of the COVID-19 pandemic accentuated by severe regional crises in the Sahel (security) and East Africa (the locust outbreak). Yet there is great room for growth through improved policies and productive investment, and some evidence that these are beginning to emerge. In the current environment, these levers will be increasingly urgent to support ongoing food system transformation and improve citizens' livelihoods in Africa.

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2.1 Introduction

Africa's rapid urbanization, combined with substantial growth in real per capita incomes over the past 20 years and the globalization of food markets, is a major contributor to the rapid transformation taking place in the continent's food systems (McMillan & Harttgen, 2014; Reardon, et al., 2019; Tschirley, Dolislager, et al., 2015; Young, 2012). Together, these dynamics are confronting rural and urban people alike with new challenges while also providing a wide array of new opportunities. The purpose of this chapter is to better understand these new opportunities, the contribution that urbanization is making to them, and how they might evolve over the next 10 years.

The chapter makes three contributions to the literature. First, it assesses the implications for food systems of insights from new spatial data on human settlement on the continent, which goes beyond the increasingly inadequate rural/urban dichotomy. This provides new insights about emerging new opportunities and about the policies and investments that may be needed to adapt to and take advantage of these patterns.

Second, it brings together highly complementary—but to date separate—findings on changing diets in East and Southern Africa compared to West Africa, and thereby provides the most comprehensive view to date of this central driver of changing opportunities for food system participants on the continent.

Third, the chapter addresses the faltering of per capita income growth on the continent since 2013³, together with the enormous global shock of the COVID-19 pandemic, to think critically about how

the ongoing transformation of African food systems might differ over the next 10 years compared to what has been seen over the past 10–20 years.

The chapter proceeds as follows: Section 2 explains our conceptual approach; Section 3 reviews the empirical record on patterns of change in human settlement and per capita incomes on the continent; Section 4 lays out the expected impacts of these patterns of change on consumer behavior (changing consumer demand for food and its characteristics); Section 5 assesses the consequences of consumer behavioral change for the distribution of livelihood opportunities across the food system (and the participants at each level) and across rural-to-urban space; and Section 6 concludes by considering what the implications of recent faltering in per capita consumption growth, together with the COVID-19 pandemic, might mean for the trajectory of food system transformation over the next 10 years.

2.2 Conceptual approach

In a market-based economy, labor must follow the structure of consumer demand⁴. The distribution of demand for labor — across sectors, levels of supply chains, and by skill requirement and wage level (or profitability, if self-employment) — then defines the structure of livelihood opportunities available to the system's participants. Over time, forces of change external to the system influence the structure of demand and change the set of available livelihood opportunities.

In this chapter, we consider the impact of two forces of change on the structure of African consumers' demand for food and on the resulting distribution of livelihood opportunities: urbanization and income growth. These ongoing forces of change alter behavior in the form of transformed diets and related changes of structure and behavior in the food supply chains (FSCs) that support them.

3 McMillan, Rodrik, and Sepulveda (2017) note the faltering starting around mid-decade and find little reason for optimism going forward; Sy and Talvi (2016) note that the International Monetary Fund (IMF) forecasts for growth in Africa in 2016 were the lowest since 1999; World Bank data (<https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=chart>) show a flattening of real per capita purchasing power parity (PPP) gross domestic product (GDP) in sub-Saharan Africa since 2014 and a slight but steady decline in real per capita USD GDP since the same year. In this chapter, we use World Bank data on per capita consumption expenditure, which show decline after 2013.

4 Changing technology — in particular, differing capital intensities across sectors of the economy and levels of supply chains — mediates the impact of demand on the distribution of labor. Treating this aspect systematically is beyond the scope of this chapter, though we will refer to it when especially relevant.

These diet and FSC transformations then alter opportunities for farmers, rural residents in general, and operators throughout the FSCs and in rural and urban areas in three ways: the magnitude of opportunities, their range or diversity, and their location within the FSCs and the broader economy.

Our thesis is that urbanization and income growth lead to broadly predictable patterns of transformation of diets and of FSCs, and that clear expectations can be formed regarding the effects of these transformations on the level, diversity, and distribution of opportunities. In looking forward, we consider these broad dynamics of change together with the concept of local food cultures, and evidence for their persistence, to consider what aspects of these transformations are generalizable and thus predictable, which are subject to more local influence, and what this implies about the evolution of the system over time.

We ask two broad questions: (1) to what extent are the observed patterns of change in Africa over the past decades consistent with these expectations, and how deep and broad have these changes been?; and (2) in light of the answer to the first questions, where might this process lead over the next 10 years?

To explore these questions, we do three things. First, we empirically examine patterns of change in: (a) the speed and spatial distribution of change in human settlement patterns in Africa since 1960; and (b) consumer expenditure (as the best cross-country proxy for income⁵) and its distribution between rural and urban areas since 1980. To examine human settlement patterns, we use spatial data sets rather than official administrative data on rural and urban populations.

Second, we characterize the evidence regarding the transformation of African diets over the past 10–20 years, hypothesize what the effects of these

⁵ Changes in per capita GDP can be a poor indicator of changes in consumer well-being, due to changes in the capital intensity of an economy and thus the distribution of national income across labor and capital. See Arndt, McKay, and Tarp (2016) for a classification of African economies based in part on divergence between growth in GDP and growth in consumption.

changes should be on the behavior—primarily the kinds of livelihoods they engage in—of farmers, rural residents in general, and entrepreneurs in FSCs, and review whether the empirical evidence conforms with our expectations.

Finally, we speculate about how the processes documented in the chapter might play out over the next 10 years, and what this implies for policy and investment. In this last section, we emphasize the great uncertainty currently facing Africa and its cities due to growth faltering since 2013, and the potentially devastating impact of the COVID-19 pandemic on economic growth and livelihoods of the poorest⁶.

2.3 Patterns of change in urbanization and income growth

In this section we review the evidence on changes in human settlement patterns in Africa since 1960 using data from Africapolis (OECD/SWAC, 2020), then use data from World Bank⁷ to examine trends in per capita expenditure on the continent since 1980.

2.3.1 Five findings regarding change in human settlement patterns over the past several decades

Assessing the opportunities presented by African urban areas requires an accurate understanding of the patterns of urban settlement on the continent. Official urban and rural population data are inadequate to this task for three reasons. First, they are inconsistent across countries, with differing national cutoffs for the minimum size of settlement that qualify as “urban” (from as low as 5,000 to as high as 20,000). Comparison across countries is thus problematic.

Second, urban areas in official data are defined administratively, not based on observed settlement patterns of people. This has led to two types

⁶ Evidence suggests that urbanization will continue in Africa even if income growth slows. See Gollin, Jedwab, and Vollrath (2016) and Jedwab and Vollrath (2015) on the conundrum of past urbanization in the absence of rapid income growth.

⁷ <https://data.worldbank.org/indicator/NE.CON.TOTL.KD>, file API_NE.CON.TOTL.KD_DS2_en_excel_v2_1129220

of misclassification of physical spaces and their populations: administratively “urban” areas around many city and town cores that enter official urban population numbers but are functionally rural in terms of population density and predominant livelihoods; and sizeable agglomerations of people emerging in rural areas that for extended periods are not recognized administratively as urban and therefore do not enter official statistics on urban populations (see OECD/SWAC (2020, Table 4.1, p. 113) for examples from across the continent).

The third weakness in official data is that cross-country data sets on urban settlements from the United Nations typically include only settlements above populations of 300,000⁸. This means that the potentially large number of people living in urban settlements below this size cannot be examined in a cross-country setting, even if they are recognized as urban at country level.

The Africapolis data set⁹ addresses these problems by combining demographic data, satellite and aerial imagery, and other cartographic information around a standardized spatial definition of “urban”. The system generates estimates of the number of urban agglomerations, the population of each, and total urban population at 10-year intervals for every country on the continent since 1950. Africapolis defines as “urban” an agglomeration of at least 10,000 people that meets specified criteria of overall density and built-up area. Because Africapolis uses administrative classification as one layer of information, its urban agglomerations include but are not limited to administratively urban areas. The result is a time series with, as of 2018, over 7,500 urban agglomerations across Africa, with total population, spatial extent, and spatial location of each.

8 The UN agglomeration level data includes only cities above 300,000; see <https://population.un.org/wup/Download/>, file 15 or 16 under Urban Agglomerations. The country level urbanization data by city size class includes a class of “under 300,000”. But unlike all the other, larger, size classes, it does not provide data on the number of agglomerations of this size, only an overall estimate of total population in the class and its share in overall population. Exactly how these overall estimates are generated is not clear.

9 <https://africapolis.org/home>, data downloadable at <https://africapolis.org/home/data>. See OECD/SWAC (2020) for more on methods and key patterns. The spreadsheet used to generate results in this chapter is available upon request.

We use these data plus WorldPop¹⁰ data on overall human settlement in Africa to examine how settlement patterns have changed over time. We reach five conclusions, each discussed in turn.

Finding #1: More rapid urban growth and higher urban populations:

The first conclusion is that urban populations have grown more rapidly and are now much higher than shown in official data as compiled by the UN. Comparing Africapolis data to the United Nations/World Urbanization Prospects (UN/WUP), Table 2.1 shows that urban populations under Africapolis in 2015 are nearly 90 million, or 20%, higher than under UN/WUP data, and their share in total population is 49%, compared to only 41% in UN/WUP.

Growth rates in Africapolis are uniformly higher starting each decade through 2015. Notably, UN/WUP data show a slight slowing in urban population growth rates over time (falling from 4.1% for 1960–2015 to only 3.7% from 2000 to 2015), while Africapolis shows steady (and higher) rates starting in 1960 through 1990, then sharp *increases* starting in 2000. These two data sets thus paint quite different pictures of current urbanization dynamics on the continent, with Africapolis suggesting that the continent is already half urban, and that the continuing rate of urbanization is much more rapid than previously thought.

Finding #2: Decentralized growth — the role of new urban agglomerations, many not administratively recognized:

The second finding is that a major driver of this rapid growth has been the rise of thousands of new urban agglomerations, many not officially recognized as “urban”. Africa has experienced a dramatically more decentralized urbanization process than is typically appreciated or visible through official data (Table 2.2). The number of agglomerations above the Africapolis cutoff of 10,000 expanded by 15 times across the continent between 1950 and 2015, from just under 500 to over 7,600; in sub-Saharan Africa the number expanded

10 <https://www.worldpop.org/>, population data downloadable at <https://www.worldpop.org/project/categories?id=3>. See also <https://www.worldpop.org/methods> for details and citations on methods. See Arslan, Tschirley, and Egger (2020) and IFAD (2019) for applications.

Table 2.1. Urban populations, share in total, and annual percent growth to 2015, Africapolis versus UN/WUP (1960–2015)

	Africapolis			UN/WUP		
	Urban population ('000)	Share in total (%)	Annual average growth to 2015 (%)	Urban population ('000)	Share in total (%)	Annual average growth to 2015 (%)
1960	41,905	17	4.9	52,072	19	4.1
1970	68,161	21	4.8	81,057	23	4.0
1980	109,953	26	4.8	126,082	27	3.9
1990	170,517	30	4.9	196,050	32	3.7
2000	258,703	36	5.4	280,008	35	3.7
2010	411,847	43	6.6	399,735	39	3.8
2015	567,115	49	---	480,785	41	---

Note: Table includes North African countries; 50 countries in total across the continent.

Table 2.2. Growth in urban agglomerations in Africa and contribution of new and existing agglomerations to growth of urban population (1950–2015)

	Number of agglomerations			Contribution to urban population growth			
				New agglomerations (%)		Existing agglomerations (%)	
	1950	1990	2015	1950–2015	1990–2015	1950–2015	1990–2015
African continent	498	2705	7617	20	20	80	80
Sub Saharan Africa	277	1769	5779	21	21	79	79
Central	26	223	873	22	23	78	77
East	42	333	1483	22	22	78	78
North	221	936	1838	17	14	83	86
Southern	56	249	936	28	29	72	71
West	153	964	2487	18	17	82	83

Notes: (1) Africapolis cutoff for urban agglomeration is 10,000; see OECD/SWAC (2020) for more detail.

Source: Africapolis (<https://www.africapolis.org/home>) and downloadable data set

by 21 times, from under 280 to nearly 5,800. Just from 1990 to 2015, the number expanded by a factor of 2.8 on the continent and 3.3 in sub-Saharan Africa.

The emergence of these new agglomerations accounted for 20% of all urban population growth since 1950 (21% in sub-Saharan Africa), and the same percent since 1990, driven by steady annual growth of slightly more than 4% in the number of agglomerations. This means that there has been

no recent slowing of the contribution of new urban agglomerations, compared to existing ones, to total urban population growth. This rapid and spatially dispersed emergence of urban agglomerations is taking place in the midst of rural areas (a process Africapolis calls *in situ urbanization*; OECD/SWAC, 2020), with major implications for the accessibility of urban markets to farmers and also for urban infrastructural investment policy.

Finding #3: The accelerating emergence of megacities:

Despite Africa's highly decentralized urbanization, the continent has seen the emergence of many "megacities" (Figure 2.1). Cities of more than 5 million rose from zero in 1960 to 2 in 2000 (Cairo and Alexandria) and 11 by 2015. Using a cutoff of 2 million, Africa had one megacity in 1950 (Cairo). The continent did not get its second until 1970 (Johannesburg), and by 2015 had 42.

The population in cities of this size is growing very rapidly and the pace of growth is increasing. For example, population in the 11 cities of 5 million or more grew at over 11% per annum from 2000 to 2015, versus only 6.4% from 1970 to 2015; the share of urban population in these cities rose from 8% in 1970 to 17% in 2015. Using 2 million as the cutoff, population grew 7.7% annually from 2000 to 2015 versus 7.3% from 1960, and the share in total urban population in these 42 cities rose from 9% in 1960 to 33% in 2015.

Finding #4: Continuing importance of medium and smaller cities and towns:

Despite the rise of megacities, over half (52% both continentally and in sub-Saharan Africa) of Africa's urban population in 2015 resided in towns and small cities of less than 500,000 population. Even towns under 100,000 population accounted for nearly one-third of the urban population. Though this share is declining, this category of smaller cities and towns — many of them only recently emerging as urban areas — will remain for many years tremendously important in determining the opportunities that African urbanization provides for its food system participants. They must therefore figure prominently on the urban policy and investment agenda of African governments. In fact, these smaller cities and towns, being closer to rural areas than the emerging megacities, in many ways already play an outsize role in creating such opportunities by making migratory options more accessible to more people and resulting in substantial poverty reduction (Christiaensen, DeWeerd, & Todo, 2013; Christiaensen & Todo, 2014).

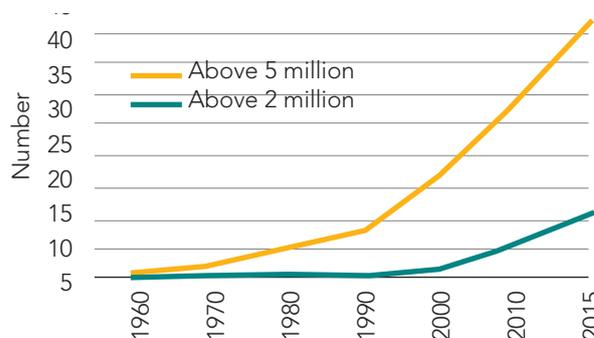


Figure 2.1. Number of cities above 2 million and 5 million in Africa, 1960–2015

Source: Africapolis data

Finding #5: Rural densification and the blurring of rural–urban distinctions:

Rural populations have become dramatically more dense in recent decades. This dynamic is still poorly understood but emerges clearly from the WorldPop global spatial settlement data. For example, Arslan, Tschirley, and Egger (2020) and IFAD (2019) show that two-thirds of rural youth live on only 8% of the populated rural land, meaning that average population densities for these two-thirds are more than 23 times higher than for the most remote one-third¹¹. Jayne, Chamberlin, and Headey (2014) show that 82% of Africa's rural population reside on only 20% of the rural land, and 62% reside on only 10%. These figures lead to similar conclusions about relative densities of African rural population settlement.

This pattern is functionally related to the rise of new agglomerations and Africa's decentralized urbanization process, as increasing rural populations eventually reach densities that must be considered functionally urban (OECD/SWAC, 2020). The distinction between rural and urban areas thus becomes blurred: densifying rural areas are likely to take on increasingly urban characteristics, especially with respect to their engagement with markets as consumers, while new urban agglomerations are likely to have relatively low densities compared to other urban areas and to support more agriculture-related livelihoods than traditional cities. We revisit these ideas in section 4 regarding expected effects of observed settlement patterns on behavior of consumers and FSC participants.

¹¹ $(0.67/0.08)/(0.33/0.92) = 23.3$.

2.4 Income growth boomed from 2000, with urban areas likely benefiting most, but has faltered since 2013

We use World Bank per capita final consumption expenditure rather than per capita GDP as GDP includes returns to capital that will have much less impact on the behavior of consumers, and thus on the structure of food demand and resulting opportunities available to participants¹². Resource-rich countries in particular can see substantially higher growth in GDP than in consumption, as rents from the resource extraction leave the country, or are reinvested rather than spent, or are saved.

Trends in income levels: prolonged boom followed by a bust: Figure 2.2 shows declining average real per capita consumption in sub-Saharan Africa during the 1980s as a result of

12 Both series come from national accounts data but use differing methods. See <https://data.worldbank.org/indicator/NE.CON.TOTL.KD>, file API_NE.CON.TOTL.KD_DS2_en_excel_v2_1129220 for consumption expenditure data used in this chapter.

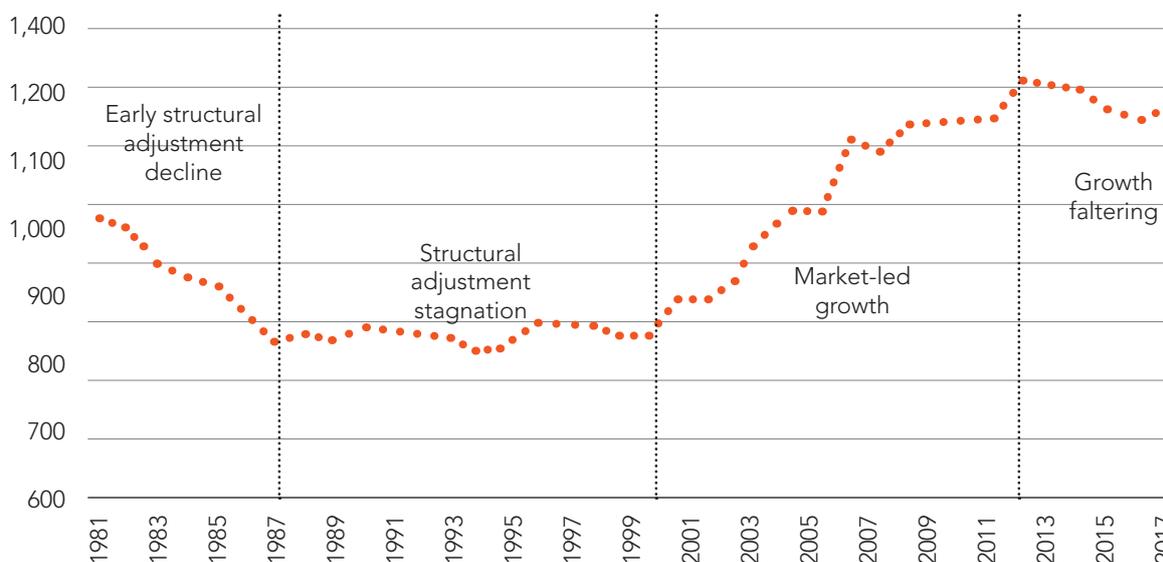
the growth-inhibiting effects of previous policies and the roll-out of structural adjustment programs across the continent. This period was followed by over a decade of stagnation to 2000. From 2000 to 2013, constant 2010 USD per capita consumption expenditure boomed, growing at an annual average rate of 3.14% and rising 50% from US\$874 to US\$1,306. This boom in consumer expenditure, tied to urbanization and the accumulating response to the economic opening spurred by structural adjustment¹³, is what drove the transformations of diets and FSCs that we discuss next.

Since 2013, however, average consumption expenditure has slowly declined¹⁴. Though growth did not decline in all countries, the downturn has been broad: of the 29 countries with data for the entire 2000–2018 period, 9 had higher growth

13 See Sachs and Warner (1997) for the contribution of closed economic policy to the lack of growth on the continent before the mid-1990s.

14 World Bank data on constant 2010 USD per capita GDP and constant 2017 PPP USD per capita GDP show an end to growth after 2014: 2010 USD shows slow decline from 2014 to 2019 while the 2017 PPP USD shows a flat trend. These data are available to 2019 while the consumption data go only through 2018 at the time of this writing. Files can be downloaded at <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=chart>

Figure 2.2. Per capita final consumer expenditure in constant 2010 USD, Sub-Saharan Africa, 1981–2018



Source: World Bank Indicators, Final consumption expenditure estimated from national accounts data (excel file API_NE.CON.TOTL.KD_DS2_en_excel_v2_1129220).

after 2013 compared to before, but 20 had lower growth; and while only 1 of the 29 had negative growth before 2013, a total of 10 had negative growth since 2013. If this decline continues or becomes a prolonged stagnation, it puts at risk the transformations we discuss and clouds the picture of how rapidly cities can create new opportunities for food system participants¹⁵.

Rural–urban comparison: urban areas are richer and have probably grown faster: Data do not allow a comparison of growth rates over time in consumption or income between urban and rural areas. Extensive research documents, however, much higher living standards in urban than in rural Africa (Sahn & Stifel, 2003), and the little available

evidence suggests that this urban advantage is not declining over time. On the first question, the World Bank provides rural/urban consumption expenditure estimates for 2010 across 36 African countries, based on nationally representative household consumption or expenditure survey data sets (Table 2.3). These data show that the ratio of urban-to-rural consumption expenditure is above 1.0 in every country, ranging from a low of 1.37 in Ethiopia (a 37% average income advantage for urban residents) to a high of 5.28 in Rwanda (a massive advantage for urban households, with average expenditure more than 5 times higher than rural). The population-weighted mean ratio is 2.08, meaning that the average urban resident enjoys more than double the consumption expenditure of the average rural resident.

¹⁵ See Rodrik (2018) and McMillan et al. (2017) on Africa’s future growth prospects. None of these authors are optimistic that the rapid growth of 2000–2013 can be quickly rekindled.

Table 2.3. Urban and rural per capita expenditure in selected African countries, and urban-to-rural ratio (2010 PPP\$)

Country	2010 per capita consumption, PPP\$			Country	2010 per capita consumption, PPP\$			Country	2010 per capita consumption, PPP\$		
	Rural	Urban	U/R ratio		Rural	Urban	U/R ratio		Rural	Urban	U/R ratio
Ethiopia	1,048	1,440	1.37	Liberia	538	981	1.82	Togo	423	1,004	2.37
São Tomé	3,044	4,344	1.43	Tanzania	418	783	1.87	Niger	459	1,116	2.43
Nigeria	493	758	1.54	Côte d’Ivoire	891	1,761	1.98	Malawi	489	1,293	2.64
Congo	1,013	1,560	1.54	Ghana	875	1,826	2.09	Burundi	277	760	2.74
Gabon	1,698	2,635	1.55	Guinea	580	1,225	2.11	Cameroon	420	1,214	2.89
Benin	489	769	1.57	Lesotho	944	1,995	2.11	Kenya	572	1,661	2.90
Chad	694	1,097	1.58	Madagascar	210	457	2.18	Namibia	859	2,583	3.01
DRC	218	374	1.72	Uganda	796	1,788	2.25	Swaziland	626	1,919	3.07
The Gambia	818	1,440	1.76	Cabo Verde	1,307	2,975	2.28	Zambia	279	933	3.34
Mauritania	1,052	1,869	1.78	Senegal	592	1,367	2.31	RSA	1,598	5,467	3.42
Mozambique	453	811	1.79	Mali	427	988	2.31	Rwanda	294	1,552	5.28
Sierra Leone	1,010	1,832	1.81	Burkina	400	932	2.33				
				Population-weighted ratio			2.08				

Source: World Bank, computed from household income-expenditure surveys.

Sahn and Stifel (2003) show similar inequality between rural and urban areas in Africa, based on a multi-dimensional measure of poverty. Across 6 countries, the smallest difference in asset poverty is 30%, and in half of the countries, asset poverty is more than 50% higher in rural areas than in urban areas.

Surprisingly, the study by Sahn and Stifel (2003) is the only one we find that explored whether urban–rural disparities are declining or rising over time. Their general conclusion is that there is no evidence of rural areas catching up in Africa. Depending on the measure of welfare and which countries are examined, evidence can be strong that rural areas are falling further behind.

2.4 Expected impacts on consumer behavior: the structure of demand for food and its characteristics

Our findings so far can be summarized in four broad patterns of change that will influence the behavior of food system participants and through this on opportunities to those participants. These shocks are:

- The share of population living in urban areas has risen rapidly, from less than one-third in 1990 to one-half today (49% in 2015).
- Rural areas on average are now much closer to urban areas and are themselves much more densely populated.
- Megacities are rapidly increasing their population share even as smaller cities and towns hold over half the continent’s urban population.
- Incomes rose rapidly from 2000 to 2013, probably more rapidly in urban than in rural areas.

These changes have predictable effects on consumer behavior, and these effects are largely borne-out by empirical study¹⁶. Tschirley (2017) has characterized changes in food consumption behavior on the continent as food becoming more

¹⁶ The changing behavior and structure of FSCs is reviewed in Chapter 4 (this volume).

purchased, more perishable, more processed, and more prepared. He documents how deep and broad these patterns are across countries and across rural and urban areas in East and Southern Africa (Tschirley, Dolislager, Reardon, & Snyder, 2015; Tschirley, Snyder, et al., 2015). Bricas, Tchamda, and Mouton (2016) and Hollinger and Staatz (2015) do the same in West Africa.

We treat each of these four patterns (purchasing, perishability, processing, and preparation) in turn, then close the section with a consideration of how more qualitative aspects of consumer food demand, in particular food safety, perceived quality, and “desirability”, are affected by urbanization, rural densification, and rising incomes.

A key insight is that urbanization and income growth have independent effects on diets and thus, through FSC restructuring, on opportunities available to food system participants, but that together they have far higher combined effects. To take one example, consider the demand for convenience. A rural resident who migrates to an urban area will experience lifestyle changes that lead them to put a higher value on convenience, and to increase the share of convenient (typically processed or prepared) foods in their diet, even if their income does not increase (Huang & David, 1993; Regmi & Dyck, 2001). Similarly, a rural resident who sees their income rise but remains in the rural area may value convenience more due to a higher opportunity cost of time. Yet higher costs and (potentially) lower availability of processed and prepared foods in rural areas may limit the extent of this behavioral change. When urbanization and income growth occur together, their impact is far larger: an economist would compute the combined effect as the product of the independent impact of urbanization on demand for convenience and the pure income elasticity of demand for convenience. Transformation can thus be extremely rapid when the two complementary forces of change operate simultaneously.

2.4.1 Purchased foods

Expectations: Greater reliance on purchased food follows directly from greater urbanization, greater density of rural settlements, and lesser

average distances from rural to urban areas. Urban households everywhere rely overwhelmingly on markets for their food; denser populations in rural areas reduce land per capita and increase opportunities for specialization, both of which drive greater reliance on food markets for consumption; and lesser average distances between rural and urban areas increases the influence of urban areas on rural, including allowing urban marketing networks to reach more rural areas.

Empirical patterns: Patterns are remarkably similar across regions of the continent. From household surveys in West Africa, Cameroon, and Chad, Bricas et al. (2016) show that over 90% of food in major cities is purchased, more than 80% is purchased in secondary cities, and over half is purchased in rural areas. As causes of the high share in rural areas, they note the increase in urban settlements in the midst of rural areas (what Africapolis calls “in situ urbanization”), and the increasing share of non-farm labor in rural residents’ livelihoods. In five countries of East and Southern Africa (Ethiopia, Uganda, Tanzania, Mozambique, and Malawi), Tschirley, Dolislager, et al. (2015) showed that, circa 2010, in rural areas 44% of all consumed food was purchased; over 90% was purchased in urban areas. Later analysis that included Nigeria and Zambia pushed the share of purchased food in total food in rural areas to nearly 50% (Tschirley, 2017).

2.4.2 Perishable foods and other non-staples

Expectations: Bennett and Pierce (1954) first documented the move away from starchy staples towards more perishable foods as incomes rise, a pattern now identified as Bennett’s Law. These perishable foods include animal proteins, including fish, meat, poultry, eggs, and dairy, and fresh fruit and vegetables.

Empirical patterns: Perhaps surprisingly, empirical evidence on this pattern in Africa is mixed. The most robust pattern is towards animal proteins. Calculations from annex data in Tschirley, Snyder, et al., (2015) show that these items occupied 20% of all food purchases in Ethiopia, Uganda, Tanzania, Mozambique, Malawi, and Zambia around 2010. Bricas et al. (2016) in West Africa showed similar

results — these same categories accounted for 15–30% of all food consumption (including consumed own production) in West Africa between 2001 and 2011. Hollinger and Staatz (2015) also found similar results for the region, and show that this share rose in urban areas of every country (Burkina Faso, Côte d’Ivoire, Ghana, Mali, and Senegal) between 1994 and the mid- to late 2000s (though it fell in rural areas of three of the five countries). They show that meat and dairy (separately) have income elasticities of demand above 1.0 in 26 out of 28 country-by-rural/urban combinations for the 2 food items. Income elasticities for fish typically hover between 0.9 and 1.2. Across income quintiles, meat and dairy budget shares rose with rising income in every country (these are not computed for fish). Overall, these results strongly suggest that demand for animal protein will grow rapidly with income.

The patterns for fruit and vegetables are not as clear. Hollinger and Staatz (2015, Table A6.2 and A6.2) found a mix of modestly rising and declining shares with income in both urban and rural areas of six countries of West Africa. The strongest evidence of rising shares was in Niger, the poorest country in the group, where shares rose most sharply with income but from very low levels. Bricas et al. (2016, Graphique 21) show lower budget shares (but potentially higher total consumption) of fresh fruits and vegetables in urban areas of West Africa than in rural areas.

Even steady budget shares, however, imply rapidly rising per capita consumption of these items as incomes rise. Income elasticities are 1.0 or greater in 8 out of 14 country-by-rural/urban combinations, but never less than 0.7. When combined with rapid rises in urban populations, these patterns produce even more rapid growth in total demand.

Trends for fruit likely differ from those for vegetables, yet the two are typically reported as one group. Tschirley, Dolislager, et al. (2015) distinguished between them in East and Southern Africa and found slowly falling shares for vegetables with income (from 11% among the poor to 9% among the upper class; note that this implies *higher* absolute consumption of vegetables among the upper class)

but large rises (from a lower base) in the share of fruits. Tschirley, Cunguara, Haggblade, Reardon, and Kondo (2017) estimate expenditure elasticities in Tanzania of 1.32 and 1.07 for fruit in rural and urban areas respectively and for vegetables of 0.62 and 0.77. Overall, these sources suggest that demand for fruit should rise rapidly with incomes, while demand for fresh vegetables will rise, but much more slowly.

Finally, trends on the share of staples in African diets show modest change. Reardon et al. (2019) used FAOSTAT data to show that the share of cereals declined very little between 1970 and 2013 (from 28% to 26%), roots and tubers remained steady around 20%, and non-staple shares rose from 50% to 55%.

2.4.3 Processed and prepared foods

Expectations: Urban lifestyles are busier and urban residents on average have much higher incomes than rural residents. Limited time and high incomes increase the opportunity cost of time, especially for women. The result is that consumers seek convenience in many things, including food. This search for convenience is at the root of the rapid rise in demand for processed food documented across all regions of Africa, particularly for highly processed foods and food away from home.

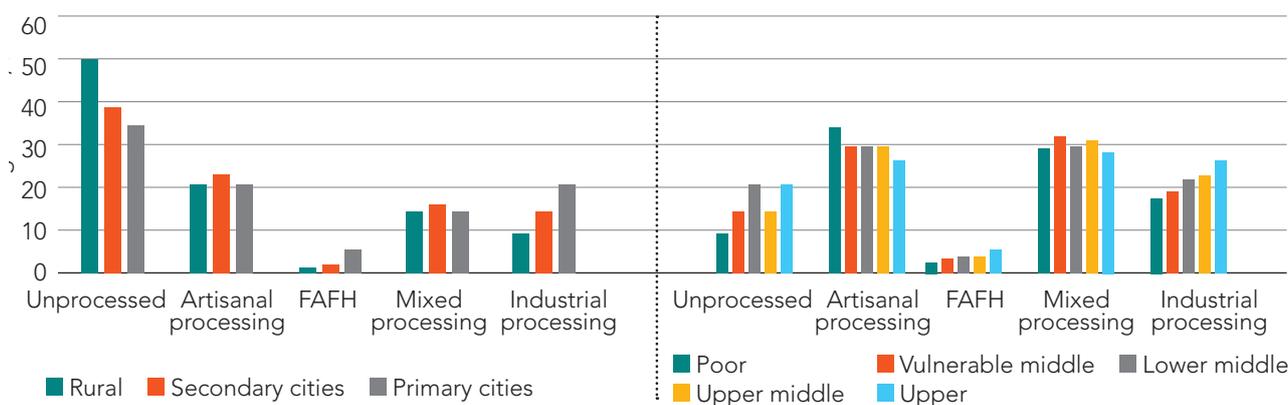
Empirical patterns: Processed foods: Across 16 countries of West Africa, Bricas et al. (2016) found that processed foods account for at least 48% of all consumption in rural areas, at least 56% in

secondary cities, and at least 62% in primary cities (Graphique 32)¹⁷. Using a different classification scheme to that used by Tschirley, Dolislager, et al. (2015), they found that foods processed by small and medium enterprises (SMEs; the “artisanal processing” category in Figure 2.3) (which will correspond primarily to moderately processed foods in the Tschirley, Dolislager, et al. 2015 classification) show roughly constant shares of more than 20% across rural and urban areas, while the share of industrially processed foods (relating primarily to the more highly processed category in Tschirley, Dolislager, et al., 2015) rises from 10% in rural areas to about 15% in secondary cities and 21% in primary cities (Figure 2.3). They found similar behavior across income groups, with the small-scale processed category remaining steady around 20%, while the industrially processed share rises from 12% in the poorest quintile to about 18% in the top quintile.

Tschirley, Dolislager, et al. (2015) found similar patterns in East and Southern Africa (Figure 2.4). They show that purchased processed foods account for nearly two-thirds of all consumption in urban areas and 30% in rural areas. As a share of purchased foods, the shares are nearly identical in urban and rural areas at 70%.

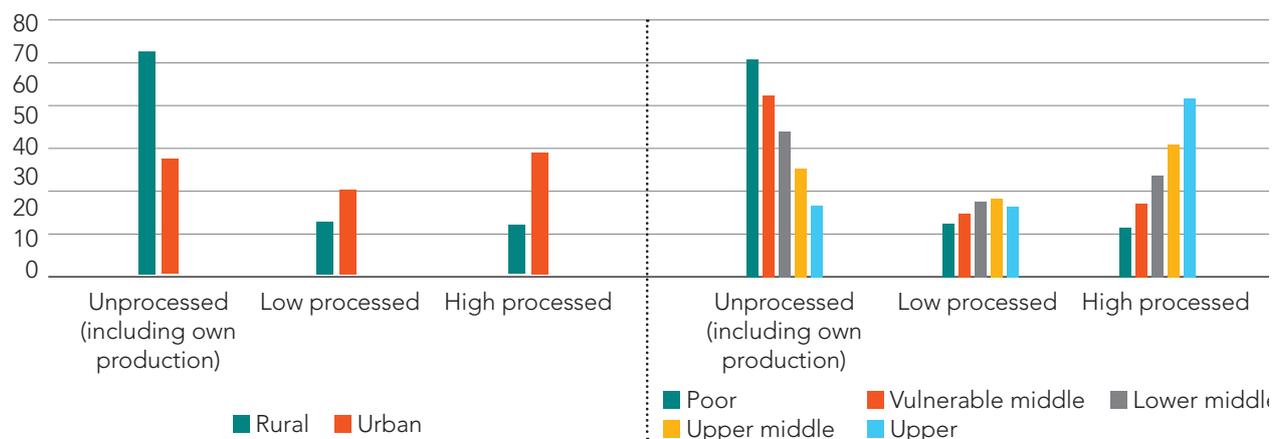
17 They include a category for products whose origin is mixed or unknown — we exclude these shares in what we quote above.

Figure 2.3. Total food budget shares in West Africa by processing level, rural/urban and by income quintile



Source: Bricas et al. (2016)

Figure 2.4. Total food budget shares in East and Southern Africa by processing level, rural/urban and by income class



Source: Tschirley, Dolislager, et al. (2015)

The difference emerges in the degree of processing. The share of more highly processed foods in food purchases is lower in rural areas, at 33%, compared to 42% in urban areas. Yet across income levels, these shares behave nearly the same in rural and urban areas: the purchased food budget share of more highly processed foods rises from 36% to 65% across urban income classes, and from 30% to 52% in rural areas. Meanwhile, the share of moderately processed foods falls with income in urban areas, from 30% among the poor to 20% among the upper class, and remains steady at just under 40% across all income levels in rural areas.

Empirical patterns: Food away from home:

Consumption of food away from home shows very similar patterns in West Africa and East and Southern Africa: low overall shares around 2010 (circa 2%) hiding great variation across countries and a very strong positive relationship to income and urbanization. In West Africa, food and food away from home shares were estimated by Bricas et al. (2016) at only about 2% regionally, rising to 6% in major cities, but varying within cities from only 5% in Freetown and Conakry to over 30% in Cotonou, Lomé, and Abidjan. Tschirley, Snyder, et al. (2015) likewise show about a 2% share overall in their 6 countries, but Reardon et al. (2019) and Sauer et al. (2019) found much higher shares in Nigeria (not included in the Tschirley, Dolislager, et al, 2015 work) and Tanzania — about 25% in urban areas and 10%

in rural areas. In Nigeria, the share doubles from the lowest to highest income tercile — this implies explosive growth in total expenditure on this item with growing incomes. Tschirley, Snyder, et al. (2015) found a similar pattern with income, projecting higher growth rates over time (based on income elasticities and rates of urbanization) for food away from home than for any other food category and even slightly above demand growth for non-food.

2.4.4. Food diversity, quality, safety, and desirability

Expectations: Bennett's Law can be extended and generalized into an expectation of rising demand for food diversity (this follows directly from a declining budget share of starchy staples) and for a broader set of food attributes as incomes rise. Key among these attributes are perceived food safety and quality (including nutrition) and complex notions of food desirability.

Food desirability includes internal factors such as taste, texture, aroma, palatability and (for non-packaged foods) visual appeal, and external factors such as the perceived status or prestige of foods, their relationship to existing cultural norms around food, and one's desired lifestyle¹⁸. In the globalized, industrialized, market-based food system that now dominates global consumption, lifestyle advertising by large multinational food corporations (both western and African, for example Tiger Brands

¹⁸ This conception builds on Herforth and Ahmed (2015).

of South Africa and Bakhresa Group of Tanzania) directly targets all these aspects of desirability, and does so especially for ultra-processed industrial food products (Abrahams, Temple, Mchiza, & Nelia, 2017; Gaber & Write, 2014; Igumbor et al., 2012; Ng et al., 2014). Most obviously, it targets external aspects such as perceived status or prestige and the role of the product in one's desired lifestyle. Yet over time, and especially when targeted at children, such advertising can heavily influence internal factors such as what is considered a desirable taste or texture or smell (Robinson, Borzekowski, & Matheson, 2007; Smith, Kelly, Yeatman, & Boyland, 2019).

Because this advertising takes place within a local food culture, one should expect variability over space and time in how these externally promoted foods and food products are adopted into diets. Spatially, differing local food cultures should drive variation in the particular products adopted and the particular ways in which they are combined with "local" and "traditional" foods to create new dishes (Bricas, 2008; Bricas & O'Déy , 1985; Soula, Yount-Andr , & Bricas, 2020). One can also expect that strongly embedded local values around food might slow the adoption of ultra-processed foods in some areas, even controlling for levels of income.

Much innovation around food and eating takes place within households or among small-scale street vendors. This innovation has to do with how foods are combined and prepared into dishes and may be relatively free of large corporate influence. Examples include the expansion of fried plantain banana (*aloko*) all over West Africa, *atti ke* made from cassava semolina in C te d'Ivoire and now in other countries (S dia, Konan, & Akind s, 2020); rice and fish with oil and vegetables (*ceebu j n*) in urban Senegal (Bricas & O'D y , 1985), and *baabenda*, a vegetable leaves dish, in urban Burkina Faso (H ron, 2020).

Urbanization increases exposure to other people and their food habits and to modern media, from billboards to TV advertising to smartphone advertisements and embedded advertisements in movies and online shows. In this way, urbanization

per se should simultaneously increase the influence of the large corporate sector and of more organic national and regional influences that depend on the mixing of people and informal sharing of "food styles" (Bricas, 2008; Bricas & O'D y , 1985; Soula et al., 2020).

We expect that these forces will result in great spatial variation in the particular foods and food products that are adopted into diets and the dishes that they support, but that this variability will be found in the midst of very robust convergence towards food being more purchased, perishable, processed, and prepared (Tschirley, 2017). More specifically, we expect the demand for status and prestige through food, or for "lifestyle foods", to start with iconic global brands such as Coca-Cola (beverages), Frito-Lay (snack foods), and Kentucky Fried Chicken (fast food). As this happens, local firms will find a niche, for example Chicken Republic in Ghana, Nando's in South Africa, and Azam in Tanzania. Street foods will also grow and innovate to adapt to these trends, but this sector and small local firms will be heavily pressed to compete with larger firms. Over time, as incomes rise and as intensified by urbanization, concepts of desirability will change. We expect that they will move back towards foods perceived as more healthy but that still have high processing content or are prepared outside the home. These features are essential for convenience, which is a driving force in urban food demand. We also expect that in most cases these foods will feature strong advertising content, which is needed to penetrate the "noise" of product diversity in modern systems and capture aspirational demand of high-income consumers). The rate at which this happens will vary depending on the rate of income growth and the strength of local food cultures.

Empirical patterns: Extensive research exists on consumer willingness to pay for food quality but generalizing is difficult due to the large number of characteristics that can be considered under the rubric of quality. The literature includes examinations of fortified versus unfortified maize meal in Kenya (De Groote, Kimenju, & Morawetz,

2011); genetically modified foods in Kenya (Kimenju & De Groote, 2008), rice quality in Senegal (Demont et al., 2013); quality protein maize in Tanzania (Kiria, Vermeulen, & De Groote, 2010); Karoo Lamb in South Africa (Van Zyl, Vermeulen, & Kirsten, 2013); African green leafy vegetables in Kenya (Chelang'a, Obare, & Kimenju, 2013; Ngigi, Okello, Lagerkvist, Karanja, & Mburu, 2011) and in South Africa (Senyolo, Wale, & Ortmann, 2014), and organic foods in South Africa (Vermeulen & Bienabe, 2007).

Empirical research on demand for food safety in Africa is scarce. Ortega and Tschirley (2017) found that consumer awareness of food safety issues is lower in Africa than in Asia and found little empirical evidence of consumer demand for food safety in Africa. Hoffman, Moser, and Saak (2019) reviewed six studies of consumer willingness to pay for food safety. Four of the studies are in Africa and all of these are in Kenya. They conclude that African (Kenyan) consumers have low knowledge of food safety and low willingness to pay for it.

Research on perceptions of status, prestige, and lifestyle as drivers of food consumption is nearly absent in Africa's food economics literature, despite the growing ubiquity of global brands of beverages, snack foods, and fast foods on the continent, and of advertising associated with each. Given the rapidly unfolding nutrition transition in Africa and the increase in overweight and obesity and associated non-communicable diseases (Reardon et al., 2020), this should be an area of rapidly increasing research¹⁹.

2.4.5 Megacities and consumer food demand

Little literature exists on the relationship between patterns of food consumption and city size. Sauer et al. (2019) found a threshold effect of the size of urban agglomeration on demand for highly

processed food in Tanzania: living in a secondary city compared to a town has no effect on demand for these kinds of foods, but living in a primary city (the largest type) is strongly positively associated with demand for these categories (packaged high processed foods and meals away from home). Headey, Stifel, You, and Guo (2018) showed that residing in a rural area, regardless of its degree of remoteness from an urban settlement, has a meaningful negative impact on child diet diversity scores. In the absence of further empirical or conceptual literature on this topic, we hypothesize that the impact of the rise of megacities on consumer demand will be "more of the same": more demand for food diversity, quality, safety, convenience, and prestige. Megacity impacts on the structure and behavior of FSCs can lead to additional changes in consumer demand based on changing relative prices.

2.5. Consequences of consumer behavioral change for livelihood opportunities

The central effect of changing consumer demand for food is to draw labor and livelihoods — opportunities — off the farm into the non-farm portion of FSCs and entirely outside the food system. We review the literature on this move off the farm, then consider changing opportunities for farmers, before closing with a consideration of the implications of the higher capital intensity, knowledge, and skill that will be required to capture these new opportunities.

2.5.1 Rising opportunities off the farm

The inverse relationship between a country's income (strongly associated with its level of urbanization) and the share of labor on the farm is among the most established empirical regularities in development economics, forming the basis of the earliest development models (Lewis, 1954) and elaborated on by numerous authors under the rubric of structural transformation of economies (see Herrendorf, Rogerson, and Valentinyi (2014) for a review of recent research and Timmer (1988; 2012) for applications to agriculture).

¹⁹ We found only one example of research on food advertising in Africa outside of South Africa: a letter to the editor (not an article) in *Food and Nutrition Bulletin* focused on billboard advertising in Maputo, Mozambique (Pinto, Lunet, Williams, & Barros, 2007). Not a single paper citing this work picks-up on the advertising angle. See Igumbor et al. (2012), Moodley, Christofides, Norris, Achia, and Hofman (2015), and Cassim (2005) for South Africa. Use of the term "aspirational foods" remains rare in research on Africa, one exception being Colen et al. (2018), though they do not link this to advertising.

Tschirley, Snyder, et al. (2015) use this relationship together with modeling of the diet transformation previously discussed to project movement of labor both off the farm and across sectors of the agri-food system in East and Southern Africa over 15- and 30-year periods from 2010. Focusing on primary sectors of employment and depending on the level of income growth, they projected that employment in farming would fall from 75% in 2010 to a range of 61% (assuming 4.5% per capita annual growth) to 68% (assuming 2% growth) in 2025, then to a range of 49% (4.5% growth) to 62% (2% growth) by 2040. Due to high population growth absolute employment on the farm will rise, even as its share of all employment falls. The post-farm segment of the agri-food system would increase its share from 8% to between 10% and 12% by 2025 and 11% to 14% by 2040. The biggest winner from this process would be the economy outside the agri-food system, whose share would rise from 18% in 2010 to between 22% (2% growth) and 28% (4.5% growth) by 2025 and between 27% and 39% by 2040.

By focusing on an individual's primary sector of employment, these projections put a lower bound on the share of the non-farm economy (both within the agri-food system and outside it) in total employment. Using much of the same data (LSMS-ISA data from six African countries²⁰) and focusing on full-time equivalents (FTEs) rather than primary occupation, Dolislager et al. (2020) capture the fact that economically active individuals in Africa typically engage in multiple livelihoods. They show that only 34% of all labor effort (FTE) in Africa was spent on own farming around 2015, and even rural areas showed only 39%. Together, these are roughly one-half the 75% farm share that Tschirley, Snyder, et al. (2015) reported from an overlapping set of countries, just 5 years earlier, based on primary occupation.

Focusing on work off the farm, Dolislager et al. (2020) show that 25% of all FTE labor — farm and all non-farm including that unrelated to food — is spent in the post-farm segment of the agri-food system, well above the 8% figure (from 5 years

earlier) of Tschirley, Snyder, et al. (2015) and again confirming how individuals in Africa engage in multiple livelihoods.

This same research also shows that engagement in the off-farm portion of the agri-food system increases as a household resides in more densely populated areas (Figure 2.5). They do this by applying the same classification scheme used by IFAD (2019) and Arslan et al. (2020) and found that the share of FTEs dedicated to post-farm agri-food system (AFS) work (including wage and self-employment) in the 6 African countries increases from 22% in the rural hinterland (the least densely populated rural areas) to 25% in intermediate zones, 26% in peri-urban areas, and 31% in urban areas. The share of farming falls across these zones from 57% to 38% to 28% before dropping all the way to 7% in fully urban areas. Work shares entirely outside the agri-food system (non-agri-food wage plus non-agri-food self-employment) rise from 22% in the hinterland to 47% in peri-urban and 62% in urban areas. This more disaggregated view of rural spaces is better suited to the population settlement patterns previously reviewed, where we showed that much of "rural" Africa is relatively densely populated.

Summarizing, urbanization and income growth in Africa have already driven a dramatic shift of labor effort off the farm and into the midstream and downstream of the agri-food system (25% of all labor today in the 6 countries analyzed) and outside the agri-food system (39%). Continued urbanization and income growth can be expected to continue this process, with the prospect that in 5–10 years roughly two-thirds of all labor even in rural areas will take place off the farm.

2.5.2 Opportunities for farmers

We identify five impacts that the changing structure of food demand should have on farmers, and review evidence on each.

#1: Crop mix shift towards high-value crops: First, there should be a change in farm production mix towards higher value crops such as fresh fruit and vegetables and animal products (poultry and eggs,

20 Ethiopia, Malawi, Niger, Nigeria, Tanzania, and Uganda.

dairy, and meat). This is a direct response to changing consumer demand and was theorized by von Thunen (1826) nearly 200 years ago. This shift at farm level could be inhibited by surging imports of the high value products, but in the absence of such a surge, the shift would have to come from local production.

Empirical support for this change is tenuous and shallow, with few empirical studies. Headey and Jayne (2014) find some support, showing that increasing rural population densities on the continent are associated primarily with some shifts to higher value crops. Yet they also cite FAOSTAT data as showing a slight decline in the contribution of non-cereal crops to total output in high density African countries.

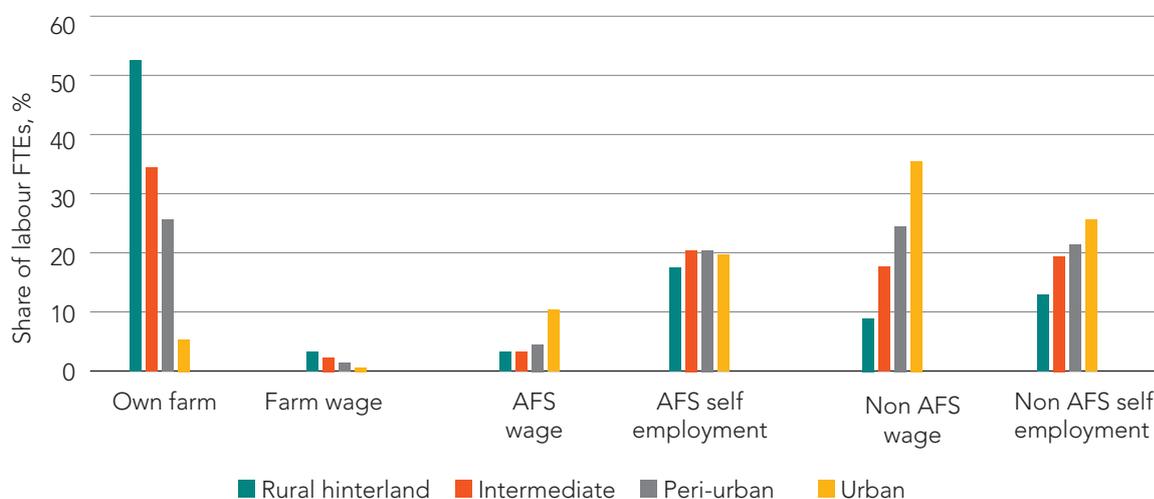
Our own review of FAOSTAT data also does not support the idea that high value crop production has increased its share in total production on the continent. Between 1990 and 2018, the ratio of total production of staple cereals, roots and tubers, and plantains (low value crops) to all other production (high value) trended slowly down, from about 36% to 34%²¹.

Problems of accuracy with FAOSTAT data are well-known²², and under-reporting may be a particular problem with high value crops such as fruit and vegetables and animal products. Opportunities created by rising demand are clear, and many individual studies speak to areas where high value agricultural production — especially for vegetables, dairy, and some meats — is rising rapidly to satisfy this burgeoning urban demand. For example, Chapoto, Hichaambwa and Kabwe (Box 8.2, this volume) show that nearly 200,000 farmers have entered Zambia’s vegetable market since 2007, nearly doubling the share of smallholder farmers producing these crops, with a strong reason being rising urban demand. Similar dynamics appear underway in Ethiopia, where growing urban demand has fueled the emergence of peri-urban horticultural farming clusters serving expanding urban markets for fresh fruits and vegetables (Minten, Mohammed, & Tamru, 2020). Various writers have documented the rapid rise in dairy production in peri-urban areas of Kenya (Kiambi et al., 2018; Kiambi et al., 2020; Ngigi et al., 2010). Hollinger and Staatz (2015) show rapid growth in

21 We excluded sugar cane from the analysis because its extreme bulkiness meant that it dominated these production-based ratios.

22 See, for example, Headey and Jayne (2014) who based much of their analysis on FAOSTAT data, since it is the available source, but warn twice of problems with the data.

Figure 2.5. Labor full-time equivalent (FTE) shares by functional (self-employment versus wage) and sectoral (agri-food system or non-agri-food system) category, East and Southern Africa circa 2014



Source: Dolislager et al. (2020)

production of some types of meat in West Africa since 1980.

These findings suggest that it is possible there has been a greater shift than national data show. But recall that Reardon et al. (2019) reported small changes in the staples share in consumption in Africa, and that Tschirley, Dolislager, et al. (2015) and Tschirley, Snyder, et al. (2015) computed modest income elasticities of demand for vegetables. Furthermore, Bachewe and Minten (2020) show in Ethiopia that the prices of nutritious foods (mostly animal-source proteins, and fruits and vegetables) have risen much more rapidly than the prices of obesogenic foods (oils, fats, and sugar) and staples between 2007 and 2016, suggesting that local production is not keeping pace with rises in demand in urban areas.

Together this evidence suggests that there have likely been some shifts in production mix, that they have been modest and spotty to date, but that over time they likely will become more pronounced and broad-based (as long as incomes continue to rise and local supply chains are competitive) with special emphasis on animal protein, fruit, and perhaps vegetables.

#2: Higher input use: Increased input intensity could come from three sources. The first is linked to lower total cost of access to inputs for farmers, which could stem from three effects. For one, shorter average distances between rural and urban areas should result in farmers more frequently connecting with urban-based input dealers, which could lower total costs of such input access due to lower transport costs, and lower prices for the inputs due both to potentially greater competition among dealers in more competitive urban markets and lower unit costs for these dealers based on higher volumes transacted than would be possible with a rural location. More dense rural populations could also make it more profitable (through a threshold effect) for input dealers to locate in rural areas. These rural input dealers may charge higher prices due to higher operating costs and lower volumes transacted, but their presence could increase access and reduce total cost of input

acquisition for some farmers, primarily those for whom traveling to the urban center is infeasible or more expensive than any price premium they would pay to a local input dealer.

The second source of input intensification is Boserupian intensification based on changing relative factor prices (Boserup, 1965). This process is driven by the interaction of more dense rural populations and greater proximity to urban areas, which drives up land prices, changes relative factor costs, and makes it more economically rational for farmers to intensify with land-saving inputs such as fertilizers and pesticides. In other words, inputs need only become *relatively* cheaper compared to other factors of production to drive input intensification among those farmers that have the cash or can otherwise finance input purchases.

The third contributor to increased input intensity could be a relieved cash constraint due to higher off-farm incomes (including from remittances), interacting with the first two dynamics.

The empirical record on input intensification in Africa is tricky to interpret in part because intensification is highly clustered (Sheahan & Barrett, 2017), meaning that national and continental trends hide a great deal of heterogeneity. The broad story is that inorganic fertilizer use has grown rapidly over the past decade (Ariga, Mabaya, Waithaka, & Wanzala-Mlobela, 2019) but remains far below levels in other areas of the developing world and is driven by maize; that herbicide use has skyrocketed since the early 2000s (Haggblade, Minten, Pray, Reardon, & Zilberman, 2017); and that whatever broad intensification has occurred is strongly related to proximity to an urban market (Vandecastelen, Beyene, Minten, & Swinnen, 2018a; 2018b). We support each statement in turn.

Ariga et al. (2019) report that inorganic fertilizer use in sub-Saharan Africa rose 8% per year between 2008 and 2018 but at 15 kg/ha remains far below other areas of the world. Forty percent of the use in 2017 was for maize. Bachewe and Minten (2020) showed that modern input use partly drove agricultural productivity growth in Ethiopia but

that area expansion played a larger role in growth in total production. Headey and Jayne (2014) anticipated this result, showing that intensification in high density areas of the continent was achieved primarily through greater intensity of land use (mostly declining fallow periods in favor of more continuous use) and very little to increased input use. Jayne et al. (2019) show that growth in total production over the past decade was driven 75% by area expansion and only 25% by yield growth.

Yet Sheahan and Barrett (2017) found tremendous variability across 6 countries in fertilizer use, with country averages ranging from 26 kg/ha to 57 kg/ha. They also found “immense” variation in use of fertilizer and other chemical inputs across regions within countries, for example in Ethiopia where three regions far surpass the national average of 45 kg/ha while 5 regions use less than 10 kg/ha. Finally, they showed that nearly half the variation in inorganic fertilizer use is related to policy and institutional factors at country levels; household and plot factors explain much less variation.

Sheahan and Barret (2017) also suggest that agrochemical use is far higher than typically recorded, while Haggblade et al. (2017) document the explosion in pesticide use (particularly herbicides) in West Africa. They show that imports rose 8-fold between 2000 and 2013, from about US\$110 million to over US\$800 million. Drivers of this dramatic rise have been falling prices due to a flood of generic pesticides related to the expiration of patent protection for major active ingredients, together with rising rural wage rates related to urbanization and the growth of off-farm employment.

Examining teff production in Ethiopia, Vandercasteelen et al. (2018a) generated results strikingly in tune with what we showed about the pattern of population settlement in Africa. They show that secondary cities have strong positive effects on input use because their large numbers and wide distribution reduce the distance to urban markets for many farmers. However, the size of the effect is larger for larger cities: hinterland farmers linked to Addis Ababa (fewer than those linked to

one of the many secondary cities) used more inputs and achieved higher yields than farmers lying similar distances from secondary cities. Vandercasteelen et al. (2018b) showed sharp increases in the use of diammonium phosphate (DAP), urea, and improved seeds together with higher profits (despite paying higher wages to hired labor) as farmers reside closer to Addis Ababa. Assima and Tamru (Box 8.1, this volume) show similarly sharp spatial gradients for herbicide use in Ethiopia and Mali, with rapidly rising use related to rapidly falling prices closer to cities.

Rural non-farm income has risen with urbanization and food system transformation. The empirical record on reinvestment of this income into farming is mixed, however. Mathenge, Smale, and Tschirley (2014) found that off-farm income generally competes with maize intensification in Kenya. Smale, Kusunose, Mathenge, and Alia (2016) found a negative relationship with maize intensification at low income levels but a positive relationship at higher income levels. On the other hand, Oseni and Winters (2009) found a positive relationship between off-farm income and farm expenses in Nigeria, in particular on labor and fertilizer, though this effect varies across regions. Maertens (2009) found that access to employment in export agro-industry alleviates farmers’ liquidity constraints in Senegal and increases agricultural production.

Summarizing, empirical literature remains sparse but is beginning to capture increased use of modern inputs in African agriculture. Progress is rapid but from very low levels and shows great variation across and within countries. Urban proximity (and thus the importance of the decentralized urbanization we document earlier in the chapter) is an important driver of this emerging trend, and rural non-farm income can, under conducive circumstances, also relieve liquidity constraints and allow greater crop intensification.

#3: More marketing: The third expected impact on farmers of the human settlement and income trends we identified is more marketing of agricultural production. This effect stems from three facts: (1) market-dependent consumers outnumber farmers

(urbanization plus movement into rural non-farm employment); (2) these consumers have higher incomes; and (3) market penetration and high population densities in rural areas means that rural people also are purchasing more of their food.

Surprisingly, empirical research on this topic is extremely thin. One flurry of research on “market participation” of smallholders in Africa took place in the mid-2000s (Alene et al. 2008; Barrett, 2008; Boughton et al., 2007). Using data from around 2000, these studies came too early after the start of the rise in per capita incomes on the continent, did not focus on the impact of market proximity, and were also unable to examine trends at household level in crop marketing due to lack of panel data. Later work (for example, Mather, Boughton, & Jayne, 2013) stresses the impact of technology and household resource endowments on participation (much like Barrett (2008) and Boughton et al. (2007)), with less importance found for proximity to market.

A second area of study is contract farming (which is, by definition, market-oriented) but the focus is heavily on the impacts of participation and less on its determinants and trends. A more current burgeoning literature on African food system transformation focuses primarily on diets (Keding, Msuya, Maass, & Krawinkel, 2011; Tschirley, Dolislager, et al., 2015; Tschirley, Snyder, et al. 2015; Worku, Dereje, Minten, & Hirvonen, 2017) and nutrition (Gillespie & van den Bold et al., 2017; Popkin, 2017) or the midstream (Reardon, 2015; Reardon et al. 2019). If it does address farm issues (Jayne, Chamberlin, & Benfica, 2018) it takes a broader focus that does not examine impacts of these transformations on household level marketing behavior.

In short, empirical support for the obvious proposition that increased proximity to urban areas should increase farmer marketing behavior is very weak because the research has not been done; this is an important area for more research.

#4: More profitable marketing: The fourth effect on farmers should be more profitable marketing, stemming from two sources. First, shorter transport

distances mean that consumers are now closer to farmers, which should reduce marketing margins, some of which should go to farmers (with the share that farmers capture depending on elasticities of supply and demand). The second source of more profitable marketing should be a volume effect, based on two factors: lower unit costs per kilometer transported due to higher production volumes per farm (this based again on the much lower ratio of farmers to non-farmers), and more dense clustering of farms, which further increases volumes, reduces unit costs for traders and transporters, and should in part raise prices for farmers.

Vandercasteelen et al. (2018a; 2018b) provide strong support for this expectation in the production and marketing of teff in Ethiopia, but we find no other literature that directly examines how the profitability of agricultural production varies with proximity to urban areas.

However, an indirect indicator of the business attractiveness of farming in Africa today is the rise of medium-scale, entrepreneurial farmers. This trend was first identified by research around the effect of “agri-food industry transformation”, including the rise of supermarkets, on smallholder farmers in Africa. Neven, Odera, Reardon, and Wang (2009) found that supermarkets in Nairobi sourced their vegetables from wholesale markets and primarily medium-sized horticultural farmers near the city, echoing similar shifts decades earlier in Latin America. Much of this literature emphasized the exclusion of smallholder farmers from these high-value modernized markets, due to standards for quality and regularity of deliveries that smallholders found difficult to meet. Those smallholders that did enter the markets, however, were typically found to earn higher profits (Minten, Randrianarison, & Swinnen, 2009).

Later research by Jayne and colleagues (Jayne et al., 2014; Jayne et al., 2016; Jayne et al., 2019) documents the much broader rise of medium-scale farmers in relatively land-abundant countries, producing a similar range of crops to smallholder farmers. Jayne et al. (2019) found that farmers cultivating between 5 ha and 100 ha accounted

for between 40% and 60% of the increase in total agricultural output over 6–10 years in Ghana, Malawi, Rwanda, Nigeria, Senegal, Tanzania, and Zambia.

Overall, the evidence compiled by Vandercasteelen et al. (2018a; 2018b), Neven et al. (2009), and Jayne et al. (2014; 2016; 2019) paints a consistent picture of agri-food system transformation and associated increased urbanization driving greater profit possibilities in farming, which new medium-scale farmers and a limited number of smallholder farmers are taking advantage of.

2.5.3 Increasing capital intensity and skill requirements

A distinguishing feature of the new opportunities arising to serve Africa's urban food demand is that doing so requires more capital intensity and greater knowledge, skill, and organization. This fact means that, unless effective policy and programmatic responses can be found, only a small subset of the hundreds of millions of smallholder farmers and micro and small-scale agribusinesses will be able to compete in this new environment over the medium term.

Daunting challenges for small-scale farmers:

The new demand patterns of consumers lead increasingly to changes in the structure (scale) and behavior of FSCs that pose major challenges for smallholder farmers. In the emerging modernized food systems of Africa, agribusiness firms want quality, regularity of delivery, demonstrable safety, and scale to reduce unit costs. These requirements are most predominant in perishable supply chains such as fresh fruit and vegetables and animal products. The early supermarket literature (Minten et al., 2009; Neven et al., 2009; Weatherspoon & Reardon, 2003) highlighted the broad exclusion of smallholder farmers from supermarket fresh produce supply chains, except to the extent that these chains purchased from wholesale markets (though even there, it is the upper quarter or less of smallholder farmers that supply the vast majority of fresh produce). Reardon, Barrett, Berdegúe, and Swinnen (2009) concluded that smallholder farmers can be included but in small numbers and not those in hinterland areas or that are asset poor.

Tschirley et al. (2018) reviewed the evidence and food system transformation in Africa and suggested that 10–30% of the “commercial farmer” households (already better equipped and more market-oriented) and a smaller portion of the “pre-commercial” households might be able to compete in these emerging markets in the medium-term. The major role that medium-scale farmers have played in rising production in seven countries spread across West, Central, East, and Southern Africa, as documented by Jayne et al. (2019) and reviewed in this chapter (section 5.2), suggests that the turn towards larger, better capitalized farmers is already well underway.

A coming concentration of the midstream: big challenges for SMEs:

Tschirley et al. (2018) and Reardon et al. (2019) demonstrate that MSMEs (micro, small, and medium enterprises) dominate the midstream and downstream of African food systems. Roughly 90% of all food retailing takes place through such firms; processing of maize meal in Tanzania is almost entirely in the hands of such firms; and even in Zambia where large-scale trading firms have penetrated more than in most African countries (drawn by the substantial large-scale farmer sector), they carried only 11% of the maize trade in 2015 (Sitko, Chisanga, Tschirley, & Jayne, 2017).

Part of the reason for the limited presence of large companies in Africa's food systems is the daunting infrastructural and policy challenges they face. Poor physical infrastructure (roads, energy, water, and ports) dramatically increases the costs of operation. Heavy bureaucratic procedures further increase these costs. Ad hoc border closures during food crises (Tschirley & Jayne, 2010) can lead to enormous losses. And because the medium and large-scale farming sector is not yet large enough to supply all the product that most need, they face the costs of assembly from large numbers of small farmers or of sourcing product in dramatically congested and inefficient wholesale markets.

Yet the size of the African urban market and its rapid growth (at least until recently) has increasingly attracted large players (Reardon et al., 2019; Tschirley et al., 2018). Policy is also improving, with an encouraging recent example being the

very limited closure of borders in response to the COVID-19 pandemic. The African Continental Free Trade Agreement (AfCFTA) is moving forward and could mark a milestone in improved policy that allows scaling of investment in production, processing, and trade and much lower costs of operation. If policies continue to improve, more large-scale investment will be attracted, and the “J curve” of the evolution of concentration will begin to enter the phase of rapid consolidation, increases in scale of operation, and progressive exclusion of micro and small firms (the right side of the “J”; Reardon et al., 2019).

Africa is behind other areas of the world in this process of consolidation, and the stalling of growth over the past five years may have further slowed the process. Yet the COVID-19 shock may give renewed impetus to consolidation (Reardon, 2020).

Concerns about employment: The likelihood of rising capital intensity raises concerns about employment on a continent where the youth population (those 15–24 years old) is projected to double by 2050, compared to expected declines in Asia and Latin America (Arslan et al., 2020; IFAD, 2019). Concerns are compounded when considering the near certainty that manufacturing will not create the levels of employment in Africa that were seen in the West in the last century or even in East Asia and areas of South Asia over the past 30 years²³.

The evidence on how rapidly this consolidation is taking place is mixed. What is clear is that medium and large-scale firms are rapidly expanding (far beyond any such private sector footprint of two and three decades ago) even as micro and small-scale firms innovate and maintain very large market shares in some areas. At retail, Tschirley et al. (2017) note the dramatic expansion of modern supermarkets and convenience stores in Dar es Salaam over the past 15–20 years, while noting that

this growth has been much less visible in secondary cities. Though there have been few if any estimates of supermarket market shares since the boom in the supermarket literature in the 2000s, overall shares likely remain in the single digits outside of capital cities of nearly every country except South Africa. Tschirley et al. (2017) and Reardon et al. (2020) also note that some large industrial food companies in Tanzania are losing market share in the maize meal market in the face of a huge expansion of micro and small processors, while these same large industrial firms are seeing major growth in other food items (for example, sales of Bakhresa up 10 times in 10 years, and of MeTL up 40 times in 15 years) and are also expanding regionally. Companies like IndoFoods in Nigeria (Reardon, et al., 2019) and Zambeef in Zambia are also growing rapidly both domestically and regionally. Chapter 4 provides more detail on this issue.

Addressing this challenge is a thorny problem. Tschirley et al. (2017) caution that the popularity of programs to promote SMEs far outruns any evidence of their effectiveness, and note that the little empirical that does exist tends to show modest impacts and low rates of return. Where such investments are made, they suggest that they focus on clusters of firms, to reduce unit costs of service delivery and maximize learning. Legislation around secured transactions reform built around collateral registries might also help small firms gain access to credit. Finally, improved transport and energy infrastructure in rural areas might help attenuate the current very heavy concentration of food processing in urban areas, and allow the emergence of more small-scale firms in rural areas or in secondary cities. Solar and micro or mini-grids may be part of this push for more distributed food processing (and small-scale manufacturing in general) in favor of higher employment ratios.

2.6 Looking ahead

Growth in urban populations and incomes are the fundamental drivers of the opportunities that African urban areas will generate for food system participants over the coming years. We argued in section 4 that these two shocks have

²³ This difficulty relates to many factors: the dominance of East Asia, especially China, in this sphere; the post-industrial structure of consumer demand in developed countries where services take up a rapidly expanding share of consumer expenditure; and automation that drives down labor to capital ratios and leads to much more rapid deindustrialization in employment even than in output.

independent effects on diets and thus, through FSC restructuring, on the range, distribution, and level of opportunities available to food system participants. The effect is far larger, however, when the two dynamics occur together, jointly driving very rapid transformation of diets — making food more purchased, more perishable, more processed, and more prepared — and of FSCs, and thus of the opportunities available to food system participants.

These trends are robustly predictable. Other factors will also come into play, however. Local conditions — the resilience and diversity of the local production base, the country's level of development, and the strength of its local food culture — will drive spatial variability in the particular ways in which these processes unfold. Regulatory response to the increasingly rapid rise of overweight and obesity and associated non-communicable diseases (diabetes, hypertension, and others) may also lead to variations across countries and modify the particular types of processed foods that get produced.

COVID-19 is likely to have major and potentially opposite effects. The disease is likely to speed-up consolidation in the midstream and downstream that is also driven by diet change and food system transformation. It is also likely to speed the movement to online platforms (Reardon, 2020), thereby reinforcing the rising need for skill and capital mentioned earlier. However, it will dramatically reduce income growth at least over the next two years, which will tend to hold back the transformation process. Climate change will have major effects and these, too, will vary across countries, but their consideration is beyond the scope of this chapter.

2.6.1 Past projections

Tschirley, Dolislager, et al. (2015), Tschirley, Snyder, et al. (2015) and Zhou and Staatz (2016) show this for East and Southern Africa and West Africa respectively. For East and Southern Africa, Tschirley, Dolislager, et al. (2015) and Tschirley, Snyder, et al. (2015) projected that, with real annual per capita income growth equal to the average of the preceding 10 years (4.5%), overall market

demand for food between 2010 and 2025 would increase 2.8 times led by perishable products (3.2 times) and especially the most highly processed perishable products (3.6 times). These massive increases were a result of the rapid income growth that increases demand for food and especially for value added in food, and continued urbanization and rural densification that leads to greater reliance on markets for food. At a growth rate of only 2% per year, overall market size would double, again led by perishable and especially highly processed perishable foods. These large increases even with a modest 2% per capita growth are driven by high population growth, continued urbanization, and increasing reliance on markets.

Zhou and Staatz (2016) applied similar methods to West Africa to project increase in demand from 2010 to 2030 (20 years compared to the 15 used in Tschirley, Snyder, et al., 2015). Assuming continued high per capita income growth, their results pointed to increase in demand of over 4.5 times for dairy products and meat, and 2–3 times for other commodities. Growth of one percentage point below previous growth would still increase demand for dairy products and meat by nearly 4 times, and for other products again in the range of 2–3 times. Considering that growth in the farming labor force would be very slow in these growth scenarios, this level of growth implies massive new opportunities for farmers and agribusiness firms, especially the millions of SME firms making up the “hidden middle” of these FSCs (Reardon et al., 2019).

2.6.2 Uncertainty around drivers

Looking to the future, evidence strongly suggests that urbanization is likely to continue at a rapid pace. Both UN and Africapolis show high growth in the urban population share regardless of income trends. Jedwab and Vollrath (2015) show that global urbanization has been trending rapidly upwards since the 1500s independent of income: urbanization today is 25–30 percentage points higher than in 1500 at comparable levels of income.

Income growth is far less certain. Though not known at the time, both the Tschirley, Snyder et al. (2015b) and Zhou and Staatz (2016) analyses were

done at the end of Africa's 15-year growth spurt, when optimism about future growth prospects still reigned. Even at that time, however, skeptical voices were being raised (Rodrik, 2014). These voices continued into 2018 (McMillan et al., 2017; Rodrik, 2018), struggling to find ways in which African growth could continue at high rates without the rapid industrialization that drove previous sustained growth but that is increasingly difficult to achieve today.

Since 2013, as we have shown, growth in average real per capita consumption and GDP has been negative. In 2019, the International Monetary Fund (IMF) forecast 3.5% growth in GDP for the continent that year and 3.6% in 2020, barely positive in per capita terms and well below the lowest projections in the studies mentioned above. Now, with the COVID-19 pandemic, the severe locust outbreak in East Africa, the Fall Armyworm infestation since 2016, and growing security problems in the Sahel, the IMF forecasts GDP growth of *negative* 3.2% in 2020 (negative 5.4% per capita!) and a recovery to 1.1% overall (still negative in per capita terms) in 2021 "assuming that the pandemic abates, and lockdowns ease further in the second half of 2020" (IMF, 2020, p. 5). By the end of 2021 under these projections, per capita incomes on the continent would be back to where they were 10 years ago. If the pandemic instead worsens and economic life is further disrupted, the regression will be even greater.

In urban areas this negative income growth is likely to be most severe among the poorest, who are reliant on informal markets requiring in-person interactions, which have fallen dramatically as a result of the pandemic. Because the mass of low-income consumers in Africa have been central to the diet transformation and resulting growth in farm- and off-farm opportunities (Tschirley, Dolislager, et al., 2015), severe economic shocks to this group will have large impacts on growth and transformation in the system.

A ray of hope is that the IMF projections are the least negative for the African economies that are not dependent on natural resources or tourism. For these countries, if Africa is able to continue opening

its local markets within a regional free trade area and make associated investments in trade and productive capacity, it may be able to sustain some positive growth in per capita incomes for some period of time.

2.6.3 Local food cultures and emerging health concerns

Our fundamental contention is that local food cultures and emerging concerns about the health effects of poor diets among the non-poor are likely to lead to flourishing innovation without meaningfully altering the basic dynamic of more purchased, perishable processed, and prepared food. This argument is based on three factors.

First, demand for more diverse food as incomes rise strikes us as a fundamental human tendency. In section 4.4 we reinterpreted Bennett's law as "an expectation of rising demand for food diversity ... and for a broader set of food attributes as incomes rise." This diversity is served by greater reliance on markets— more purchased food — and the large number of products they can make available. Food processing outside the home is a major avenue through which this demand for diversity can be satisfied and becomes a major focus of innovation in the midstream of FSCs.

Second, higher demand for more perishable foods, especially animal products, as incomes rise is a robust empirical pattern over many decades. Perishable animal products are, at the level of the consumer (albeit not from a whole FSC perspective) extremely efficient providers of protein, fat, and minerals. For people coming out of poverty, such foods almost certainly improve nutritional outcomes rather than worsening them (as they increasingly do in rich economies). At this stage of development of most African countries, it is difficult to imagine a development path that does not lead to more consumption of these products.

Third, consumers will always have a higher demand for convenience when they perceive a higher opportunity cost of their time. Urbanization increases this perceived opportunity cost of time for many of reasons, from longer commutes to dual-

income couples to the basic psychology of being in an environment with many people in motion pursuing innumerable activities in front of you. Food processing and preparation outside the home respond directly to this fundamental demand.

Local food cultures will influence the particular staple foods, animal products, and fresh produce that consumers demand, the way in which they are prepared, and the particular foods they are combined with. They will also influence the kinds of processed and prepared foods that consumers desire. We find implausible in the extreme, however, to expect them to diminish the fundamental demands for diversity and convenience that come with rising incomes and urbanization.

Emerging concerns about the deleterious health effects of ultra-processed food consumption in middle and higher income countries, and among the middle and upper classes of low income countries, is leading to much new regulatory activity in Latin America (HLPE, 2020, Box 8) and is putting such options on the table in other areas of the developing world. In similar vein to our argument above, we expect that such new regulations, rather than stopping or seriously slowing the trend towards more food processing, will lead to new innovation around more healthy but still highly palatable and convenient foods in the attempt to meet fundamental consumer demands for diversity, convenience, and status in consumer diets.

2.6.4 Concluding remarks

Rapid urbanization has transformed the face of Africa over the past few decades. Paired with rapid growth in per capita incomes since 2000, it generated dramatic change in the foods that African consumers demand and drove big improvements in the opportunities available to farmers, micro-enterprises, and consumers. Yet the continent now finds itself at a point of profound uncertainty, in the midst of a five-year stagnation of growth and dealing now with the massive challenge of the COVID-19 pandemic accentuated by severe

regional crises in the Sahel and East Africa. The result is that the projections of just five years ago now have little if any likelihood of being realized.

This does not mean that transformation in the directions we have discussed will stop, for two reasons. First, it is very likely that urbanization will continue at a relatively rapid pace, for the reasons discussed above. And as we have said, urbanization alone will have some, though much less, transformative effect on eating habits and thus on structural change in the economy.

The second reason that transformation need not come to a halt is that Africa has much room for increasing economic growth through improved policy and investment, and both are improving. The most recent example is that few if any border closings were imposed during the COVID-19 pandemic, in stark contrast to previous behavior by governments faced with food crises (Tschirley & Jayne, 2010). The AfCFTA is moving forward and promises reduced costs of trade, greater scale of operation, and rising productivity and incomes. This provides some hope that persistently low intra-Africa trade might begin to rise (Awokuse, et al., 2019), thus allowing firms not yet able to compete in the global market to expand operations regionally and potentially to develop the knowledge and capabilities to compete globally. Though various sub-regional free trade agreements on the continent have done little to reduce costs and increase volumes of intra-Africa trade, some optimism now exists that forces are aligning to make this time different and take a major step towards growth-enhancing policies on the continent. Infrastructural investment has also been increasing, up in value in 2018 by 24% over 2017 and 33% over the 2015–2017 average (ICA, 2018). Continuing this trend, prioritizing sectors effectively, and delivering on the promise of AfCFTA could go a long way towards helping the continent regain its footing in the wake of its own faltering and COVID-19, and resume the level of growth and transformation that many anticipated five years ago.

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3 Competitiveness of African Food Systems with International Imports

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Key messages

- 1 African agri-businesses must increasingly compete with sophisticated, large-scale international suppliers to feed Africa's growing cities.
- 2 The competitiveness of African suppliers varies significantly across countries and commodities. While some countries are at/or nearing self-sufficiency with core staples, others are increasingly having to rely on imports, and others are regularly exporting a surplus of production. The demand for certain commodities, like rice and wheat, however, is growing much faster than supply.
- 3 African agriculture struggles with international competitiveness due to low farm productivity, inadequate support service systems, high production costs, fragmented domestic and regional markets, and high transport and transaction costs imposed by local vested interests.
- 4 Improved competitiveness will require large-scale dissemination of productivity increasing technology and inputs, expanded public and private investments in trade, transport and processing infrastructure, better access to regional and continental market opportunities, improved coordination and vertical integration within food value chains, competitive access to finance and building scale both domestically and via regional markets within Africa
- 5 The African Continental Free Trade Area (AfCFTA) holds lofty ambitions, but its success will largely come down to implementation. For such a large regional arrangement to take effect, rigorous national measures and policies to address competitiveness issues at all links of agricultural value chains will be crucial. Harmonization of trade policies, standards, and trade facilitation should be at the heart of these measures.

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3.1 Introduction

Africa's rapidly growing urban food markets offer significant opportunities for African farmers and agribusinesses. Yet African cities, particularly its large and growing coastal metropolises, can often import food at low cost from international suppliers. As a result, African farmers must remain competitive with international suppliers if they are to successfully supply growing domestic urban markets.

On average, over the past 5 years, Africa has imported US\$72 billion³ of food annually, down roughly US\$10 billion per year from the years immediately following the 2011 world food crisis (ITC, 2020). While some countries can afford to substitute domestic production by imports thanks to higher incomes from exports of natural resources (oil, gold, diamond, etc.) and cash crops (cocoa, coffee, etc.), the same does not apply for the larger continent where more than 40% of the population is still living below the international poverty line (UN, 2019). This situation has given rise to several targeted strategic interventions around agricultural production systems. Despite these efforts, the current levels of food production across the continent fail to satisfy food demands. NEPAD points out that "cereal production" has been "unable to keep pace with population growth, [...] this gap is even wider for processed products and meat", with higher demands for the urban population (NEPAD, 2014, p. 8). More significantly, the increasing incidence of food imports indicates that the sector has been facing several economic and environmental challenges to respond to the continent's needs. Africa has always been praised for its untapped potential from land availability and labour resources. However, according to a McKinsey study, the availability of productive cultivable areas is limited primarily to nine African countries (McKinsey, 2019). Besides, very little improvement has been recorded in production factors (labour and land). Slow progress towards food security has been attributed to low productivity of agricultural resources, high population growth rates, political

instability and civil strife, and low yield levels (half of those in Asia) (NEPAD, 2014). The other characteristics of the African agriculture sector in ensuring food production is the fact that "Africa has 33 million farms of less than 2 hectares, accounting for 80% of all farms" (NEPAD, 2014, p. 8).

This chapter examines the competitiveness of Africa's farmers and food supply systems in the face of growing competition from international imports. Discussion focusses on food products which have the highest demands, and are also subject to the highest imports in Africa. We start by analyzing production and trade trends, before exploring the enablers and bottlenecks to competitiveness in Africa's agri-food systems.

3.1.1 Cereals

The production of main cereals (which represent 50% of the average caloric intake) in Africa has generally increased by 30% in volume terms from 2009 to 2018 (see Figure 3.1). Wheat has experienced an average annual growth of 2.4% over that period with annual fluctuations (from 26 million tonnes in 2010 to 29.3 million tonnes in 2018) with a 13% increase in yield. The volume of rice produced also increased from 23.3 million to 33.2 million tonnes during the same period registering a drop of 11% of the yield. The production of maize reached 79 million tonnes in 2017 compared to 60 million tonnes. When comparing imports of African cereals within the continent, trade figures (see Figure 3.1) indicate that in the case of rice and maize most of the exports from African countries are absorbed by other African countries.

Figure 3.2 provides a comparison between the yields for maize, rice and wheat in Africa with other producing regions of the world. Although yield is dependent on various factors, the graphs indicate significant gaps between Africa's yield levels of maize and rice and the world average. For maize, yield levels range from 2.6 (in Asia and South America) to 6 times more (in North America) and for rice 2 times (in Asia) to 3.7 times in North America compared to African figures. Improvements in yield levels for maize and rice in Africa have been relatively stagnant over the last 10 years. However,

³ According to <https://www.trademap.org/> (accessed May 8, 2020).

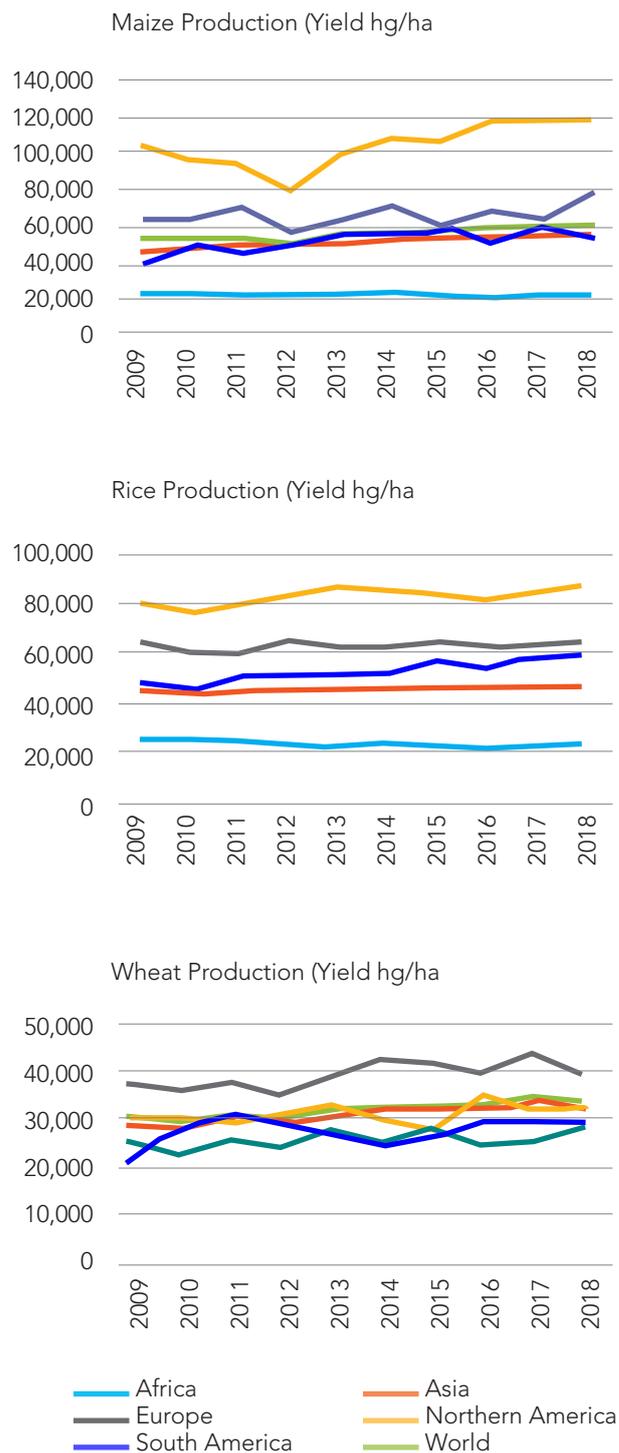
wheat yield increased to world levels in 2011 but has remained slightly below the average world levels during the last few years.

Figure 3.1. Africa's cereal production, 2009–2018



Source: FAOSTAT

Figure 3.2. Comparison of cereals' yields by world regions, 2009–2018



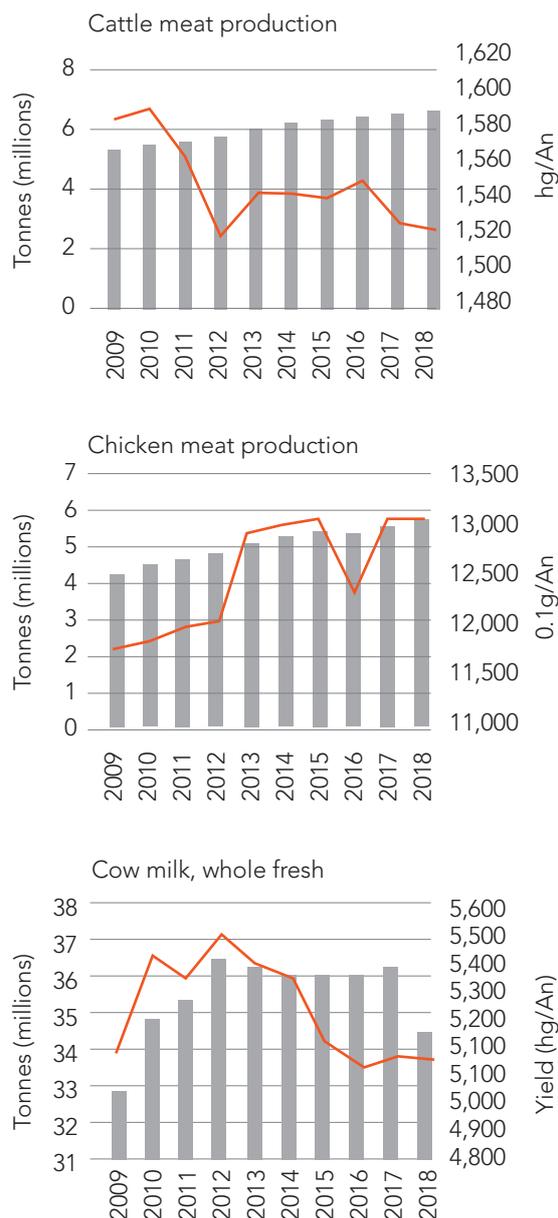
3.1.2 Meat

Africa produced 6.7 million tonnes of beef in 2018 representing an annual average growth of 2.5% since 2009 from 5.4 million tonnes in 2009 (figure 3.3). The yield has, however, been on a slight downward trend with an annual average decrease of -0.5% which is linked to various problems faced in this sector (yield, infrastructure, feed, storage, etc.) (FAO, 2017, 2019).

Due to a preference for chicken over red meat because of its affordability, but also related to an increase in living standards, the production of chicken meat has also been increasing in Africa over the last 10 years. In 2009, Africa produced 4.2 million tonnes compared to 5.7 million tonnes in 2018 (Figure 3.3) which represents an annual average growth of 3.6%, according to FAO data⁴. South Africa produced the highest volumes of chicken on the continent (1.8 million tonnes) followed by Egypt (1.1 million tonnes) and Morocco (720,000 tonnes), with a combined 62% share of total production (Berkhout, 2020). According to a report from the Bill & Melinda Gates Foundation (BMGF, World Bank, FAO, ILRI, & AU-IBAR, 2014), between 2005/07 and 2030, consumption of animal-source foods is noted as the fastest-growing sub-category with meat consumption projected to grow by 2.8% annually in Africa. The same report indicates that, “demand for livestock products in Africa is anticipated not only to grow fast but also more quickly than in other regions of the world” (BMGF et al., 2014, p. 6) with beef and poultry being Africa’s most consumed meats.

Africa produces an annual average of US\$35.7 million tonnes of cow milk. Since 2009 the production volume has been increasing from 32.9 million tonnes to reach a peak in 2012 of 36.78 million followed by a constant decrease to plateau at 34.5 million tonnes in 2017 and 2018. Being cheap, widely available, and consumed in small quantities, milk is the most consumed animal protein source in terms of volume. The estimated volume of the milk market in 2050 is almost 83 million tonnes (BMGF, World Bank, FAO, ILRI, & AU-IBAR, 2014, p. 5).

Figure 3.3. Africa’s Meat Production, 2009–2018



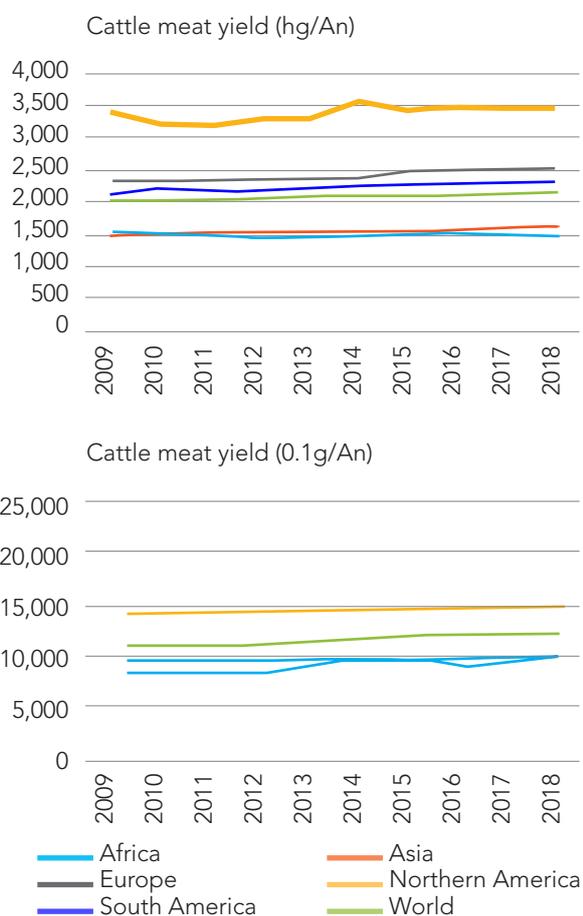
Source: FAOSTAT

⁴ <http://www.fao.org/faostat/en/#data/QL>.

3.1.3 Comparing Meat Yields by world regions

A comparison of meat yields both for cattle and chicken indicates that Africa has the lowest levels in the world (Figure 3.4). It is comparable to yield levels in Asia but lower than world average for both products. North America has by far the highest yields for cattle meat, while South America is the dominant player in the case of chicken meat yield levels.

Figure 3.4. Comparison of meat yields by world regions, 2009-2018

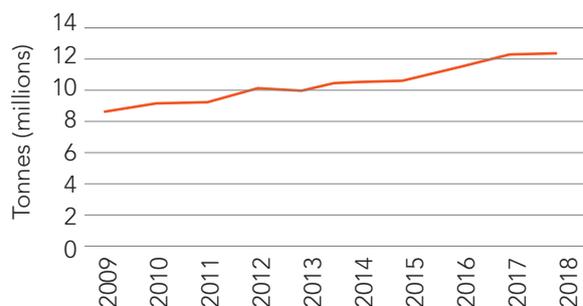


3.1.4 Fish

According to FAO statistics,⁵ Africa produced 12.4 million tonnes of fish in 2018. Fish production has been growing at an annual average rate of 4% from 2009 to 2018. The volume of fish harvested increased from 8.6 million tonnes in 2009 to 12.4 million in 2018 (Figure 3.5).

5 <http://www.fao.org/faostat/en/#data/QL>.

Figure 3.5. Fish production in Africa, 2009-2018



Source: FAOSTAT statistics

According to the World Bank data⁶, the major countries producing fish in Africa are Egypt (14% of total volume followed by Morocco (12.1%), Nigeria (9.4%), South Africa (5.5%), Uganda (4.9%) Mauritania (4.6%). The first five fish-producing countries in Africa account for more than 50% of the fish production on the continent. The largest production of fish is attributed to aquaculture production where Egypt⁷ and Nigeria are the largest producers with Egypt being the world's third highest producer of tilapia and Nigeria a leading aquaculture producer in Africa.

3.1.5 Edible Oils

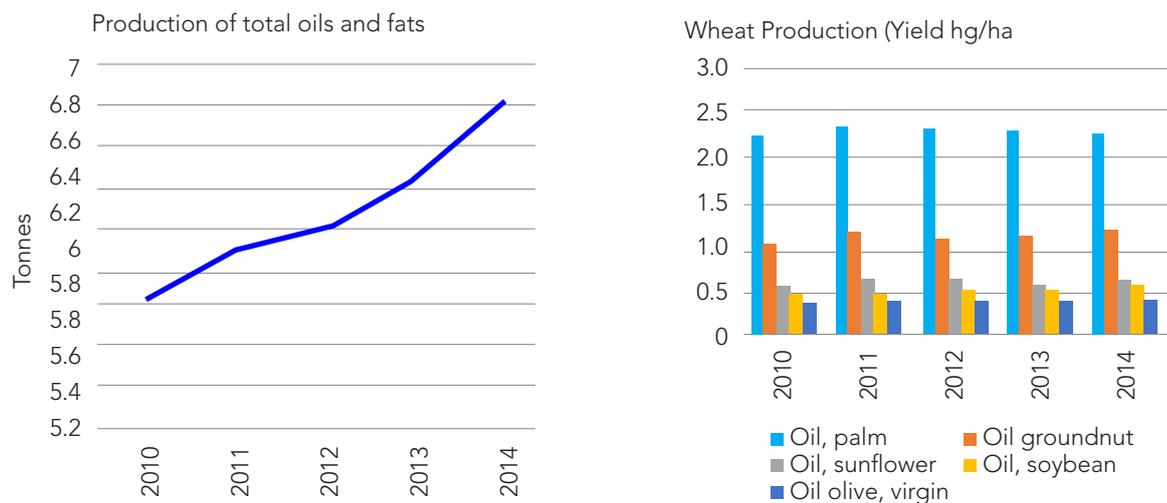
According to FAO statistics⁸, Africa's production of edible oils consists of products such as palm, groundnut, sunflower, soybean, virgin olive, margarine, sesame, maize, coconut (copra), and rapeseed. The volume of oil produced between 2010 and 2014 has been increasing from 5.8 to 6.8 million tonnes averaging a 4% growth annually (Figure 3.6). Palm oil has the highest production with an average of 2.3 million tonnes annually, followed by groundnut at 1.14 million tonnes; these two constitute 55% of the edible oil production in Africa. The volume of every type of oil produced has remained at almost the same levels over the period considered. Statistics in Figure 3.7 indicate that due to high demand, the gap with import figures is quite significant.

6 https://data.worldbank.org/indicator/ER.FSH.PROD.MT?end=2016&name_desc=false&start=2008.

7 <https://fish.cgiar.org/impact/stories-of-change/transforming-lives-market-led-aquaculture-africa>.

8 <http://www.fao.org/faostat/en/#data/QD>.

Figure 3.6. Africa's edible oil production, 2010–2014



Source: FAOSTAT

3.2 International competitiveness of Africa's trade in foods

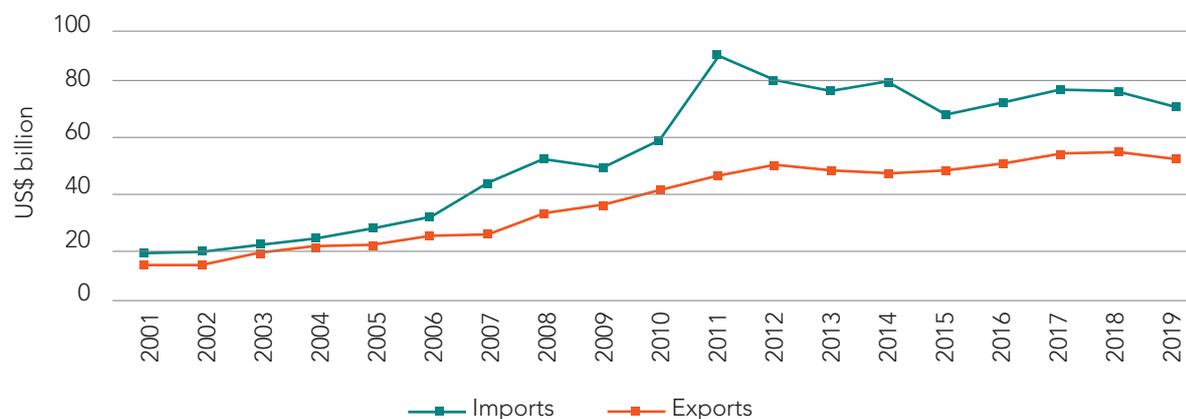
3.2.1 Trends in Africa's food imports

According to the AfDB (2016), a third of all calories consumed in Africa are imported, resulting in a negative net agricultural trade balance which amounted to US\$-18.37 billion in 2019. Africa's food import bill during the last 5 years averaged US\$68.5 billion annually, though this amount fluctuated widely from year to year due to changing agricultural prices, changes in net demand, and

fluctuations in Africa's domestic production levels. Overall, the growth of food imports over the last 10 years averaged 3%.

Africa was a net exporter of food products until the 1980s (see Figure 3.7), after which it became a net importer with a recorded boost in the levels of imports from 2008 and 2011 mainly due to the world food crises. The increase in imports can also be attributed to the high economic growth (from 2000, which peaked in 2007) coupled with population increase on the African continent. The trade gap widened during these periods but

Figure 3.7. Food trade in Africa, 2001–2019



Source: ITC Trade Map

narrowed to an average of US\$-22.8 billion in the last 5 years. According to an FAO report (Rakotoarisoa, Lafrate, & Paschali, 2011), the falling level of exports corresponds with falling raw commodities prices (mainly coffee, cocoa, and spices in the 1980s), which represented the major sources of agricultural export revenues. The report also mentions other reasons for the sluggishness in food production, namely “low productivity, poor agricultural and trade infrastructure, low investment levels in agricultural resources (human, natural, financial, equipment), domestic and foreign policy distortions, high population growth, and political instability and civil unrest” (Rakotoarisoa et al., 2011, p. 2). These challenges are still relevant in the current situation with additional aggravating issues linked to the environment.

However, when considering agricultural products in Africa, the trade balance has been positive for the same period. This is mainly due to the dominance of exports of unprocessed products, according to the 2019 Africa Agriculture Trade Monitor (Bouët & Odjo, 2019).

The volume of intra-regional trade for food items within Africa remains low (Figure 3.8); the share of food imports from Africa compared to that of the total imports from the rest of the world decreasing slightly from 17.4% in 2001 to 12.6% in 2008 and 2010 and increased to 15% in 2019, implying a growing dependence on international imported food products, as a proportion of the continent’s import basket.

3.2.2 Food trade in Africa by region⁹

The North Africa region has the highest imports of food items (31%) followed by Southern Africa and West Africa (Figure 3.9). In terms of exports, the Southern and the Western African regions are the largest players with almost the same share while Central African countries remain the smallest exporters.

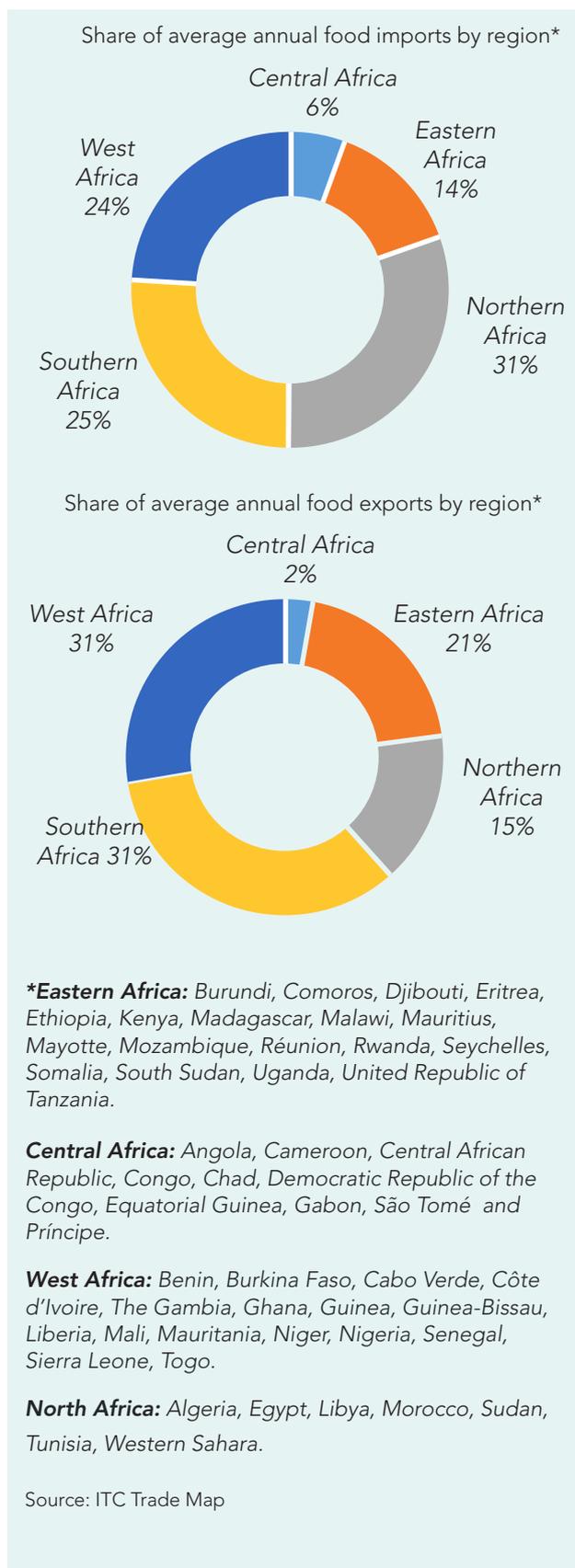
⁹ All trade statistics presented in this section are calculations based on data from ITC Trade Map.

Figure 3.8. Food imports from Africa as a percentage of food imports from the world, 2001–2019



Source: ITC Trade Map

Figure 3.9. Share of average annual food imports and exports by region average 2010-19



When comparing the trade patterns in various regions across Africa, the Northern region has been experiencing the highest food trade gaps followed by Central Africa (Figure 3.10). However, Eastern Africa shows a more positive picture where exports of food have overtaken those of imports since 2017. In Southern and Western Africa, the statistics tend to indicate a gradually improving situation where the gap between imports and exports has been narrowing over the last few years.

3.2.3 Main food products imported in Africa

The largest food items imported in Africa are cereals and cereal products (31% of total food imports), vegetable oils (12%), sugar and confectionery products (9%), dairy (6.8%), meat (6.2%), fish and crustaceans (6%), and preparations of cereals and flour (4%) (Table 3.1). The food products with the highest trade deficits by value are cereals; animal or vegetable fats and oils; dairy produce; meat and edible meat offal; sugars and sugar confectionery; preparations of cereals, flour, starch or milk and products of the milling industry. The last category (preparation of cereals...) represents an annual average of 4% of the total food imports and its value has almost doubled in the last 10 years.

Table 3.1. Major food imports into Africa (US\$ billions, 10-year average 2010–2019)

	Average Annual food imports	
	US\$ billions	Percent
Cereals	22.798	30.8
Vegetable oils	8.517	11.5
Sugars	6.434	8.7
Dairy products	5.034	6.8
Meat and edible meat offal	4.580	6.2
Fish and crustaceans	4.275	5.8
Preparations of cereals and flour	3.368	4.5
Other food Items	19.080	25.8
Total food Imports	74.086	100

Source: ITC Trade Map

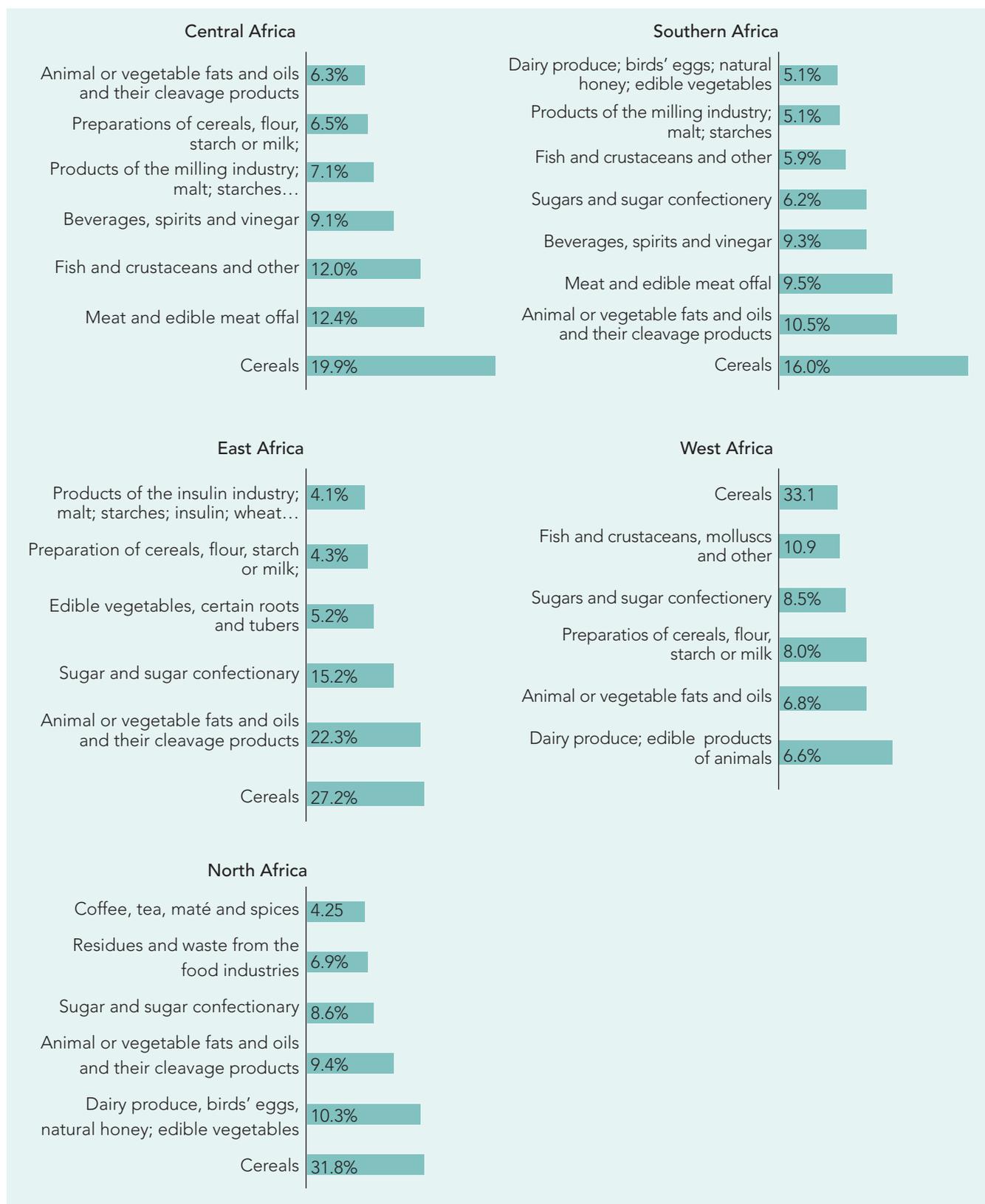
Figure 3.10. Food trade by region, 2010-2019



While cereals remain the top import products for most regions on the continent, an analysis of the other important products shows different import patterns per region (Figure 3.11). In the Central African region, meat consisting mainly of frozen poultry is the second main food import followed by fish (mainly frozen), and beverages and spirits. In Eastern Africa, after cereals, palm oil is the second most dominant product followed by sugar products, and vegetables and tubers. In North Africa, cereals (31% of total food imports), basically comprising wheat, has a significant share in the food bill. The

second most important item is dairy products (mainly powdered milk), followed by sugar products, and residues from the food industry. In the Western African region, the high volume of cereals mainly constitutes rice and wheat. Nigeria, which is part of this group and the most populated country, is one of the largest importers of rice on the continent. The second most important food import consists of frozen fish with a smaller share of dried fish. Sugar and sugar confectionery and other preparations of cereals make up the rest of the imported products.

Figure 3.11. Regional food imports (average annual (2010–2019) as a share of total imports)



Source: ITC Trade Map

Cereals remain by far the major imported food products in Africa (31% of total food bill) and constituted mainly of wheat and rice followed by maize (representing 50%, 27%, and 20% of the total cereals imports respectively). Wheat on its own represented an average of 15% of the total food bill for Africa over the last 5 years. Wheat is imported mainly from the Russian Federation (27.4%), France, Canada, and the USA. These four countries make up 65% of the wheat sources for Africa.

Most of the maize and rice exported from Africa is consumed on the continent. However, a significant gap remains in demand for cereals in Africa, which is covered by international imports. Concerning wheat, the level of imports from Africa has been decreasing over the last 10 years which is also coupled with a general decrease in world imports. When comparing the imports of cereals at the regional level, the Southern African region (being a cereal-producing region) has a lower net demand gap than the other regions which are highly trade deficit in cereals. Wheat is considered as a dominant import in the basket of cereals for the Eastern, Northern, and Southern African regions. The cereal imports of the Central and Western regions consist mainly of rice.

Vegetable oils are the second most important group of imported food in Africa (12% of the import food bill). The breakdown consists of three main products which are palm, soya bean, and sunflower seed oils representing more than 80% of the products in this category (cooking oils) with an average annual market value of US\$6.53 billion. Palm oil accounts for 48% of the total animal and vegetable oil category while soya bean and sunflower account for 22% and 11% respectively. The main sources of palm oil are Malaysia and Indonesia (both making up 47.5% of the market); soya bean oil comes from Argentina, Spain, the Russian Federation, and the Netherlands altogether supplying 60% of the market. Imports of fats and oils (HS15) on the African continent represents a market of US\$1.02 billion and constitutes mainly of palm oil (36%), soya bean oil (16%), sunflower seed oil, and margarine. It represents about 10% of the

main oils imported. The volume of palm oil from Africa has been increasing since 2011, reaching a peak in 2018 and following the same decline as for the imports from the international market.

Sugar and sugar and confectionery products are the third major food imports (9% of food imports) of which cane or beet sugar is the dominant category (88%). The imported sugar market in Africa averaged US\$6.3 billion over the last 10 years while imports from Africa amounted to US\$2.4 billion. Sugar products from the international market have had two peaks with the last 10 years: in 2011 and 2018. However, import value decreased in 2019 (similar levels to 2010). Imports from Africa accounted for 18.6% of the total international imports. Some caution, however, needs to be taken when interpreting these figures as they could often be a case of re-exports which has not been properly captured.

The import pattern for confectionery in Africa by region shows significant gaps for most regions except Southern African which is a net exporter of the sugar products.

Dairy products come next at 6.8% of food imports. This category, although quite diverse in its range, includes powdered milk as the product with the largest share (63%), followed by cheese and curd (13%), and butter (9%); all three cover 83% in this category. New Zealand is the largest exporter of milk products followed by countries from the EU. Although subject to fluctuations the market has been growing at an average rate of 3.8% annually.

Meat accounts for a further 6.2% of total food imports, with poultry accounting for the largest share (Table 3.2). Poultry imports have been experiencing fluctuations between 2010 and 2019, due to price variations. Poultry meat which is the main product in this category (42%) has been increasing from 2010 (US\$1.3 billion), reaching a peak in 2012 (US\$2.3 billion). The value of imports remained more or less at the same levels until 2014 then it dropped between 2015 (US\$1.6 billion) and 2016 (US\$1.5 billion). This was followed by an increase from 2017 to 2018 and another decline

in 2019 (US\$1.9 billion). The second main product in this category consists of frozen beef at 33% followed by offal at 11%.

The main source for poultry and beef are Brazil (30% and 55% respectively of the total meat imports). The USA is the second largest supplier of poultry with 22% of the market, and India (30%) is the second largest source of beef imports. The demand for poultry is higher due to its lower price compared to red meat, and its low production costs.

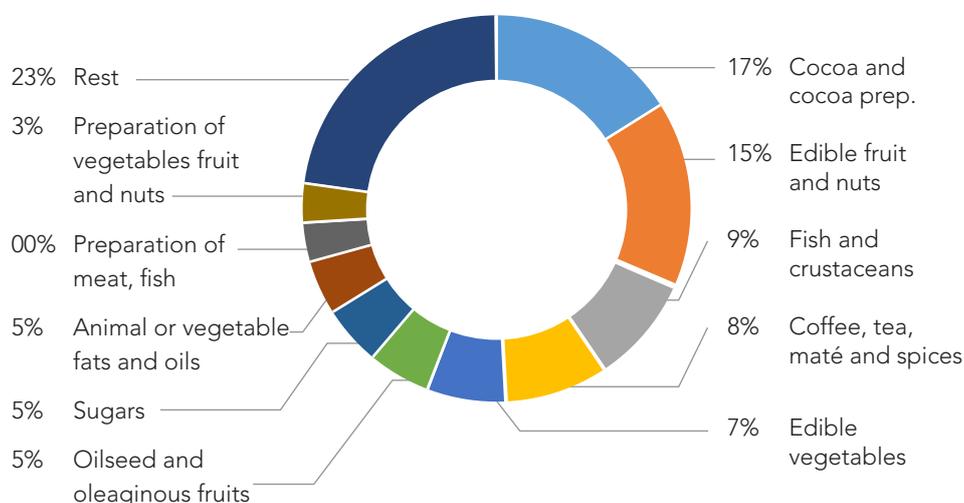
The imports of both beef and poultry follow almost the same import patterns with increases from 2010 to 2012 followed by a decline in 2016; the market grew from 2016 to 2018 with imports dropping in 2019. The decline in imports can be explained by the variation in meat prices worldwide especially in 2015 where global prices for meat dropped. The OECD-FAO Agricultural Outlook 2016-2025 indicated that “weaker demand for meats by emerging economies and oil-exporting countries throughout 2015 exerted significant downward pressure on meat prices. According to the FAO Meat Price Index, meat prices in 2015 fell to a level last seen in early 2010” (OECD-FAO, 2016, p. 107).

Trade statistics indicate a higher level of export for bovine meat on the international market.

Higher prices in these markets are an incentive for exporting higher quality meat. The main markets for these products are mainly the Middle East for both bovine and sheep/goat meat. Quality bovine meat is also exported to European countries.

Fish represents 5.8% of the total food imports in Africa. The value of imports increased by 70% from 2009 (US\$3.2 billion) to 2010 (US\$4.8 billion). It has since been on a decreasing path with fluctuating values within the US4 billion mark. Frozen fish is by far the dominant category in this group representing an average of 77% of the total fish imports. The other products are crustaceans and processed fish (dried, smoked, and salted) which constitute 6.6% and 6.5% of fish products respectively. The largest importers in Africa are Nigeria, absorbing 25% of the market, followed by Egypt (13%) and Côte d’Ivoire (9%). Fish and fish products are supplied by many countries with small market shares. However, the main suppliers of these products are Mauritania (9.5%), Netherlands (9.1%), China (8.6%), and Spain (7.3%). Africa has had a positive trade balance situation for fish products since 2016 from US\$-33.6 million in 2015 to US\$844 million in 2019.

Figure 3.12. Food exports from Africa, 2010-2019 average



Source: ITC Trade Map

Box 3.1 Ghana poultry case study

Ghana's production of chicken meat more than tripled from 20.5 million birds in 2000 to 74.5 million in 2017 (representing almost 60,000 tonnes), showing an average annual growth of 8.7%. However, this represents only 38% of the local demand which stood at 219,220 tonnes in 2013.

The Ghana poultry industry consists of privately owned large-scale commercial poultry farms, medium-scale, and small-scale ones. The large farms have their own feed mills and ensure a high biosecurity level. The medium-scale and the small-scale categories comprise 80% of the poultry sector and rely on hatcheries for their day-old chicks and feed mills for their feed. While large and medium-scale farms produce primarily eggs, the small-scale category comprises mainly backyard poultry producers who mostly produce broiler birds, using minimal biosecurity levels.

Despite having local hatcheries, poultry farmers prefer to buy imported day-old chicks from the Netherlands and Belgium due to the generally low quality of day-old chicks available locally. In 2018 Ghana imported 511,960 broiler day-old chicks and 7.1 million layer day-old chicks.

Ghana has 17 commercial feed mills that are underutilized (40% to 50%) as they produce only layer feed (80% of feed) due to the drop in domestic broiler production. Animal feed costs represent 60–70% of the total production cost compelling feed manufacturers to switch to low-cost substitutes. Input costs to produce chicken meat are 7 times the cost of labour and 4–5 times the cost of utilities.

Consumers in Ghana prefer imported frozen poultry because their price is lower than locally produced poultry and it is already pre-cut, boosting demand for ready-to-use chicken. Demand has also been impacted by the rapid growth of the restaurants, hotels, and fast-food sector in the past few years.

To curb increasing imports of poultry meat (mainly from United States, Brazil, and the EU), the Ghana Government has been developing policies to support the local poultry industry since 2013. These policies include removing customs duties on poultry inputs such as feed, additives, drugs, and vaccines, and facilitating improved access to veterinary services. In 2014 the government developed policy limiting imports to 60%, forcing importers to buy the remaining 40% locally. This does not seem to have been successful as imports soared from 2013 until 2019.

Between 2010 and 2013, the value of imports of poultry had doubled to US\$200 million, followed by a period of slow down reaching US\$107 million in 2016. Imports gradually increased to reach US\$ 245 million in 2019.

In June 2019 the President of Ghana launched the “Rearing for Food and Jobs” campaign aimed at developing a competitive and more efficient livestock industry, that would increase domestic production, reduce importation of livestock products, contribute to employment creation, and improve livelihoods of livestock value chain actors.

The Ghana local poultry meat production, however, faces several problems such as the quality of vaccines, the inability of local feed mills to meet local demand due to inadequate maize and soybean production locally, inadequate biosecurity systems, low-quality day-old chicks due to poor quality local hatcheries, and lack of regulations to regulate the hatcheries. Limited processing and cold chain facilities, high cost of local poultry production, inability to meet consumer preference, and competition from imported poultry products are other challenges facing this industry.

Despite policy measures taken by the government, these challenges illustrate the low competitiveness of the poultry sector against imported poultry products mainly due to the high production costs.

Source: (Netherlands Enterprise Agency, 2019)

3.2.4 Exports of food products from Africa¹⁰

The five main products exported from Africa (Figure 3.12) are cocoa, and cocoa products (17%); edible fruits, and nuts (15%); fish, and crustaceans and molluscs (9%); coffee, tea, and spices (8%); and edible vegetables (7%).

Cocoa exports (16% of the total food exports) (Figure 3.12) consist mainly of beans which are exported mainly to Europe, the USA, and Asia with an annual average export value of US\$8.2 billion. The main exporters are Côte d'Ivoire, Ghana, Cameroon, and Nigeria which have almost 85% of the market share. The market has had an average 5% annual growth since 2010 with drops in 2014 and 2017 due to falling prices on the world market.

Edible fruits and nuts exports represent an average annual market of US\$7.6 billion with an average annual growth of 7%. South Africa is the dominant player (38% of the market share) followed by Egypt (15%), Côte d'Ivoire (11%), and Morocco (10%). The main products exported are citrus fruits (29%), nuts (22%), and grapes (11%).

Fish and fish products are the third most important exported products. These consist mainly of frozen fish (31%), molluscs (28%), and crustaceans (15%). The export markets are mainly Europe and Asia and the major exporters are Morocco, Mauritania, Namibia, and South Africa.

Coffee, tea, and spices represent 8.5% of the total food exports. Coffee is the dominant exported product in this group with 47% of the market amounting to US\$1.97 billion. The market has been growing annually by 1.7%. Tea exports (a market of US\$1.5 billion) and vanilla constitute the other large exports in this group. Vanilla exports have been growing at an average rate of 65.5% since 2013 due to a surge in the world price of natural vanilla. The main exporters in this category were Kenya (30.8% of the total exports) followed by Ethiopia (19.6%), Madagascar (15.3%), Uganda (10.1%), and Tanzania (4.7%).

Edible vegetables and tubers which consist mainly of fresh vegetables and leguminous vegetables

are the fifth highest export group from Africa and represent a market valued at US\$3.4 billion in 2019. Import values have been fluctuating, reaching a peak in 2017 with drops in 2018 and 2019. The main export market for these products is mainly Europe. The main exporters are Morocco (37% of total market share), Egypt (30%), Kenya (6%), South Africa (6%), and Tanzania (4%).

Sugars exports from Africa consist mainly of cane sugar (79% in this category) and have been subject to a fluctuating market over the last 10 years. The average annual export value amounts to US\$2.4 billion and is sold to African and European markets. The main exporters of sugar products are South Africa (30% of the market share), Eswatini (24%), Morocco (12%), Mauritius (10%), and Zambia (7%).

3.3 Drivers of Competitiveness of Africa's Agri-Food System

While a myriad of differences exists in the conditions of production across Africa, some key salient features cut across most regions and across sectors that explain Africa's aggregate performance in agriculture. These are presented in Section 3.3.1, while a sectoral focus is adopted in Section 3.3.2 to highlight regional differences across Africa, as each country presents different challenges to productivity and trade performance. These findings will then form a basis for drawing recommendations for future policy considerations.

3.3.1 Salient features of competitiveness drivers and challenges across agri-food systems

Africa's agriculture production and export have grown over the years. Gross production value has increased by 11% from 2010 to 2016.¹¹ Production growth has mainly been achieved through the continued expansion of production areas and increased labor on farms. Demand for agricultural output has also increased due to population and consumer income growth. Cash crops are a big factor underlying Africa's agricultural production growth. Calculated export unit values revealed that

¹⁰ All trade statistics presented in this section are calculated based on data from ITC Trade Map.

¹¹ Using 2004–2006 constant dollar, according to <http://www.fao.org/faostat/en/#data/QV>.

the price of Africa's agricultural goods compared to the rest of the world is more competitive by a gap of 10% to 25% on average.¹² The most price-competitive regional economic communities (RECs) are the Economic Commission of West African States (ECOWAS) and the Economic Community of Central African States (ECCAS), and the most price-competitive commodities are cash-crops such as cotton, tea, sugar, sesame, and cocoa. Revealed comparative advantages (RCA), a measure of relative weight in exports, but not necessarily of competitiveness, pointed to the rising relative weight of sesame seeds, legumes and pulses in the export basket of African countries, while traditional commodities such as cashew nuts, cocoa, cotton, and tea have been steady, and coffee is declining in terms of competitiveness (Bouët & Odjo, 2019).

The performance of cash crops could be partly explained by the high concentration in the production of cash crops and the low tariff rate applied to Africa's agricultural exports (an average of 9.07% compared to 9.16% of Asia and 11.87% of Latin America). The preferential treatments enjoyed by African countries under schemes such as the EU's Everything But Arms (EBA), the US African Growth and Opportunity Act (AGOA) and the Duty-Free Tariff Preference (DFTP) scheme by India for the least developed countries (LDCs) are the main drivers of lower tariffs.

Productivity growth in factors of production has been limited. NEPAD (2014) pointed out that productivity per agricultural worker has improved by a factor of only 1.6 in Africa over the past 30 years, compared to 2.5 in Asia. Low productivity can be attributable to small-scale production, as well as lack of access to improved seeds and productivity-enhancing inputs such as equipment, fertilizers, and pesticides. Low productivity and yield gaps are among the main constraints facing small and medium-scale farmers, who account for more than 60% of the Africa population. Where carried out on

a large scale under highly integrated value chains with established out-grower systems and sufficient investment (such as South Africa's poultry or Kenya's horticulture), production has been boosted and export capacity has been created (BFAP, 2016; Chemertorit, Saavedra, & Gema, 2018). In most African countries, however, low levels of productivity have contributed to low and even decreasing levels of competitiveness. Low smallholder yields and returns to labor are largely due to the lack of use of productivity-enhancing inputs such as modern seeds and fertilizers. FAO data shows a low level of fertilizer use in Africa, which accounts for less than one-fifth of the world average (FAO, 2020). Underdeveloped markets, high prices, and high transport costs have limited the availability of fertilizers and enhanced seeds. Policy and market failures account for the slow adoption of productivity-enhancing inputs. To some extent, subsidized fertilizers were not reaching the neediest farmers, according to *The Economist* (2017). There was early resistance to agrotechnology, such as genetically modified (GM) crops, to fight climate and disease impacts, but this trend seems to be waning, and the adoption of biotechnology is on the rise (Agaba, 2019). Mechanization is still costly and has yet to be widely adopted. Additionally, higher energy costs, which stem from small markets, small-scale generation facilities, and failure to benefit from the substantial economies of scale in power generation, also pose a systemic constraint to irrigated farming, food processing, and cold storage, thus driving up agricultural production cost (World Bank, 2010).

Africa lacks competitiveness at the processing stages of production and agricultural exports are mainly driven by non-African demand for unprocessed and semi-processed products. There is an excessive concentration of exports on unprocessed commodities, especially concerning its trade relations with rich and emerging markets (Europe, North America, Asia, etc.). This is especially true for the Central African Economic and Monetary Community (CEMAC) and ECCAS, although much less so for the Southern African Customs Union (SACU), where countries like South

¹² Emphasis is made on the "average calculated price", as the competitiveness was driven mainly by the listed cash crop (cotton, tea, sugar, sesame, and cocoa), while in the following section it will be observed that food crops like wheat do not possess this price competitiveness.

Africa have made significant progress along the value chain. In contrast, exports of processed and unprocessed products are balanced within the intra-continental trade (Bouët & Odjo, Africa Agriculture Trade Monitor, 2019). In terms of specific value chains, some African countries have been able to achieve a certain level of processing for grapes, sugar, and tomatoes, with the total value of processed over unprocessed and semi-processed products at 71%, 15%, and 11% respectively.¹³ However, the rest of the agricultural products have been mostly exported as primary goods. According to ITC data, less than 2% of cashew nuts, sesame seeds, and tea, and around 6% of coffee were exported as processed goods in 2019 (ITC, 2020). More concerning, the rate of the total value of processed over unprocessed and semi-processed exports for all products has shown a declining trend over 2010–2019.

Market linkages are fragmented, with high transportation costs and weak trade logistics posing as an impediment. African countries, in general, underperformed logistics-wise during the period under consideration. Of all the countries, only South Africa made it to the second quintile of ranked countries, and 32 ranked below 100th in the World Bank's Logistics Performance Index (LPI) 2018. Out of 54 African countries, 16 are landlocked. This geographical handicap reduces connectivity and increases the cost of access to the sea, thus leading to decreasing competitiveness of exports. Given poor infrastructure, high fuel costs and frequent internal trade barriers, per kilometer costs of trade within Africa remain very high. A recent study of 42 countries in sub-Saharan Africa finds median trade costs over five times higher than elsewhere in the world (Porteous, 2019). As a result, transportation costs in Africa account for more than half the marketing costs, and frequent roadblocks add to these mark-ups (Pannhausen, 2010). According to the ESCAP-World Bank Trade

Cost Database,¹⁴ the estimated costs of exporting agricultural products among African countries are generally higher than the costs of exporting outside the continent. For example, the lowest trade cost (excluding tariff) of exporting agricultural products from Nigeria to Lithuania at about 155% of sales; the lowest cost of exporting to another African country (in this case, South Africa) is 188% of sales. The same situation is observed for Ethiopia, where the costs are 138% and 177% for the lowest trade cost to destination outside and inside Africa respectively. In another study, Porteous (2019) estimated that median intra-national trade cost in sub-Saharan Africa is over five times higher than benchmark freight rates elsewhere in the world. Distance between production and consumption areas, combined with underdeveloped and unreliable road and transportation system, impairs producers' access to markets and reduces their bargaining power.

Non-tariff measures (NTMs) pose a huge obstacle to Africa's agriculture trade. Lengthy procedures for obtaining documents for agricultural exports further increase the time and costs of trade. Sub-Saharan Africa has the highest estimated time and costs to obtain export and import related certifications (World Bank, 2017). Bouët, Cosnard and Fall, (2019) estimated that the total export and import costs in ad valorem equivalents of Africa's agricultural products are more than 30% for exports and almost 200% for imports (median value). The decomposition of the cost structure of African trade indicates that the largest components are the average duty faced on exports (ADFE), the ad valorem equivalent of time for border compliance, and the ad valorem equivalent of time for documentation compliance, with a large gap between tariff barriers and non-tariff barriers (Bouët, Cosnard, & Fall, 2019). The NTMs are an important cause of the weak performance of Africa in agricultural trade, and efforts in trade facilitation will help to improve performance in this area.

¹³ Calculated based on ITC Trade Map data on total export value of processed exports over unprocessed and semi-processed products at HS6 level, for example 120740 for unprocessed sesame seeds and 151550 for sesame oil.

¹⁴ See the data at <https://www.unescap.org/resources/escap-world-bank-trade-cost-database>. Data refers to 2018 value.

Weak branding leads to less visibility of African-made products in the global and regional markets. African consumers are perceived to be brand savvy and loyal, which means brand recognition is of high importance (Spivey, Dupoux, Niavas, Ermias, & Heuzé, 2013). African brands, nonetheless, are typically country or market-specific, and lack of investment leads to lack of capacity to compete with global brands (African Business Magazine, 2020). Some of Africa's agricultural products, such as cocoa and coffee, have benefited from Fair Trade initiatives. However, many primary Africa exports are not effectively branded, which leads to a dilution in the value of African-made products, and offers little product differentiation. The newly ratified African Continental Free Trade Area (AfCFTA) is thus seen as an opportunity to put a "Made in Africa" mark on the continent's products and enhance overall continental branding.

Limited integration into global value chains, especially at the downstream level, inhibits Africa's potential higher added-value activities.

Africa's integration within global agricultural value chains is limited, and where such chains exist, they tend to be producer-driven with limited scope for functional upgrading to lift Africa up to processing and beyond (Mbabazi, Bah, & Verdier-Chouchane, 2015). While this holds true for exports to non-African markets, the situation with respect to regional markets is balanced: half of the intra-regional trade is associated with processed products. This can be illustrated by the case of Egypt, where the country is the largest importer of wheat grain (HS 1001) but also the top exporter in Africa for processed wheat (HS 1101). The demand drivers are important in addressing this situation, as can be seen in the poultry industry discussed in the next section. Bouët and Odjo (2019) argue that consumers in advanced economies have limited appetite for/ or limited access to processed African products. However, African regional markets tend to have many common threads in terms of consumer preferences and legislation, and are easier for market penetration. Another important factor for consideration in attempts to access advanced economies is the high quality standards (SPS and

TBT regulations) that can act as additional barriers, especially for the small and medium enterprises (SMEs). In this context, regional value chains can offer as a stepping stone for the integration of Africa's agriculture into global value chains. While climbing up the value chain ladder is a long-term goal, product differentiation and quality upgrading within the current supply chains propose an interim transiting route. Other opportunities lie in product differentiation, branding, and grading systems for segregating different qualities for exports.

3.3.2. Sectors in focus: wheat and poultry

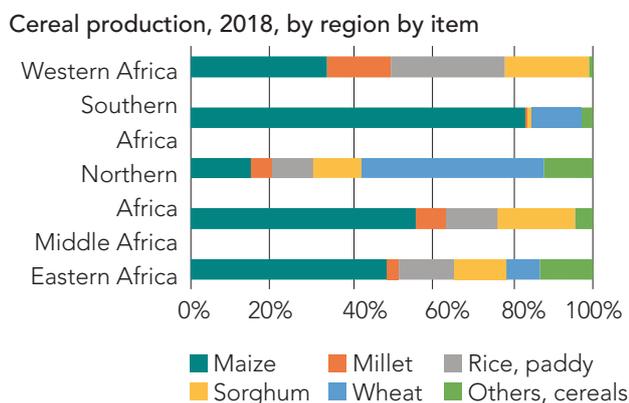
To illustrate the diagnosis analysis, this section investigates two of the most important food products in terms of production, trade, and their respective role in daily food balance Africa: wheat and poultry. The analysis will start with looking into Africa's total production, consumption, exports, and imports of the product in question to assess the capacity for production and trade of such goods. This will be further broken down to see which region and/or country possesses the most capacity in the production and trade of such goods, as well as the underlying drivers or obstacles thereof.

(i) Wheat

Though traditionally not the leading staple crop in Africa, wheat is becoming an important food crop due to rapid population growth associated with increased urbanization and change in food preference (Tadesse, Bishaw, & Assefa, 2018; Tschirley, Reardon, Dolislager, & Snyder, 2015). Wheat is now the most consumed grain in African' cereal-dominating diet. Wheat consumption rate is approximately 49 kg/capita per year, followed by maize and rice at 47 kg/capita per year and 36 kg/capita per year respectively (Figure 3.13). This consumption trend deviates slightly from the production pattern, where maize is in the lead, followed by rice, sorghum, and then wheat. Further investigation reveals different patterns of cereal consumption among African regions. Southern Africa consumes the most maize and maize products (100 kg/capita per year), Western Africa consumes the most rice (60 kg/capita per year), and Northern Africa is the largest consumer of

wheat (144 kg/capita per year). These consumption patterns reflect regional production patterns: each region consumes more of those cereals than it can produce in larger quantities. While economic and demographic growth have led to rapidly increasing wheat demand, production has not managed to keep up with demand, widening the supply-demand gap, and leading to more imports.

Figure 3.13. Cereal in food balance versus cereal production in Africa

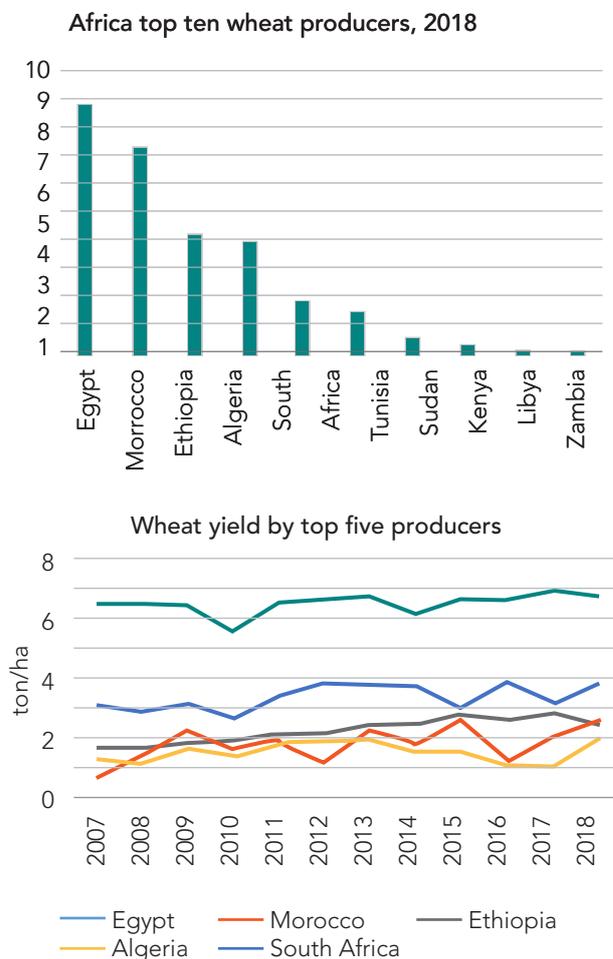


Source: FAOSTAT

Northern Africa is the largest wheat-producing region of the continent, accounting for 76% of all wheat production. Egypt's high wheat production is incentivized by the government's subsidies to create artificially high procurement prices (FAO, 2015). The rest is produced by Eastern Africa — 17% (mostly Ethiopia) — and Southern Africa with 7% (mostly South Africa). Egypt is the largest wheat producer of all African countries, contributing to more than 30% of the crop (Figure 3.14). It also takes the lead in the continent's wheat productivity, recording almost 6.7 ton/ha, and is ranked seventh in the world. Other countries, like Namibia and Zambia, also recorded relatively high wheat yield (5.4 and 5.3 ton/ha respectively). The average wheat yield in Africa, while relatively high compared to the world average (3.4 ton/ha), is still low compared to the highest yield by New Zealand and EU countries (7 to 8 ton/ha) (Figure 3.14). Sub-optimal agroclimatic conditions, such as high temperature, drought in rain-fed environments, and lack of water in irrigated environments, are a huge constraint to wheat production in Africa.

Biotic constraints, including diseases, insects, and weeds, also cause negative impacts on African wheat production (Tadesse et al., 2018). Because many African countries, particularly in the humid tropical zone, do not have optimal agroclimatic conditions for wheat growing, they focus instead on other commodities in which they have stronger comparative advantage and import most of their wheat.

Figure 3.14. Wheat production and yield



Source: FAOSTAT

Although it is the top producer of wheat, Northern Africa, like other regions across the continent, still faces trade deficits for wheat. Four out of the eight top wheat producers in North Africa are also the largest wheat importing countries (i.e., Egypt, Morocco, Algeria, and Sudan), signaling a significant production deficit. Egypt, the continent's top wheat producer, is the largest importer of wheat

in the whole world. According to ITC data, this country imported more than US\$3 billion of wheat in 2019. Egypt suffers from major production swings from year to year, and is vulnerable to climatic changes and disease infestations.

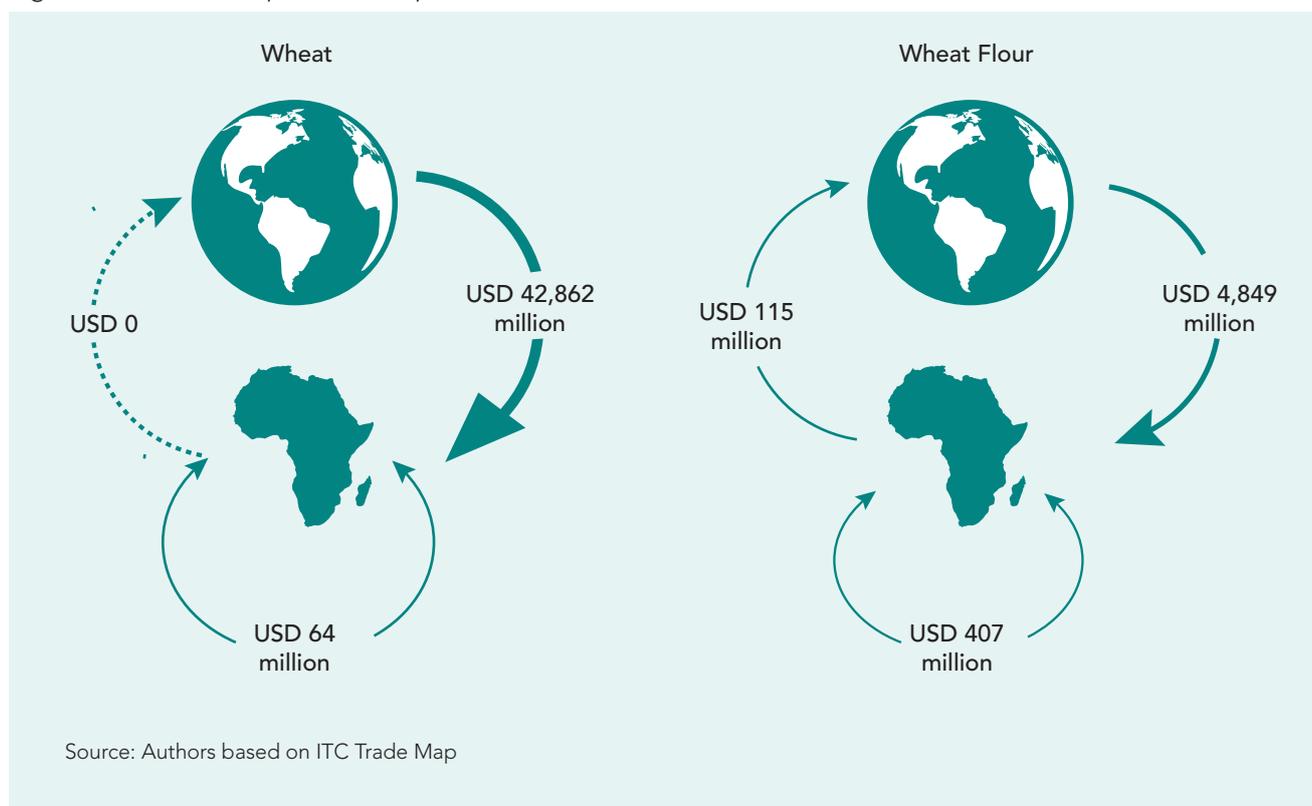
Nonetheless, African wheat exports exist. Egypt is the top exporter of wheat flour (HS 1101), all of which is exported to other African countries or the Middle East; South Africa is the top exporter of wheat grain (HS 1001). The value of total African wheat (grain and flour) exports, however, is minimal compared to imports and as mentioned in Section 3.1, all of Africa's entire cereal exports, including wheat, are almost entirely absorbed in the continent (Figure 3.15). Unlike many other value-added products, Africa primarily transforms wheat on the continent as opposed to importing finished products from the rest of the world (the imports by Africa for the raw commodity are 10 times the size of the finished product).

FA comparison of the producer price¹⁵ of wheat by top African producers versus world producers reveals a price disadvantage for African wheat. This high cost of production is caused by the persisting high costs of inputs (seeds and fertilizers), and of machinery operation (Gitau, Mburu, Mathenge, & Smale, 2011; FAO, 2015; Negassa et al., 2013, 2013). According to FAOSTAT, the unit cost of imported wheat into Africa is US\$240/ton on average,¹⁶ which is on par with or even lower than the most competitive African producers' price, except for Egypt. At the farm gate, the price of the most competitive wheat producers in Africa in its best years, for example, Egypt's producer price of US\$212/ton in 2017, is still 25% higher than the most expensive wheat produced by the world's top

15 The producer price is calculated by FAO. It is identified as the prices received by farmers for primary crops, live animals and livestock primary products as collected at the point of initial sale (prices paid at the farm-gate).

16 Calculated as total value divided by total quantity of wheat imports, using data downloaded from FAOSTAT. FAO uses CIF prices to value imports.

Figure 3.15 African imports and exports of wheat, 2018



5 producers (e.g. the US producer price of US\$169/ton in the same year) (Figure 3.16). Egypt's high production cost is due to high machinery costs, the massive amount of manual labor work, and high input costs. Farm scale is also an important factor in production cost; it ranges from around US\$900/ha in large farms to more than US\$1,000/ha for small farms. While the government's interventions into the wheat value chain have provided an incentive for wheat production, they also pose obstacles to the sector's competitiveness due to inefficient management of public storage and milling systems that lead to exposure to the effects of the weather, pests, and post-harvest losses, and due to the complexity of the public tender process; all these trigger additional costs (FAO, 2015).

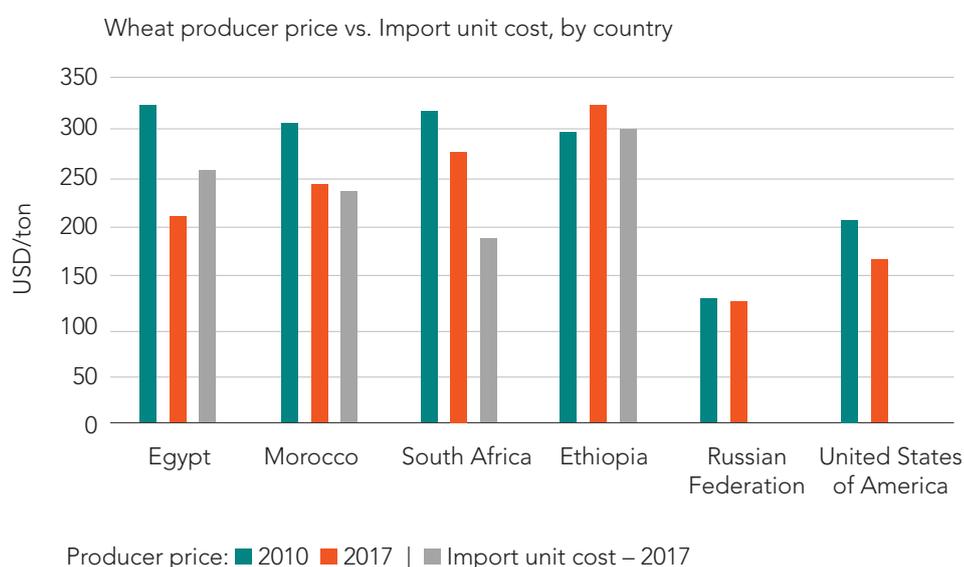
This raises the question whether countries should focus on wheat production or on other commodities where they have stronger comparative advantage, and use the export revenue to import wheat and other food crops of lower competitiveness. As discussed earlier in this section, Africa, in general,

possesses strong comparative advantages for cash crops such as cocoa, cotton, tea, sugar, sesame, cashew nuts, coffee, but lacks the same for major food crops. Additionally, many smallholder farmers grow staple crops for subsistence, meaning that pursuing the proposed path might potentially increase exposure to food insecurity for small-scale farmers and marginal groups.

(ii) Poultry meat

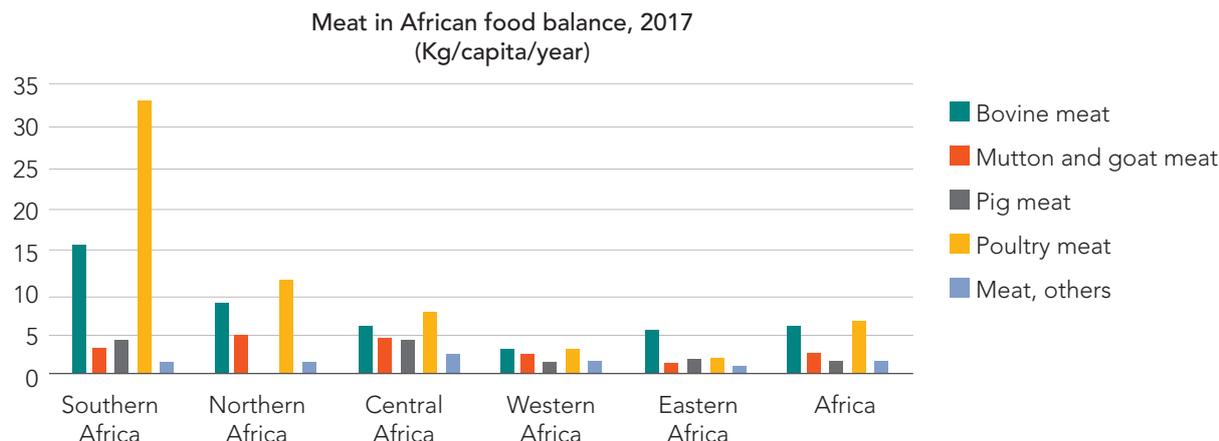
Poultry plays an important role in Africa's food balance. Except for Eastern Africa where beef dominates protein intake, the rest of the continent counts on poultry for a large portion of annual protein supplies. Poultry meat accounts for a substantial part of the South African diet, with the consumption of more than 32 kg/capita per year, followed by Northern Africa with 11 kg/capita per year. The top poultry meat consuming countries are Mauritius (38 kg/capita per year), South Africa (36 kg/capita per year), Gabon (29 kg/capita per year), Congo (22 kg/capita per year), and Morocco (21 kg/capita per year) (Figure 3.17).

Figure 3.16. Wheat producer price vs. import unit cost, by country



Source: FAOSTAT

Figure 3.17. Meat in African food balance

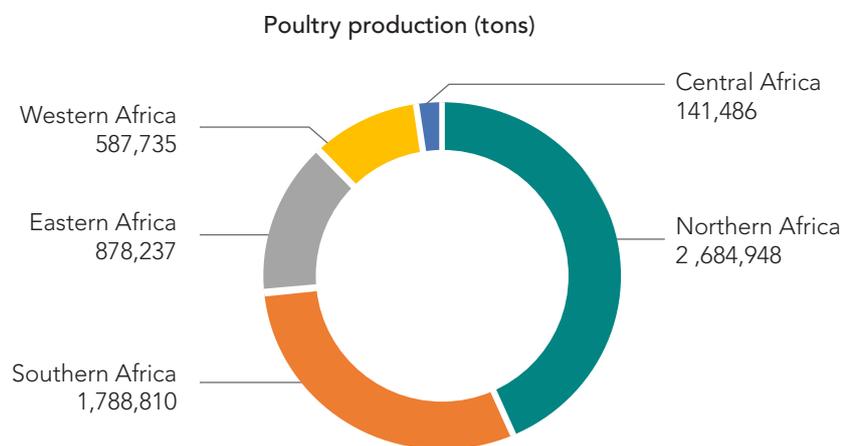


Source: FAOSTAT

Contrary to their low poultry consumption, Northern African countries have the largest poultry stocks and production levels of all regions. This region alone contributes to approximately 35% of all poultry produced in Africa and 37% of all African poultry livestock. Southern Africa, despite being fourth in size of the poultry livestock, has the second largest poultry production (Figure 3.18). All regions, except for Southern Africa, recorded positive growth over

the 2010–2018 period in both the size of the poultry brood and production. Southern African, however, recorded negative growth (-1.37% compounded annual growth rate — CAGR) in poultry stock size during the 2010–2018 period, when its brood declined from a high of over 200 million head to slightly over 180 million, though it has been able to maintain positive growth (+2.34% CAGR) in poultry production.

Figure 3.18. African poultry production, 2018



Source: FAOSTAT

A further look into the brood size and production capacity of the countries reveals the high concentration in African poultry production. According to FAOSTAT data, the top 10 countries produce more than 60% and 81% of the continent's poultry stock and production respectively. South Africa has the highest production capacity, accounting for 1.8 million tonnes (29%) of all poultry production, and Morocco has the largest poultry stock with more than 0.2 million chicks (11%). Other countries, such as Mozambique and Ghana, have been able to achieve rapid growth in poultry production, accounting for 14% and 9% CAGR respectively over the 2010–2018 period.

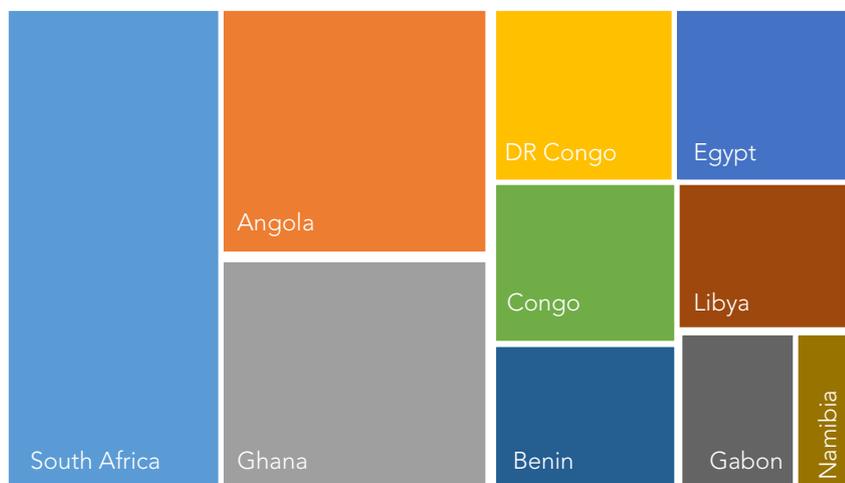
Despite expansion in poultry stock and production, Africa still faces an increasing trade deficit in this sector. African imports of poultry meat have increased by more than 45% over the 2010–2019 period, while exports have decreased by almost 40%, leading to a deficit of US\$1.8 billion. Poultry imports in Africa are highly concentrated: the top three exporters account for more than 83% of all African poultry meat imports. Top supplying markets for African poultry meat imports are the EU (33%), Brazil (27%), and the United States (23%). African intra-regional exports only account for 4.3% of all the continent's poultry meat imports, with South Africa, Angola, and Ghana being the main suppliers (Figure 3.19).

Figure 3.19. African poultry meat imports and exports, 2019

Africa's poultry meat imports by country of origin, 2019



Africa's poultry meat imports by country importing, 2019



Source: ITC Trade Map

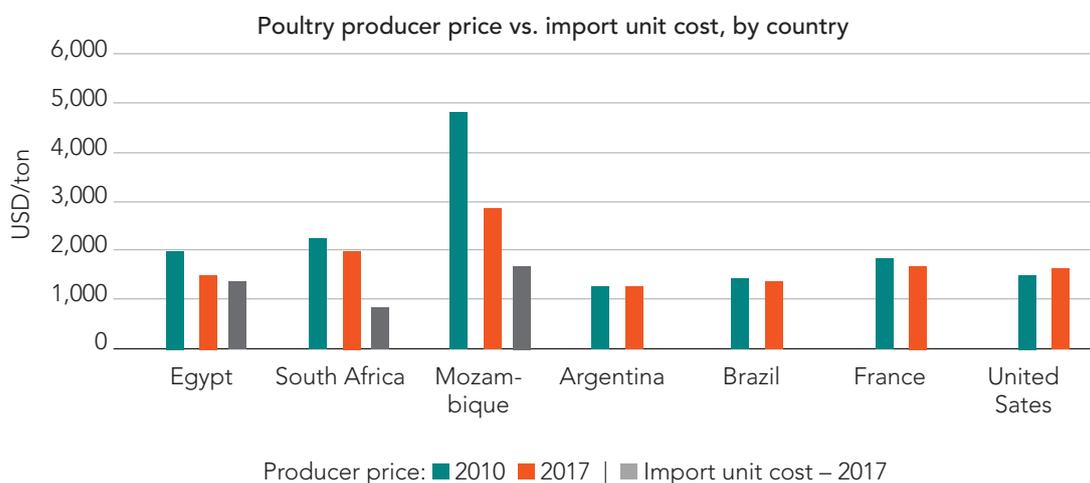
Production capacity and scale are among the factors affecting the production cost and thus the competitiveness of the poultry sector in Africa. Until recently, the sector was dominated by two production systems: local backyard system (low input–low output) and a commercial production system (high input–high output). Most poultry farmers are either small or medium-scale farmers (Vernooij, Masaki, & Meijer-Willems, 2018). Except for South Africa where the integrated value chain and the contract growing model have created a highly concentrated commercial broiler industry, the broiler value chain in other African countries is fragmented and underdeveloped, and certain parts of the value chain (financial services, feed mills, hatchers, veterinary services, and processing) are weak or absent (Bah & Gajigo, 2019; Netherlands Enterprise Agency, 2019).

Though comparable to that of the EU, Africa’s producer price of poultry is on the higher end of the spectrum. While African countries can produce maize for animal feed, they have to import a large amount of protein meals (for example, soybean oilcake), which has raised the feed cost. Breeding is another reason for the higher production cost: while some countries, for example Ghana, have to import

a large number of day-old chicks for broilers and layers (Netherlands Enterprise Agency, 2019), others, like South Africa, have to import genetic material at grandparent chicks level as the government prohibits the import of commercial day-old chick. While the warm climate has helped to reduce the costs of housing and energy, high input costs (feed and day-old chicks) have made it hard for Africa’s poultry’s producer prices to compete with major feed producers like the US and Argentina (BFAP, 2016).

In addition to price, different consumer tastes and preferences have been a major factor inhibiting the competitiveness of the regional poultry sector. While the European and North American markets prefer white meat and chicken breasts, whole chicken or pre-cut bone-in portions are consumed by Africans. Having obtained a premium domestically for higher value cuts, producers in the EU and the USA are then able to supply bone-in portions into African markets at very competitive prices (lower than producer price, as can be seen in Figure 3.20), while remaining profitable. On the contrary, domestic producers have not been able to benefit from premium cuts and therefore struggle to compete directly with imported frozen cuts (BFAP, 2016).

Figure 3.20 Poultry producer price vs. Import unit cost, by country



Source: FAOSTAT

The surging frozen cut imports have been considered a result of alleged dumping by large-scale exporters. In order to protect the domestic industry, some African countries have imposed poultry import bans. In 2017 Mozambique announced a poultry import ban covering many countries (including South Africa and Zimbabwe) with the main target being Brazil. The country's domestic poultry production continued to expand by 17% in the 2016–2017 period. The ban, however, seemed to have driven up local poultry prices and forced domestic suppliers to import from Europe (not affected by the ban) instead of neighboring countries (Bah & Gajigo, 2019).

One potential direction that Africa can look into for the poultry production industry is to replicate the same market segmentation strategy, that is, premium white meat for EU and America exports, and bone-in portions to target regional markets. Although most African countries have free access to EU and US markets under the EBA and AGOA preferential treatments, high non-tariff barriers will be the main challenge faced by African poultry exporters (TRALAC, 2017). The EU market is known for stringent animal welfare regulations, which requires lower stocking densities and thus increase the housing cost (BFAP, 2016). In order to comply with the SPS requirements in these potential export markets, it is essential to increase substantial investments to upgrade the production chains and the national quality infrastructure. To address the feed cost issues, critical linkage back to the feed sector will need to be developed and closely integrated into the feed-to-poultry value chain at national and regional levels to reduce the overall production cost and improve the sector's competitiveness.

3.4 Opportunities for Building Competitiveness in Africa's food systems

The vision of African agriculture is visualized in the Malabo Declaration 2014 and further guided by the Comprehensive Africa Agriculture Development Programme (CAADP) framework. Fulfilling the potential of African agribusiness could open up markets worth more than US\$100 billion per year by 2025. In order to realize such vision, the African Development Bank (AfDB) envisages an annual investment of US\$2.4 billion per year in agriculture and agribusiness. The Agricultural

Transformation Agenda will be implemented by scaling and leveraging what is already working, ensuring sufficient skills and capabilities exist for follow-through while being sufficiently targeted and backed by political will around seven core enablers¹⁷ (AfDB, 2016).

Various efforts have been implemented to improve the agriculture sector's competitiveness via enhancing productivity, quality, and distribution along the value chains. At the country level, the transformation has happened via the liberalization of input markets, expansion of innovative agricultural finance, and land policy reform. Examples of country-specific efforts include Nigerian farmer registration and input distribution, the development of the floriculture sector in Ethiopia, the horticulture sector in Kenya, improved rice yields in Senegal and Mali, vertical integration and agroprocessing in Morocco, the ecosystem-based farm management practices (EBFMPs) in Ghana, etc. For crop sector, GIZ (2017) identified six areas of recommended good practices for African farming, which are: use of improved seeds, soil and water management, timing of farming practice, changing crop/livestock distribution and densities, tillage and associated practices, and farm crop and livestock diversification. While many of these practices and technologies are not new, they have been observed to, at a minimum, sustain and ideally improve agricultural production in the context of a changing climate (GIZ, 2017).

Industrialization and vertical integration of the value chain will generate big impacts on agriculture production. Linking agriculture and industry through value chains and agribusiness development is not a new idea. In fact, it has been a core focus area of development work across the continent, for example, the Agribusiness and Agro-industry Development Initiative (3ADI+) promoted in collaboration among the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Industrial

17 The seven core enablers are: increase productivity, realise the value of increased production, increase investment into soft and hard infrastructure, catalyse flows of agricultural finance, create an enabling agribusiness environment, and increased inclusivity, sustainability, and nutrition (AfDB, 2016, p. 7)

Development Organization (UNIDO), the African Union Commission, AfDB and United Nation's Economic Commission for Africa (UNECA). Vertical integration systems are already in place with large players in the commercial production sector, for example, the breed-and-feed-to-poultry system in South Africa and Zimbabwe. Such systems can be further escalated to a continental-scale using the new continental trade deal by connecting input supplier-manufacturers-producers in different countries. We can imagine a chain bringing oilcake from Zambia to feed producers in South Africa to livestock farmers in Mozambique or Botswana. To finish up the chain, strategic market segmentation will help producers serve the different targeted consumer groups.

In addition to traditional approaches to agricultural good practices, information and communication technologies (ICTs) have been adopted as a new way of modernizing agriculture. ICTs can be used at all levels of functioning of agricultural production chains. These include mobile telephony, radios, geographic information systems (GIS), satellite imagery technologies, which can be used to facilitate production from the process of land registration, allocation and use for crop selection, taking inventory, obtaining weather information on the planting calendar, facilitating government fund transfer, and facilitating farmers' access to credit, to a higher end of providing inputs to and extracting reports from market information systems, origin tracing and order tracking. Numerous initiatives promoting the use of ICTs in various fields in agrobusiness are reported, including *Kilimo Salama* (input purchase insurance), Appollo Agriculture (credit risk assessment), and M-Farm (price information) in Kenya, Zenvus (precision farming technology) in Nigeria, Esoko (SMS-based market price information, weather forecasts and farming techniques) (Jensen, 2019). The use of ICT can radically change the costs and delivery models used for a broad range of products and services to farmers and other actors along agricultural value chains (AfDB, 2016). However, much consideration should be put in the ICT transformation, as the effectiveness of such strategy will depend on

various factors like resistance to change, the level of tech-savviness by participating actors, the management and coordination mechanism, etc.

3.5 Outlook for food systems from regional integration schemes

Despite the high contribution of agriculture to the continent's gross domestic product (GDP), Africa is still a net food importer. African agricultural trade is underexploited for both international and regional markets due to high tariffs, various non-tariff barriers, low productivity, and a lack of rural connectivity. African food import bills have been increasing over the years, largely sourcing from outside the continent. The role of intra-regional trade as a catalyst for agricultural development has been recognized by both CAADP and the 2014 Malabo Declaration. With AfCFTA in place, intra-African trade in agricultural products will potentially increase by between 20% and 30% by 2040 (UNECA, 2020). By aggregating a huge market of more than 1.2 billion consumers, AfCFTA would provide attractive opportunities for both regional and international market players. The agreement would then generate state revenue, expand investment in modernizing the sector through processing and mechanization, thus contributing to the goal of food security and overall economic growth through the growth of the agriculture sector.

AfCFTA is an ambitious initiative; its success will be largely due to ratification (only 30 countries out of 54 signatories had ratified it as of May 2020), and implementation. First, for such a large regional arrangement to take effect, rigorous national measures and policies to address competitiveness issues at all links of agricultural value chains will be crucial. Those include measures to improve production capacities and promote investment for higher value-added agro-production. A robust intra-continental market information system will help connect surplus and deficit areas, opening up market access to help producers reap the benefits of the single market created by AfCFTA. Furthermore, to boost regional trade, enhanced policies are essential.

Such policies would deal with SPS, technical barriers to trade (TBT), trade facilitation, and the introduction of a harmonized trade regime, especially for cross-border agricultural trade. These measures should be designed to simplify and facilitate trade flow while lowering the undesired barriers to trade. Close partnership and engagement from both the public and private sectors will be needed to ensure that the agreement will deliver broad benefits to society, the environment, and national economies. Africa's experience with other regional trade agreements has been lackluster, and thus, there are mixed views on the outlook for Africa under a more complex AfCFTA.

The COVID-19 pandemic is a harbinger of the upcoming changes to global value chains, especially for food and medical systems. For example, some major Asian rice exporters have imposed temporary export bans which might negatively impact rice supplies globally. While currently Africa can import low-cost food from outside the continent, the pandemic might be a nudge for Africa to focus on strengthening regional food trade links. Countries might shorten the currently long supply chains to closer markets. Increasing regional food trade and developing a regional market would then naturally come as a solution to ensure food security for the fast-expanding population of the continent. Stronger together, the regionalisation of markets and intensive integration will be an effective means of boosting Africa's position in the global market, stabilizing prices, and securing the regional market supply of food. To achieve this, a grand scheme for harmonization of agricultural policies and standards will be critical. While unified agricultural policies seem to be a far-fetched target, mutual recognition and harmonization of standards are within the capability of the countries should the governments have strong enough political wills to facilitate such transformation.

Successful transformation of the African agriculture sector should be business-led and involve the creation of three simultaneous conditions: large-scale dissemination of productivity-increasing technology and inputs, plus input intensity and capital intensity; the development of input and output

market structures and incentives that allow the full realization of the value of increased production; and a well-functioning and vibrant private sector that can manage and allocate skill and capital to scale emergent success and drive long-term sustainable agribusiness growth (AfDB, 2016). To achieve such goals, a combination of resources from a broad set of public and private sector actors will be required, but the returns will also be enormous. AfDB (2016) estimated an estimated US\$315–400 billion over the 2015–2025 period will be needed to fulfill the potential transformation of African agribusiness. However, this will help unlock markets worth more than US\$100 billion per year by 2025. The governments will be catalytic in creating an enabling environment for capital flows and agribusinesses. On the private sector side, opportunities exist for market actors initiating quick and bold investments in these game-changing areas:

- Increase productivity by catalyzing the development and use of productivity-enhancing technology and inputs, crop diversification, effective input distribution systems, and post-harvest waste and loss reduction. Awareness raising and technical assistance to grassroots producers for the quick acceptance and adoption of new technology should be an essential part of this effort.
- Climate smart agriculture (CSA) shall be the recent future of agricultural production to harness control and reduce the dependence on natural conditions.
- New technologies to promote production, finance, and information flows shall open up new entrances for the transformation and modernization of agricultural value chains in an inclusive manner.
- Market research and data mining will be the catalyst to enhance understanding and confidence, thus boosting capital flows to the large and continually growing market of Africa.

Table 3.2. Detailed breakdown of major food imports into Africa (US\$ millions, 10-year average 2010–2019)

	Annual food imports	
	US\$ millions	Percent
Cereals		
Wheat and meslin	11,206	15.1
Rice	5,571	7.5
Maize or corn	4,174	5.6
Other Cereals	1,847	2.5
Total Cereals	22,798	30.8
Vegetable oils		
Palm oil	3,972	5.4
Soya-bean oil	1,870	2.5
Sunflower, safflower or cotton-seed oil	1,033	1.4
Other edible oils	1,642	2.2
Total Vegetable Oils	8,517	11.5
Sugar		
Cane or beet sugar	5,655	7.6
Sugar confectionery	469	0.6
Other sugar and confectionery	310	0.4
Total Sugar	6,434	8.7
Dairy		
Milk and cream concentrated	3,154	4.3
Cheese and curd	640	0.9
Butter and other milk fats	453	0.6
Milk and cream, not concentrated	290	0.4
Other Dairy	497	0.7
Total Dairy	5,034	6.8
Meat		
Chicken	1,874	2.5
Beef	1,560	2.1
Edible offal of bovine animals, caprine, ovine....	539	0.7
Pork, fresh, chilled or frozen	270	0.4
Other Meat Products	337	0.5
Total Meat	4,580	6.2
Fish		
Frozen fish	3,284	4.4
Crustaceans	282	0.4
Fish (dried, salted, in brine, smoked)	280	0.4
Fish, fresh or chilled	158	0.2
Other Fish	271	0.4
Total Fish	4,275	5.8

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4 Domestic food distribution systems: Linking farmers to growing urban markets in Africa

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Key messages

- 1 Traditional markets and small-format shops currently account for 80% to 90% of urban food retailing in African cities.
- 2 Supermarket shares, though currently small, seem likely to increase in the coming decades.
- 3 Small-scale farmers reach urban food markets primarily via traditional wholesale markets. Efficient operation of these markets, therefore, becomes key to small-scale farmer access and competitiveness.
- 4 A “Quiet Revolution” is underway in the small and medium enterprise (SME) trader and logistics segments of sub-Saharan African food systems. The SMEs are proliferating and making large investments, in the aggregate and individually, in vehicles, equipment, and warehousing.
- 5 Traders and logistics firms are constrained by the condition of wholesale markets and roads, corruption on the roads, electricity and fuel costs, and vehicle import ease and cost. These should be public policy and investment priorities.

4.1 Introduction

As urban food markets grow, African farmers increasingly depend on an expanding network of intermediaries — assembly traders, wholesale markets, agroprocessors, and food retailers — who purchase from farmers and supply food products to urban consumers. For low-value non-perishables such as cereal crops, supply chains typically cover long distances and involve storage, processing,

and packaging. In contrast, higher-value non-perishables such as dairy, poultry, and horticultural products are often produced in peri-urban areas or in farming zones with close road access to major towns. For the high-value perishables, urban wholesale markets become key transaction points through which farmers access urban supply chains. This chapter reviews those domestic distribution systems and outlines how they have responded to growing food markets in African cities.

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Urban consumers purchase food in a variety of outlets and retail formats, ranging from open air markets to small butcher shops to large supermarkets. Each of these retail formats involves differing backward linking supply chains, some of which favor access by small-scale farmers and some which tend to exclude them. Because access to urban food markets by small-scale farmers depends, in part, on the shifting market share of these alternative retail outlets, this chapter begins by reviewing evidence on the structure and evolution of urban food retailing. The ensuing section examines the differing rural-to-urban distribution systems that connect farmers to urban food retailers. Discussion concludes by examining policy implications for groups aiming to improve opportunities for African farmers and better serve the food needs of Africa's growing cities.

4.2 Urban retail systems

4.2.1 Snapshot

Food retailing currently accounts for about 20% of the total value of the agri-food value chain in sub-Saharan Africa (Reardon et al., 2019). As a result, its performance is important for food security for consumers in urban and rural areas. Retailing is also

crucial as the transmitter of demand signals from urban consumers upstream to farmers. As consumer demand diversifies out of cereals (see Chapter 2, this volume), retail and wholesale networks signal increased demand for more poultry, fish, meat, milk, vegetables, fruit, oil seeds, and pulses. In response, volumes of non-cereal foods marketed in urban areas have soared 10-fold over the past several decades. Similar growth in demand for processed and prepared foods has triggered widespread innovation in packaging, processing, and branding of staple foods for sale in small shops and in supermarkets with a wide diversity, including quality and packaging.

The few available survey studies of supermarket penetration of the retail sector in Africa show that the traditional and transitional retail stage is still the dominant one, with only about a 10–20% share of supermarkets in total urban food retailing. While supermarkets attain significant markets share in sales of packaged foods, dry goods, and dairy, open air markets and small shops dominate urban sales of meat and fresh fruits and vegetables (Table 4.1). Recent data from Addis Ababa, Ethiopia, indicate similarly small current shares for urban supermarkets (Woldu, Abebe, Lamoot, & Minten, 2013).

Table 4.1. Market share of urban food retail channels (percent of urban consumer food purchases)

a. Market share of urban food retail channels (percentage of urban retail purchases) a. Nairobi, 2003									
Food group	Supermarket chains	Small supermarkets	Dukas/ shops	Open markets	Kiosks	Butchers	Other	Total	
Staples	21	13	50	6	8	0	2	100	
Dairy	14	2	55	0	11	0	18	100	
Meat	4	0	9	12	4	68	3	100	
Fresh fruit and vegetables	4	0	1	56	36	0	3	100	
Overall	12	5	29	19	14	17	5	100	
b. Four cities in Zambia, 2008									
Food group	Supermarket chains	Small supermarkets	Grocers	Open markets	Kiosks	Butchers	Other	Total	
Staples	9	2	44	18	22	0	5	100	
Dairy	20	4	39	8	23	3	3	100	
Meat	7	2	5	38	13	28	8	100	
Fresh fruit and vegetables	3	1	1	66	28	0	2	101	
Overall	7	2	22	31	22	7	9	100	

Source: Tschirley et al. (2010)

4.2.2 Trends

Over time, however, these shares are changing. Across most regions of Africa, the penetration of supermarkets has increased in recent decades, steeply so in major cities. As the share of supermarkets in total consumption gradually grows, the supermarkets' quality and safety and consistency demands gradually translate into new investment requirements by farmers relative to what they were used to in traditional markets. These requirements gradually exclude asset poor farmers that cannot keep up with the new standards (Reardon, Barrett, Berdegué, & Swinnen, 2009; Reardon, Codron, Busch, Bingen, & Harris, 1999). That situation is still a decade or more in the future in Africa, as supermarket chains still have a small share (perhaps 10–20%) in urban food economies, but as with Asia and Latin America, their share will continue to grow as will their leverage to impose requirements on supply chains in general and farmers in particular.

Overall, evidence from across the globe suggests that supermarkets have increased their market share most rapidly in processed, dry, and packaged foods such as noodles, milk products, and grains, for which supermarkets have an advantage over

small retail stores due to economies of scale. In contrast, the supermarkets' progress in gaining control of fresh food markets has been slower, and there is greater variation across countries because of local habits and responses by wet markets and local shops. Usually the first fresh food categories in which supermarkets gain a majority share include less perishable "commodities" such as potatoes, and sectors experiencing consolidation in first-stage processing and production: often dairy products, chicken, beef and pork, and fish. In Brazil, where supermarkets hold a 75% share of the overall food retail market, their share in fresh fruits and vegetables retail is only 50%. This rough "2 or 3 to 1" ratio appears to be typical in developing regions (Reardon, 2007, Table 4.2). With fresh produce, the convenience and low prices of small shops and fairs, with their varied produce for daily shopping, continues to pose a competitive challenge to the supermarkets. As a result, traditional marketing systems remain competitive in perishable products longer than in non-perishables. Progress for supermarkets, usually steady but much slower in fresh produce, requires investments in procurement efficiency (Reardon, 2007).

Table 4.2. Sales of modern food retailing chains in Africa, 2002–2018

Origin of retail company	2002	2008	2012	2018
First wave	6,719	18,329	26,371	25,576
Local	4,375	11,541	13,541	13,453
Regional	117	377	552	946
International	2,227	6,412	12,279	11,176
Second wave	581	1,273	2,280	3,011
Local	160	384	1,112	1,505
Regional	161	287	547	858
International	260	602	622	648
Third wave	9	172	513	683
Local	-	106	260	298
Regional	-	47	183	228
International	9	19	70	157

Source: Reardon et al. (2019) based on data from Edge by Ascential

These patterns are similar to the historical situation of the United States during the 20th century: supermarkets started in the 1920s but did not start to sell much fresh fruit and vegetables until the 1960s, some 40 years later, as Americans traditionally had steadfastly shopped at small fruit and vegetable shops and open air markets. That penetration came only in the 1970s/1980s in Western Europe. Asia and Latin America have the same tradition as Africa and the US in terms of produce being sold in wet markets and small shops, but supermarkets penetrated produce retail much faster and earlier than in the US (Reardon, 2007; Reardon, Timmer, & Minten, 2012). This is partly because supermarket chains in those regions gained from the experience of US and European chains in building competitive supply chains in produce. They did so by buying direct and using specialized wholesalers to select for quality, for example in Central America (Berdegué, Balsevich, Flores, & Reardon, 2005), focusing at first on marketing “staple” vegetables cheaper than in wet markets while adding “fancy” and imported produce as a draw, and managing cold chain inventory to start to compete with the quality of produce in wet markets.

Interestingly, African supermarkets are beginning to employ the strategies of produce pricing that had led to supermarkets gaining a foothold and eventually a significant and growing share in produce retail (as well as chicken, pork, and other perishable retail) in Latin America and Asia. The strategy included buying in bulk from medium-sized producers (Neven, Odera, Reardon, & Wang, 2009 for the case of Kenya) and pricing key “staple” vegetables such as kale at prices lower than in shops and wet markets (Minten & Reardon, 2008; Neven, Reardon, Chege, & Wang, 2006).

In addition to growing supermarket sales, African cities are experiencing increased spread of self-service small/medium-sized grocery stores, particularly in major cities, with substantial diversity of product offer. We also find shops are shifting from the traditional offer of a handful of packaged goods and loose grains, to packaged/branded processed foods, including of staple grains.

Alphonse et al. (2019) studied this for Morogoro and Dodoma in Tanzania, and the rural towns between these two tertiary/secondary cities. They showed a remarkable penetration and proliferation of processed foods in retail shops in all sizes of cities and towns. Similar results were found for cities in north and south Nigeria (Liverpool-Tasie, Reardon, & Abagye-Igbudu, 2017). Much of the processed food was produced in-country.

Moreover, fast-food chains are spreading rapidly, and an even more spectacular proliferation of small and medium enterprises (SMEs) of street vendor food is occurring across the cities of Africa. Many of these are operated by women, such as the *mama ntilie* in Tanzania serving chicken and chips.

Table 4.2 shows rapid growth in leading supermarket chain food sales from 2002 to 2018 for sub-Saharan Africa using data on the sales of edible groceries by the top retailers, as compiled by Edge by Ascential (formerly Planet Retail), a leading retail data service that tracks at least 7,000 retail companies in 211 countries. We broke the data into waves of countries; the first wave experienced the emergence of supermarkets before the later waves did. We also distinguished by the chain's source of capital (local, regional foreign direct investment (FDI), or international (outside sub-Saharan Africa) FDI such as Carrefour). Although Edge by Ascential has information on most of the main retailers, the firm does not cover the smaller and independent supermarket chains. Thus, the data underestimate total supermarket penetration and local capital-funded supermarket sales. With that in mind, several interesting trends clearly appear.

As in Asia and Latin America, international supermarkets have proven more important in the first wave countries in Africa. In contrast, regional supermarket chains, such as Shoprite of South Africa, play an important role in Africa's second and third wave countries.

4.2.3 Implications of COVID-19

Reardon, Bellemare, and Zilberman (2020) and Reardon and Swinnen (2020) discuss the impacts of COVID-19 on in-store retail and e-commerce in

Africa and other developing regions. Two key points emerge.

First, as with earlier food safety and hygiene “shocks”, COVID-19 tends to be more onerous for small shops and wet markets and less so for supermarket chains. This means that retail will probably further “concentrate” in this disease episode as it has tended to do in earlier ones (like avian flu). Supermarkets can control client ingress and social distancing such that client density is lower than in small shops and crowded wet markets. Large retailers can manage supply chain logistics and hygiene controls on suppliers and on product transit while small shops must take what they can get from wholesale markets only. The disadvantage of supermarkets is that they tend to be further from consumers than are small shops, which may be more convenient in cases of mobility restrictions such as curfews and restrictions on public transit.

Second, as in the cases of earlier hygiene shocks such as SARS in China, e-commerce tends to spread more rapidly than supermarkets as e-commerce plus delivery intermediaries bring the product to homes rather than requiring, as with supermarkets, that consumers go to the stores. However, supermarket chains, including in Africa, have taken up e-commerce to reduce their disadvantage. The e-commerce is still only incipient in Africa so this may take some time to manifest significantly.

4.3 Aggregation systems linking farmers with urban retailers

4.3.1 Traders

Wholesale and logistics are the “life blood” of the agri-food value chain in sub-Saharan Africa. These comprise traders based in wholesale markets and “off-market” in rural and urban areas, integrated brokerage and processing operations, and truckers and ambient warehouse operators, and cold storage operators. They constitute roughly 20% of the value and cost in the food value chain in sub-Saharan Africa.

Nearly all the wholesale/logistics segment in Africa is composed of SMEs. It is likely, however, that

over time the large enterprise component of this segment will grow. This will be driven by domestic SMEs attaining scale with national and regional operations.

The role and importance of the trader/logistics segment can be seen with the image of a huge “hourglass”. Using an example from Nigeria based on research on maize traders (Liverpool-Tasie, Reardon, & Sanou, 2017), one can think of wholesalers/logistics SMEs as the middle part of the hourglass. Some 8 million Nigerian farmers produce maize, which then feeds (directly via flour and indirectly via feed) some 160 million consumers. The maize goes from the farmers via some tens of thousands of “traders” (urban wholesalers and rural brokers), much of it along 500–1000-km supply chains internal to Nigeria. The performance of that trader “middle of the hourglass” sets the market conditions for farmers and the quality and availability and affordability of maize to consumers.

Recent survey evidence from Nigeria and Ethiopia suggests rapid growth in cereal value chains and significant private sector investment in trucking, warehousing, and trade (Box 4.1). Over the 12-year period from 2000 to 2012, the number of wholesale grain traders in Ethiopia increased by 150% and these private traders purchased 65,000 new trucks. Increased competition plus exploding use of cell phones led to a 50% fall in transport costs over a decade (Minten, Stifel, & Tamru, 2014). These examples suggest that African cereal markets have thickened considerably in recent decades, driven by private sector investments and leading to a “Quiet Revolution” in food marketing similar to that occurring in Asia in prior decades (Reardon et al., 2019).

4.3.2 Traditional wholesale markets

Traditional wholesale markets serve as the focal point of most African food marketing systems. Typically, local governments designate market locations and times of operation. Government typically provides the basic market infrastructure, licenses traders, and (theoretically, at least) provides inspectors to monitor weights and measures, prices and food safety (Battersby & Waterston, 2019).

Box 4.1: Maize traders and third-party logistics services in Nigeria

Nigerian urban maize traders source from farms and other traders, assemble bulk, and transport or buy transport services. Around 75% of Nigeria's 160 million people depend on maize traders for their maize consumption, and many depend on them indirectly for their fish and chicken consumption. The fish and chicken are grown on feed composed mainly of maize brought to mills by traders.

A recent detailed survey of urban maize traders in five states in the country describes the structure and operation of this important supply chain (Liverpool-Tasie, Reardon et al., 2017). The survey was conducted in north and south Nigeria. This was crucial because the north is the main source of maize and both south and north are major consumers of the crop. The sample covered about 1,500 traders in the states and the cities with the main "feed the city" maize markets — Ibadan in the south and Jos, Kaduna, Kano, and Katsina in the north. This involved listing every one of the 7,701 traders in around 70 wholesale markets and then selecting the sample of 1,500. The work was painstaking because: 1) there was no official list from which to sample; and 2) surveying traders is far more difficult than farmer surveys because they are more mobile.

Several surprising findings came out of this survey:

- *Maize supply chains are very long, providing market integration over a vast area.* A total of 85% of the maize volume of all the traders in the large sample is sourced by traders from the northern "maize basket". Of the southern traders, 80% buy maize from the north. The northern trader makes the sale to the southern trader in the northern wholesale markets, and then the southern trader brings it 1,000 km to the south via third party logistic services (3PLS)!
- *Traders report easy access to logistics services via a very active third-party logistics services (3PLS) market for trucking and warehouse rental.* Only 4% of the traders own trucks. The rest rely on the 3PLS trucking services market. Half (50%) the produce goes by trailer trucks (the share is 13% in Ethiopia). Traders "comingle" their product in big trucks. Generally, only 24% of the traders store maize; all of them are in the north; and the storage is only for a few weeks. Nearly no southern trader owns a warehouse, but a third rent. In the north, 10% own warehouses, 15% rent, and 40% of the maize that is stored is in rented warehouses.
- *Urban traders are "de-fragmenting" supply chains: most buy direct from farmers and cut out the extra step in the chain of field brokers.* About 50–60% of the traders in the north source directly (using 3PLS) from farmers. Just under two-thirds (60%) of south traders buy direct from farmers. (In the north, however, 70% of the volume of the urban traders still comes from field brokers selling to them on commission in the wholesale markets.) This kind of disintermediation is typical of the Quiet Revolution in Asian food value chains as the old fragmented supply chains are restructured by SMEs operating in city wholesale markets (Reardon et al., 2019). This is important because it depicts the consolidation of long-fragmented chains pointing to trends that can make food commerce more efficient.
- *The trader segment has become fairly concentrated.* This segment has a 65% Gini coefficient in the north and 85% in the south. Clearly there are investment thresholds, but not for trucks or warehouses, as we show in the next section, there is an active third-party logistic solutions (3PLS) market.

- *Traders rarely gave advances to farmers or field brokers: “tied” output-credit markets have become untied!* The survey found that nearly none of the traders gave fertilizer or seed on credit to farmers. Traders also made extremely few transactions where they paid an advance (credit) to the seller (broker or farmer): 6% of the time in the south, 10% of the time in the north.
- *There is substantial value chain finance between traders and their buyers (other traders, retailers, and mills), but it is mainly short-term transaction cycle credit letting the buyer pay after a week.* The study found that only 10% of northern traders got an advance (credit) from their buyers (such as other traders and retailers). That figure is only 2% in the south. In contrast, traders give credit to their buyers, in general, by letting the buyers pay later. Only 10% of northern traders are paid immediately by their buyers. Thus 90% of their buyers are allowed by the trader to pay later, giving them trader-supplied credit. That figure is but 2% for southern traders. But the “credit” is not substantial: the traders are paid by their clients within a week so it is just a revolving cycle.
- *Most of the traders are wholesalers (take possession) not brokers (work only on commission).* The traders are thus shouldering risk in the value chain.
- *Traders make big investments and move important volumes of maize, and each links many farmers to markets.* Domestic urban maize traders are substantial medium businesses in the main maize production zone. The survey found that an average urban maize trader in the north handled 700 tons in the high season and 450 in the low season. Each linked on average 600 farmers to the market! Southern traders were seven times smaller.
- *Only 5% of traders’ transactions are on contracts.* The other 95% is in spot market relations. Most of the contracted amount is with feed and flour mills.
- *Nearly all the maize is shipped bagged and labeled. Thus, it is traceable, at least partially.*
- *Traders and their truckers waste little maize!* Much less than 1% of the maize is lost/wasted in the 1,000-km supply chain.
- *Traders complained of poor road conditions, uneven energy access, and congested wholesale markets.*

In sum:

- The maize trader segment of the supply chain in Nigeria is no longer traditional, but not yet “modern”, in the sense that modern implies high concentration and large firms.
- The maize supply chain is run by dynamic SME traders supported by developed 3PLS markets for trucking and warehousing. The middle is not missing!
- The story told here is similar to what is happening in Asia, breaking the myth that Africa is “extremely far behind” Asia in these changes.
- Yet these traders and 3PLS firms are facing constraints. Thus, donors and governments have an agenda to help them develop.

Management of the markets is generally handled jointly by trader associations and municipal authorities, with governing boards of private and public representatives setting operational rules and fee structures governing market access (see Chapter 6, this volume).

Where these wholesale markets work well, marketing margins remain low, benefitting both urban consumers and farmers. In contrast, where excessive congestion, pollution, poor sanitation, resulting food losses, and corruption drive up marketing margins, both consumers and farmers lose out. Reform and upgrading of urban wholesale markets, thus, remain a constant companion of Africa's rapidly growing urban food systems (see Smit, 2019).

The rapid expansion of Africa's cities has placed extreme pressure on food wholesale markets in many of these cities. Growing traffic congestion triggers traffic jams and long waits for both farmers and traders. As quantities required by growing urban populations leapfrog past the physical capacity of existing wholesale markets, urban planners and market traders must contemplate physical expansions, identification of new sites, upgrading of existing facilities and various sorts of management reform. Consider the example of Zambia where rapidly growing demand for fresh fruits and vegetables has attracted the entry of over 190,000 new small and medium-scale farms over the past decade. The ensuing capacity constraints at the country's major urban wholesale markets have, in turn, triggered a series of reform efforts to

improve urban wholesale market infrastructure and market governance (see Box 4.2).

4.3.3 Supermarket supply systems and small-scale farmers

Supermarket procurement systems require large-scale, timely deliveries of products that conform to private quality standards. Because small farms typically cannot meet these requirements, they are often excluded as direct suppliers to supermarkets. Data from Kenya's local supermarket chain, Uchumi, confirm that small farms account for only 10% to 15% of total produce purchases, while medium and large farms account for 45% to 65% of supplies (Table 4.3).

In places where large and efficient wholesale markets exist, supermarkets are inclined to work with them to source commodities, at least in the early stages of market penetration (Reardon, 2007). As a result, public investments in wholesale market infrastructure, management, sanitation, and traffic control can help prolong small-scale farmer access to supermarkets, via effective aggregation and grading in well-run wholesale markets.

Elsewhere, in places where fragmented, poorly coordinated traditional markets exist, many supermarkets establish their own wholesale procurement offices early on to work directly with specialized suppliers. Where the urban wholesale markets fall short — on quality, reliability, or standards — supermarkets set up dedicated buyers procurement systems instead, and these normally bypass small farms.

Table 4.3. Changing procurement sources in Kenya's Uchumi supermarket (percent of total supply)

Supplier	Vegetables			Fresh fruits		
	1997	2003	2008	1997	2003	2008
Small farms	13	10	15	5	10	10
Medium-sized farms	10	25	30	10	10	10
Large farms	5	15	35	0	15	35
Traditional brokers/wholesalers	70	45	10	70	40	10
Imports	2	5	10	15	25	35
Total	100	100	100	100	100	100

Source: Reardon (2007)

Increasingly, supermarket chains are shifting from use of traditional wholesalers to dedicated wholesalers as procurement agents. Supermarkets sometimes buy directly from farmers or other food producers, and sometimes buy via wholesalers. Often specialized wholesalers emerge within

the wholesale market and grow to focus on the supermarket channel and sometimes are subsequently acquired by supermarket chains to make them an in-house profit center. An example is Freshmark, starting as a separate company and then acquired by the Shoprite chain

Box 4.2. Commercial responses by farmers supplying growing urban horticultural markets in Zambia

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Urban horticultural markets in Zambia have grown rapidly in recent decades, attracting commercial responses from farmers of all sizes. Our team of researchers at the Indaba Agricultural Policy Research Institute (IAPRI) has investigated the trajectories of successful horticulture producers using nationally representative farm household survey data supplemented by structured life-history interviews with 90 successful commercial producers in three parts of Zambia. These investigations aimed to identify the resource requirements, management strategies, and public goods that enable smallholder farmers to successfully access these expanding commercial opportunities.

Horticultural markets offer lucrative but risky opportunities for farmers who can successfully transition to commercial production of these high-value, perishable crops. Since 2007, the share of small and medium-scale farmers growing horticulture products for sale has nearly doubled, increasing from 18% to 30% (Table B4.1). In absolute numbers, this means that an additional 192,000 small and medium farmers have entered Zambia's rapidly growing commercial horticultural markets.

Unlike cotton farmers, who receive inputs on credit each season from the ginning companies, or maize farmers, who receive substantial input subsidies from the Farmer Input Support Program (FISP) and price support from Zambia's Food Reserve Agency, horticulture farmers must self-finance for input purchases and marketing costs. Heavy disease pressure during the rainy season

Table B4.1. Characteristics of cash crop production and marketing in Zambia, 2007 and 2018

	Percent of small and medium farms					
	Maize		Cotton		Horticulture	
Farm category	2007	2018	2007	2018	2007	2018
All farms						
Growers	76	86	9	8	38	80
Sellers	26	41	9	8	18	30
Sales distribution among growing households						
Top half of sales	3	3	20	15	1	1
Bottom half of sales	36	45	80	80	46	37
Growers with no sales	62	52	0	5	53	62
Total growers	100	100	100	100	100	100

Sources: Chapoto et al. (2013); RALS (2019)

necessitates application of fungicides and insecticides; farmers also invest in dry season irrigation equipment. As a result, horticulture farmers face purchased input costs and output values 2 to 10 times higher than producers of other cash crops (Table B4.2).

Our research has identified several common characteristics of the small and medium-scale farmers who succeed in becoming regular commercial suppliers to urban markets. First is geographic proximity of their farms to urban centers, major transport corridors, and reliable water supplies. Financial discipline is likewise essential, both for self-financing heavy input costs and maintaining sufficient savings to absorb periodic losses of highly perishable produce. Typical growers start small. With modest initial savings, they finance inputs for very small starter plots. Though many fail, successful farmers accumulate savings and increase their scale over time. The top sellers farm roughly 3 times as much area and earn per hectare revenue 4 to 10 times greater than low-volume sellers (Table B4.3).

To manage risk, growers adjust their product mix over time, as they gain experience. Successful farmers start with the least expensive and least perishable products, such as rape and cabbage. Although many stumble and drop out, those who succeed with these starter crops graduate over time to higher cost, more perishable but more profitable crops such as tomatoes. The elite producers earn between half and three-quarters of their sales revenue from tomatoes, while the less skilled farmers focus on less demanding crops such as rape, cabbage and other vegetables (Table B4.4).

Most horticulture farmers sell their produce through urban wholesale markets such as Lusaka's Soweto Market and Kitwe's Chisokone Market which provide the key transaction points through which commercial smallholders access growing urban markets. In these wholesale markets, a network of private brokers control access and facilitate farmer offloading in return for a commission. City councils and marketer cooperatives manage the urban wholesale markets, although disputes over market fees and access have erupted periodically.

Table B4.2. Crop values and input costs

Farm categories	Input costs (\$/ha)	Output value (\$/ha)
maize		
Top 50% of sales	261	625
Bottom 50% of sales	202	382
Cotton		
Top 50% of sales	28	1,012
Bottom 50% of sales	27	526
Horticulture		
Rape (kale)	400	1,600
Tomato, from seeds	1,600	7,000
Tomato, hybrid seedlings	4,400	14,000

Sources: Chapoto et al. (2013); RALS (2019)

Table B4.3. Scale and productivity differences among Zambian horticulture farmers

Horticulture farmer categories	Area planted (ha)		Sales value (USD/ha)	
	2007	2018	2007	2018
Top half of sales	0.6	0.8	6,974	10,571
Bottom of sales	0.2	0.3	683	2,812
Growers with no sales	0.0	0.0	79	-
Total horticulture growers	0.1	0.1	731	2,924

Source: Chapoto et al. (2013); RALS (2019)

Table B4. 4. Shifting product mix among low and high-volume horticultural farmers

	Distribution of the value of horticultural sales by product											
	Tomato		Rape		Cababge		Other vegetables		Fruits		Total	
Category of horticulture farmers	2007	2018	2007	2018	2007	2018	2007	2018	2007	2018	2007	2018
Top half of sales	0.74	0.52	0.09	0.10	0.03	0.04	0.06	0.31	0.08	0.03	1.00	1.00
Bottom half of sales	0.34	0.35	0.29	0.27	0.12	0.10	0.15	0.15	0.10	0.12	1.00	1.00
Total horticulture sales	0.54	0.42	0.19	0.20	0.07	0.08	0.11	0.21	0.09	0.09	1.00	1.00

Sources: Chapoto et al. (2013); RALS (2019)

Urban wholesale markets supply necessary public goods that require public support. Though conditions vary across locations and over time, Zambia’s wholesale produce markets generally provide modest infrastructure, limited sanitation, and uneven traffic control which, together, impose unwanted losses on farmers, particularly during the rainy season. Intermittent discussions between market traders, city governments, town planners, and occasional donors aim to help find feasible, affordable ways of improving the market organization, sanitation, and infrastructure required to facilitate continued rapid growth of urban horticultural markets.

IAPRI’s work over many years has generated evidence to show that smallholder farmers in Zambia, as is the case in the rest of the world, who grow and sell horticultural produce earn more income and are more likely to move out of poverty than cereal growers. Yet, only 30% of small and medium farmers in Zambia grow horticultural crops for sale, though this has increased over the past decade from 18% to 30%.

Evidence has shown that one of the most constraining factors to smallholder farmer participation in these lucrative chains has been lack of proper and well-functioning fresh produce wholesale markets as the existing ones such as Soweto Market in Lusaka hinder full participation due to their “law of the jungle and survival of the fittest nature” of conducting business coupled with poor hard and soft market infrastructure. Through stakeholder consultation meetings and various outreach activities, the key stakeholders have realized that fresh produce wholesale markets with modern infrastructure and modernized systems needed to be developed outside the realm of local authorities and led by the private sector. Development of one such market started in 2019 on an 11-hectare piece of land in the Lusaka South Multi Facility Economic Zone. The Zambia Fresh Lusaka Market is designed to be part of a larger food hub concept, fresh produce market, and retail shopping area offering complimentary fresh, frozen, and dried food products and services and will trade under the mantra “Farmers First”.

(Weatherspoon & Reardon, 2003). The specialized, dedicated wholesalers serve as the chains' agents, meeting their volume and quality requirements. These specialized wholesalers reduce transaction costs and enforce private standards on behalf of the supermarkets. In most instances, these exigencies exclude small-scale farmers.

4.4. Policy implications

When conditions are ripe, SME traders and logistics firms proliferate quickly and intensely invest, meeting demand. Governments and donors (nor their non-governmental organization partners) do not need to set up warehouses and trading stations or return to the days where government enterprises undertook marketing. Firms are undertaking transactions with their own working capital. Where they can meet demand, they accumulate savings and invest and grow. Traders and logistic firms are buying and upgrading, and servicing equipment, offering services where the economics make sense, where the constraints are not too great.

Governments and donors, therefore, need to focus on enabling the Quiet Revolution already launched by the private sector. Policy makers, therefore, need to identify constraints, and relieve them.

Traders and truckers complain about several constraints:

1. Degraded and congested wholesale markets.
Investing in wholesale market infrastructure

should be the number one priority, especially in secondary/tertiary cities and rural towns close to farms. This was the strategy taken by China in the 1990s and was fundamental to their food system success (Huang et al., 2007).

2. Poor road conditions: Investing in improving roads is a second recommendation of this chapter.
3. Corruption in governance of roads and its transaction costs: We join many calls in the debate for control of such corruption.
4. The high cost of energy and uneven access to fuel: This is a crucial constraint that requires public investment in fuel delivery infrastructure as well as policies that reduce the cost of fuel and electricity that will benefit the trader and logistics segments.
5. Knowledge and training of traders and truckers to minimize food safety problems, such as aflatoxin (Liverpool-Tasie et al., 2017): This constraint is developing over time and calls for training of traders at wholesale markets in handling of maize for that purpose, for example.
6. Ease of import of equipment and vehicles: Nearly all the trucks and cooling equipment in Africa are imported, a situation that is unlikely to change in the short to medium term. Therefore policies should make it easier and more affordable to import equipment and vehicles.

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5 Food safety and public health implications of growing urban food markets

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Key Messages

- 1 Currently, Africa suffers from the highest per capita rate of foodborne illnesses in the world.
- 2 The riskiest foods from a health perspective are animal-source foods, fruits, and fresh vegetables. Consumption of all these is growing rapidly in African cities.
- 3 Food products sold in formal markets and retail outlets are not necessarily safer than those sold in informal markets.
- 4 Improvements in urban food safety will require intentioned investments in domestic market infrastructure and improved awareness of the shared responsibility to provide safe food by regulators and value chain actors.

5.1 Introduction

This chapter discusses the food safety and public health implications of urban food markets in low and middle-income countries (LMIC), with an emphasis on Africa. It starts with an overview of urban food markets, and the urban agriculture systems which often supply them, distinguishing between the dominant traditional and informal markets, and the formal system, or modern supply, which is emerging. It discusses food safety and its public health implications in urbanizing cities. The rest of the chapter focuses on food safety

as foodborne diseases are a huge concern to consumers, and a primary cause of health burden, with sickness, fatalities and economic impact both at household and national level.

In our discussion on food safety, we first present the evidence on the health burden of foodborne disease, where the best estimates have compared its magnitude to that of malaria, tuberculosis, or HIV/AIDS. We provide evidence on high risk foods and value chains. The subsequent sections focus on risk management, and the shared responsibility between the public and private sectors, and civil society. We provide an overview of responsible agencies and regulatory systems including their enforcement capacity, and draw attention to the important international and regional initiatives such as International Health Regulations (IHR), Africa Food Safety Index (AFSI), and the Partnership for Aflatoxin Control in Africa (PACA); which focus partly

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or completely on food safety. Private sector responses are discussed including private standards and public-private campaigns with an example of a campaign to address fraudulent pesticides. Finally, civil society and consumer responses are discussed. The last section focuses on policy and practical implications. The policy section sets out practical recommendations on how decision-makers can better provide support to improving food safety.

5.2 Health implications of rapidly growing urban food markets in Africa

Growing urban populations need food, and this implies growth in urban food markets, which are extensively described in other chapters of this report. Urban food markets include both the traditional, or informal, (that is, open markets and unregulated businesses) and modern, or the formal, markets (that is, regulated modern distribution and retail). In Africa, overall, the proportion of food sold through modern formal retail (supermarkets and convenience chain stores) is still low, even in cities (Kelly, 2018; Roesel & Grace, 2015). Informal or traditional food markets sell both perishables and dry products, and often both live and slaughtered animals. Many do comply, or try to comply, with government regulations when these are available and known, but most lack effective food safety management systems and are unregistered (hence the term informal). Urban consumers get their products from many different outlets and the food value chains are often complex (Kiambi et al., 2018). Formal retail is relatively more important for less perishable foods (for example, cereals, sugar, oil, and ultra-processed food) and informal markets for fresh, perishable foods (such as animal-source food, fruit and vegetables). Contrary to widespread belief, while the formal sector is characterized by modern infrastructure, often using –at times suboptimally— cold chain, the food in formal markets is not necessarily always safer than that sold in informal markets. In Kenya, for example, milk from both formal and informal outlets is frequently contaminated with aflatoxin M1 (Lindahl et al., 2018) and may have similar hygienic quality (Alonso et al., 2018). Similar findings

have been reported in other countries and other products (Eltholth et al., 2018; Fahrion et al., 2013).

Urbanization, and growing incomes and middle classes, drive increased consumption of animal-source foods (Rae, 1998) and fresh vegetables. Growing urban food markets face challenges in providing safe and affordable animal-source food and other perishables to the growing population. This problem is greatly accentuated in LMIC by high rates of population growth and urbanization. This, coupled with a lack of infrastructure and cold chain, poses problems for transportation of perishables from rural areas and is the catalyst for the growing urban and peri-urban agriculture.

Thebo et al. (2014) estimated that there are 67.4 million hectares of urban croplands globally, which comprises 5.9% of all cropped areas and is more common in LMIC. The high value of urban land entails a need to focus urban agriculture on high value products such as vegetables and animal-source foods. There are also advantages to producing these highly perishable foods close to the source of consumption. For example, in Nairobi, milk produced in urban and peri-urban settings is consumed locally, and frequently farmers sell it at farm gate directly to customers (Alarcon et al., 2017). Farm-gate sales are cheap, and customers trust the quality of the milk obtained directly from farmers. However, as urban markets grow the number of sources and intermediary actors' increase, reducing traceability and increasing the risks for adulteration or contamination along the way.

Global estimates show that one out of seven people lived in slum areas in 2011 (Bloom, 2011), and with the growing urbanization, the numbers of urban poor also increases. Poor urban inhabitants often need to produce their own food, including keeping livestock, to ensure food and nutrition security of their families. People in low-income urban settings are more likely to keep livestock. The most comprehensive study on urban livestock keeping found, across 12 LMIC countries, 22–26% of the urban poor kept livestock, and 8–12% of the well-off (Pica-Ciamarra et al., 2011). In Dar es Salaam, Tanzania, Jacobi et al. (2000) reported that urban

agriculture was characterized by vegetable gardens, dairy production, and poultry keeping.

Urban agriculture and livestock keeping have historically been present in cities, and while it is encouraged in some, the trend has generally been towards adding more and more regulatory restrictions to this practice (Grace et al., 2015). While it poses many public health challenges, urban agriculture also offers several benefits including production of nutritious foods which are sold informally in small amounts the poor consumers can afford. Urban agriculture and petty retail allow women to combine remunerative activities with household work and child minding. But the gender implications may vary between countries and food systems (Ishagi et al., 2002; Jacobi et al., 2000).

Urban agriculture presents several other challenges besides public health, including use of public urban space to graze animals illegally; allowing animals to scavenge even at dumpsites which exposes them to the risk of infections with pathogens (Lindahl & Magnusson, 2020); and potential contamination of fresh fruits, vegetables, and urban water sources by bacterial pathogens and pesticide residues from peri-urban farming. In addition, there is an influx of live animals from rural areas for slaughter into the cities where the lucrative markets are. With no or poor traceability in most African countries (Mutua et al., 2018; 2019), there is a grave concern for all kinds of transmissible zoonotic diseases.

Wet markets supply fresh products to millions of customers in tropical and subtropical regions every day. However, when live animals are present there is a risk of zoonotic viruses jumping from vertebrate animals to humans, as has been reported for corona viruses (CoV) and avian influenza viruses (AIV), with outbreaks arising from wet markets (Webster, 2004; Zhou et al., 2016). In 2002–2003, an outbreak of severe acute respiratory syndrome (SARS), caused by the corona virus named SARS-CoV, was linked to a live animal market in China (Webster, 2004), and the COVID-19 pandemic, caused by SARS-CoV-2 (De Wit et al., 2016; Guarner, 2020; Hilgenfeld & Peiris, 2013), is also believed to have started in a market selling live animals in China (Li et al., 2020).

In addition to the spread of zoonotic infections through sale of live animals, there is a risk that the water gathered around wet markets due to poor drainage may facilitate the breeding of mosquitoes, which can transfer disease to humans. Equally, peri-domestic wildlife, such as rodents, pigeons attracted to open markets, can carry diseases. The low hygienic conditions and the presence of live animals and those butchered on site facilitate the survival of several foodborne bacteria like *Campylobacter* spp, *Salmonella* spp, and *Escherichia* spp (Kogan et al., 2019), in addition to parasites like *Giardia* or *Cryptosporidium*. Inadequate knowledge, lack of inspections and biosafety routines in many places (Nyokabi et al., 2018) contribute to a higher presence of health hazards in the food supply chains, and ultimately in the foods sold in these markets.

5.3 Food safety risk assessment: Scope and scale of the problem

Food safety has currently received heightened attention in high-income countries. This is partly because many other major infectious diseases have been controlled, increasing the prominence of foodborne diseases (FBD), which had not been declining in recent years (Grace, 2015). Moreover, better detection capacities that allow FBD outbreaks to be traced back to origin can result in enormous media attention and commercial costs for the private industry. Several industrialized countries have developed methods that allow assessment of the health burden of FBD (that is, number of ill people, number of years lost to death or disability). These studies have found that FBD is common (affecting around one in three to one in eight people a year globally) and results in a high burden of disease in terms of morbidity and mortality (Gkogka et al., 2011; Kirk et al., 2014; Mangen et al., 2015; Scallan et al., 2011; Tam et al., 2014; Thomas et al., 2013). Moreover, the well-known gastrointestinal symptoms of FBD (vomiting and diarrhea) have been found to be responsible for only about half the total health burden. An equally

high, but less obvious burden came from rare but serious effects of FBD such as septicemia, paralysis, stillbirth, and meningitis.

However, historically, FBD has not been a major priority in LMIC or international development. There are several reasons for this: assessing FBD in developing countries is not easy because many infectious diseases never receive a definitive diagnosis, that is, one which identifies the pathogen responsible. Even if a diagnosis is given, it is often difficult to determine if the source of the infection was food, water, other people, animals, or the environment. Partly as a result, few developing countries have official reporting requirements for FBD as a specific category, although certain diseases transmitted through food might be notifiable (for example, salmonellosis, cholera and brucellosis). It is a truism that what is not measured is rarely managed. Thus, the first estimation of the global burden of FBD led to a radical change in understanding the importance of FBD. This was conducted by the Foodborne disease Epidemiology Reference Group (FERG) under the aegis of the World Health Organization (WHO) (Havelaar et al., 2015). Around 98% of this burden falls on LMICs and children under 5 years of age are disproportionately affected.

The FERG study covered 31 foodborne hazards, for which there was sufficient data to develop global estimates. Globally, these 31 foodborne hazards caused an estimated 600 million foodborne illnesses and 420,000 deaths in 2010. The combined burden of death and disability was estimated at 33 million Disability Adjusted Life Years (DALY⁷); children under 5 years old bore 40% of this burden, a disproportionate share as they represent 9% of the global population. The greatest per capita burden fell on African subregions, followed by Asian and Eastern Mediterranean subregions. Table 5.1 shows the number of illnesses, deaths, and DALYs for the African region attributable to

these 31 foodborne hazards. The same study more recently presented estimates on the burden of FBD associated with four heavy metals in 2015. This suggested an additional global burden of more than 1 million illnesses, over 56,000 deaths, and more than 9 million DALYs (Gibb et al., 2015). This global burden is comparable to that due to malaria and tuberculosis (estimated at 40 million and 66 million DALYs respectively in 2010) but food safety has received less global attention to combat it, than these two diseases.

The information on attribution, that is, the foods responsible for most FBD, is less solid, although progress is being made. It appears that animal-source food (for example, meat, milk, eggs, and fish) and vegetables are the riskiest products (Grace, 2015). FBD risks from animal-source foods, are mainly food parasites (*Cryptosporidium* species from dairy products, *Toxoplasma gondii* spp. from meats, dairy, and eggs) and bacterial pathogens (*Brucella* species, *Campylobacter* species, non-typhoidal *Salmonella* species, and Shiga-toxin producing *E. coli*). Fresh fruits and vegetables FBD risks are similarly also from food parasites (*Ascarid* spp, *Cryptosporidium* spp, *Entamoeba histolytica*, *Giardia* spp, and *Toxoplasma gondii*) and bacterial pathogens (*Campylobacter* spp, non-typhoidal *Salmonella* spp, and Shiga toxin producing *E. coli*) (Hoffmann et al., 2017). Especially for animal-source food, consumption tends to be higher in cities than in rural areas. Moreover, urbanization is associated with an increase in consumption of food eaten outside the household, including food sold in the street or from the roadside or in small, informal or formal restaurants (also known as eateries, hotels, or pubs depending on country).

Several studies have found high levels of contamination in these foods (Rane, 2011). A study by the World Bank (Jaffee et al., 2019) predicts that as countries develop and urbanize there will be an increase in FBD (Figure 5.1) and its associated economic burden.

⁷ DALYs are a summary measure of health developed by the Global Burden of Disease study. One DALY represents a lost year of healthy life.

Table 5.1. Median rates of foodborne illnesses, deaths and disability adjusted life years (DALYs) per 100,000 persons, with 95% uncertainty intervals (UI), 2010, African region

	Illness (95% UI)	Deaths (95% UI)	DALY (95% UI)
Diarrheal diseases	9,830 (3,969–21,567)	9 (3–14)	687 (369–1,106)
<i>Campylobacter</i> species	2,221 (335–8,482)	0.8 (0.4–1)	70 (41–112)
<i>Cryptosporidium</i> species	205 (35–813)	0.2 (0.04–0.4)	13 (3–37)
<i>Entamoeba histolytica</i>	79,698–3,868)	0.05 (0.009–0.4)	5 (0.9–39)
Enteropathogenic <i>E. coli</i>	454 (125–1,215)	2 (0.6–3)	140 (50–282)
Enterotoxigenic <i>E. coli</i>	982 (312–2,480)	1 (0.6–3)	109 (46–216)
<i>Giardia</i> spp	809 (172–2,574)	0 (0–0)	0.8 (0.2–3)
Norovirus	1,749 (491–5,060)	1 (0.3–3)	81 (24–185)
Non-typhoidal <i>Salmonella enterica</i>	896 (175–2,994)	1 (0.5–2)	89 (42–147)
<i>Shigella</i> spp	523 (45–2,265)	0.3 (0.1–2)	43 (8–124)
Shiga toxin producing <i>E. coli</i>	5 (2–9)	0 (0–0.002)	0.05 (0.02–0.1)
<i>Vibrio cholera</i>	43 (35–101)	2 (0.5–4)	112 (35–252)
Invasive enteric diseases	425 (156–976)	5 (3–8)	307 (106–508)
<i>Brucella</i> spp	3 (0.4–110)	0.02 (0.002–0.5)	1 (0.1–34)
Hepatitis A virus	232 (60–643)	0.5 (0.1–1)	23 (7–60)
<i>Listeria monocytogenes</i>	30 (19–42)	0.1 (0–2)	1 (0–21)
<i>Mycobacterium bovis</i>	7 (4–9)	0.5 (0.3–0.7)	30 (19–42)
Invasive non-typhoidal <i>Salmonella enterica</i>	25 (12–37)	3 (1–5)	169 (71–306)
<i>Salmonella enterica paratyphi A</i>	25 (5–73)	0.2(0.04–0.5)	12 (3–36)
<i>Salmonella enterica typhi</i>	108 (24–317)	0.7 (0.2–2)	53 (12–155)
Total	10,304 (4,279–322,108)	14 (8–21)	1,001 (562–1,543)

Source: WHO (2015).

In addition to microbiological risks, there are concerns about chemicals, both those naturally derived such as mycotoxins, and substances created by humans, including antibiotics and pesticides. Risks from pesticide residues in urban horticulture is a result of producers applying high levels of pesticides — primarily fungicides and insecticides — to control a wide array of pests. Studies from West Africa indicate that many of the pesticides most commonly applied to horticultural crops are either unregistered or registered for cotton or other non-horticultural crops (Ntow et al., 2006; Tano et al., 2011). Active ingredients most frequently detected in horticultural products vary across study sites, as do exposure and risk levels (Donkor et al., 2016; Ingenbleek et al., 2019; Yao, et al. 2016)

Pesticide residues have also been reported in a range of other popular urban foods, including fish, milk, and cereals. Many of these studies focus on organochlorine pesticide residues remaining in the environment and food system from prior decades of public health campaigns against malaria and concentrated spraying to control pests among major cash crops with highly toxic and now-outlawed classes of persistent organic pollutants (POPs). Indeed, a series of West African studies has detected organochlorines such as DDT and endosulfan in fish, milk, and other dairy products, and even in human breast milk (Kouadio et al., 2014; Maïga et al., 2018; Manda et al., 2017; Traore et al., 2003; 2008). Although most studies detect pesticide levels below international maximum residue limits

(MRLs), the risk of bioaccumulation nonetheless makes them potential long-term health hazards (Kouadio et al., 2014).

Together, these strands of evidence suggest that FBD is likely to be a worsening problem as urban markets grow in Africa and other LMIC.

5.4 Food safety risk management: Public sector response

5.4.1 Responsible agencies

An effective food control system provides assurances to governments and the public that the available food is safe for human consumption and can be sold or traded. It therefore aims to: 1) protect public health by reducing FDB risks; 2) protect consumers from fraudulent practices including mislabeling and adulteration; and 3) support economic development by ensuring quality and safety of products sold and or traded (FAO, 2006). Components of a national food control system include an enabling legislative framework, a food control management system, food inspection, laboratories for monitoring of hazards

and surveillance, and information, education, communication and training of value chain operators and consumers. A comprehensive food safety policy should set this out (Jaffee et al., 2019). In many African countries the food safety mandate is spread over many agencies and authorities, with unclear responsibilities leading to inaction and duplication. In most cases countries lack effective national coordination mechanisms (Box 5.1).

Food law encompasses legislations that empower governments to regulate safety in food supply chains. A food law should specify the ministries and agencies to be involved in its implementation. It is also important that the law delineates the boundaries of the actors to enable effective coordination, curing of redundancies, and effective resource utilization. Because of the lack of clarity, the stakeholders at the various nodes of the value chain are unsure of which regulation to comply with, and this may reduce their confidence in the implementing agencies. Food businesses are also exposed to multiple taxation, often without observable benefits, which may discourage compliance (reluctance to pay taxes translates to lost revenue, which negatively affects the economy).

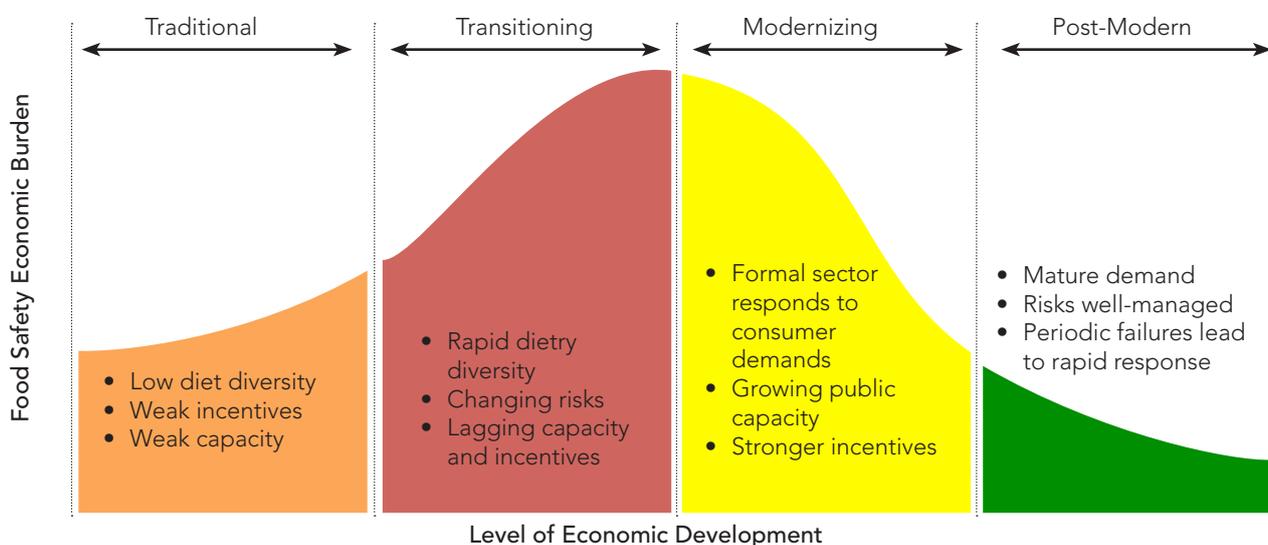


Figure 5.1: Food safety life cycle

Source: Jaffee et al. (2019)

Box 5.1: Examples of food safety regulatory systems in selected countries in Africa

In Kenya, food safety laws are scattered across 23 different agencies. The Ministry of Health leads food safety work in the country. The Ministry of Agriculture, Livestock and Fisheries, the Kenya National Bureau of Standards, the National Cereals and Produce Board, the Kenya Dairy Board, the Kenya Meat Commission, and other agencies and authorities have additional food control roles. The country has no overarching coordinating authority or agency. A Foods and Drugs Authority Bill (2019) is pending in Parliament. When approved, the legislation will allow for establishment of a Kenya Food and Drugs Authority (which is suggested to regulate and monitor the manufacture, processing, distribution, warehousing, wholesale, and importation of food in the country). The National Food and Nutrition Security policy considers food safety a crucial component in attainment of food security and nutrition.

Similarly, Tanzania has several laws on food. Food regulation is now implemented by the Tanzania Bureau of Standards (after a 2019 amendment of the Tanzania Food, Drugs and Cosmetics Act (Cap 219). through the Finance Act, No. 8 of 2019, which saw this role removed from the Tanzania Food and Drugs Authority and the name changed to Tanzania Medicines and Medical Device Authority (<https://www.tmda.go.tz>). The Tanzania Bureau of Standards is under the Ministry of Industry, Trade and Investment, and several other ministries and agencies have functions on food control.

In Uganda, ministries with food safety control include the ministries of Health, Agriculture, Animal Industry and Fisheries, and Trade and Industry; the Uganda National Bureau of Standards (UNBS) develops and enforces food standards.

In contrast, Mali has a national food safety coordination system, the National Agency for Food Safety (ANSSA), established by Law No. 03-043/PRM of 30 December 2003.

These weaknesses leave consumers less protected and contribute to the persistence of foodborne illnesses. Developing an integrated food control system is key if countries are to deliver on health outcomes associated with safe foods.

Regional bodies have also been instrumental in promoting the food safety agenda in LMIC. The Southern Africa Development Community (SADC) provided guidelines for regulation of food safety, and called for establishment of a multi-sectoral forum which would develop national food safety management policies and strategies (SADC, 2011). The East African Community (EAC) has a Food and Nutrition security strategy and action plan to guide its partner states on how to achieve the elusive food and nutritional security. The 69th Health Ministers Conference of East, Central and Southern Africa Health Community held in February 2020

(ECSA, 2020. p. 7) resolved to embrace “innovative approaches towards achieving food safety and improving quality of life”. This is a significant realization that food safety is key to attainment of health outcomes.

5.4.2 Standards

Food may never be completely safe, but standards are set to reduce the risks as much as possible. Standards are meant to protect consumers and support public health. The Codex Alimentarius Commission (CAC) sets standards for food (FAO/WHO, 2003a), to ensure quality and safety and promote fair trade, but countries or regional bodies frequently set stricter standards. A total of 188 countries are members of CAC, about 50 of which are African states. At the country level, specific agencies are mandated to develop food standards and ensure their compliance. Countries and or

regional bodies are encouraged to use Codex guidelines to develop standards that are suitable for their context. They should align well with agreements on Sanitary and Phytosanitary and Technical Barriers to Trade agreements (FAO/WHO, 2003b; Oloo, Lanoi, & Oniang'o, 2018). Unachievable standards are inappropriate when used in local contexts where food systems are more diverse and informal markets dominate (FAO, 2005). They can impact negatively on local livelihoods. Although standards should be based on science, many low-income countries not only lack expertise in risk assessment but also have no data to support its application (Oloo et al., 2018). Regional harmonization of standards is occurring across regional economic communities (RECs) to promote mutual recognition and ensure access to safe food eaten and traded across the continent (Mensah et al., 2012).

5.4.3 Monitoring capacity

Monitoring is an important element of food control systems (Mwamakamba et al., 2012). It can be in the form of training of inspectors, checks to ensure their numbers are adequate, and providing guidelines that are regularly updated to include emerging and re-emerging public health threats. Proper monitoring is hindered by factors such as the low status accorded to food safety officers, inadequate logistical support, and poor governance in the food sector (Oloo et al., 2018). Quantitative risk assessment is an expensive undertaking that many developing countries may not afford to support, however, qualitative participatory risk assessment (Grace et al, 2008) is a simple and cost-effective risk assessment alternative. Although they dominate in Africa, informal markets are not adequately covered in current food regulations (Oloo et al., 2018) and will continue to pose a regulation challenge, perhaps until the need to provide incentives to encourage compliance is realized.

Laboratories are needed for testing of foods, and they need to provide quality analyses. In most cases, public laboratories are poorly equipped (Oloo et al., 2018) and cannot function as expected. In addition, only a few of these are accredited. It is important that national governments provide

resources to address these needs (capacity building, purchase of state-of-the-art food testing equipment, surveillance resources, etc.). Surveillance data are needed to assess burden and inform priorities for resource allocation. Surveillance is important for early detection of impending FBD outbreaks, identification of source foods, and through traceability and recall systems, removal of the offending food from the distribution chain. The system should be integrated to allow sharing of data across relevant departments. Many countries in the region lack coordinated surveillance systems (Mensah et al., 2012).

5.4.4 Regional and international food safety initiatives

The Comprehensive Africa Agriculture Development Programme (CAADP) was established in 2003 as a NEPAD program with a focus on agricultural growth, but became an African Union (AU) program in 2014 to monitor progress towards attainment of Africa's Malabo declaration targets (AU, 2014). The Africa Food Safety Index (AFSI) is an indicator, introduced in 2019 in CAADP, developed to monitor progress on food safety. It is the 44th indicator that CAADP tracks every 2 years through the Biennial Review (BR) process (<https://au.int/sw/node/36659>). The index has three components: Food Safety Systems Index (FSSI); Food Safety Health Index (FSHI); and Food Safety Trade Index (FSTI).

The AFSI scores, based on the data submitted by countries, reflect the food safety status in the country. The scores provide countries with an opportunity to evaluate their performance and plan how to improve it, while promoting collaboration between agencies and authorities on provision of the data used in the index computation.

Other initiatives, not related to human health, that provide indirect information on food safety include:

- World Organisation for Animal Health (OIE) tool for the evaluation of the performance of veterinary services (<http://www.oie.int/support-to-oie-members/pvs-evaluations/oie-pvs-tool/>)

- The OIE World Animal Health Information System (http://www.oie.int/wahis_2/public/wahid.php/Wahidhome/Home), which reports on animal diseases including those that may be classified as foodborne hazards (for example, trichinellosis and brucellosis)
- The WHO International Health Regulations have one section that covers food safety implementation capacities (https://www.who.int/gho/ihr/monitoring/food_safety/en/)
- The World Bank Enabling the Business of Agriculture tool (<http://eba.worldbank.org>)
- Information from the Food and Agriculture Organization of the United Nations (FAO) on use of agricultural chemicals (<http://www.fao.org/faostat/en/#data/RP>)

5.5 Formal sector actions

In high-income countries, risk management has experienced a crucial shift, from being government led to co-regulation, that is, placing the responsibility for the safety of foods on the food operators along the supply chain. In these settings, food safety is largely governed by the private sector, while government enforces the legal framework under which such private sector is expected to operate. In LMIC, most responsibility still falls with the government. However, private industry has a growing role in the monitoring and assurance of food safety. This is particularly evident in urbanizing centers, where food supply chains reliant on modern infrastructure (for example, supermarkets, refrigerated transportation, etc.) are proliferating rapidly to meet the food demand of the growing middle and upper classes. Food safety systems in such formal value chains are adopting the principles and approaches used in industrialized countries (for example, HACCP), albeit with certain challenges related to process and accountability.

Even though there may be regulations, these may not be adhered to. Pesticide residues and use of fraudulent formulations are a great concern for food safety, especially in the fruits and fresh vegetables value chains. Most of the banned pesticides are persistent organophosphates. They are persistent and affect non-target organisms, mainly bees. Because countries have no harmonized list of banned chemical substances, such chemicals are still on the market either fraudulently or introduced into a country through illegal cross-border trade. Haggblade (2019) found that most glyphosphate pesticide on the market had 10% less active ingredient than the approved level, indicating continued use of such would have a great impact on the emergence of pests resistant to pesticides. A multi-agency campaign to minimize fraudulent pesticide by industry stakeholders perceptibly estimated that these efforts have reduced fraudulent pesticides on sale in Côte d'Ivoire, from 40% to 20% (Box 5.2).

Private standards are increasingly common in the formal sector, especially by large multinational companies aiming at meeting the consumer safety demands of the target export markets. They are set by private firms to facilitate supply chain management in international food markets (FAO, 2010) and are benchmarked with Codex Alimentarius. A strong Food Safety Management Control System is put in place to ensure production of safe products with the application of the Hazard Analysis and Critical Control Points (HACCP) and offer various levels of certification (basic, intermediate, and advanced). Besides the fact that ISO 22000:2005 (revised in 2018) is not a mandatory food safety standard in many developing countries, only a few companies manage to get certification (Oloo et al., 2018) because the costs are prohibitive for small-scale operators. The ability of countries to comply with Codex standards and guidelines greatly increases their ability to also comply with private standards (FAO, 2010).

Box 5.2: Industry efforts to combat fraudulent pesticides in West Africa

By Bama Yao

Unregistered and counterfeit pesticides account for roughly one-third of pesticides sold in West Africa, although regulatory enforcement and fraud levels vary significantly across the subregion. In part, the high levels of fraud arise because pesticide markets have grown far faster than regulatory staffing in recent decades. Conflicting registration decisions by national regulators have also contributed to cross-border smuggling of banned and unregistered pesticide products. Ghana's regulators, for example, have authorized both paraquat and atrazine for sale domestically, while the neighboring countries of Côte d'Ivoire and Burkina Faso have banned both active substances. As a result, a lively smuggling trade takes place delivering these banned substances from Ghana into surrounding countries (Figure B5.1).

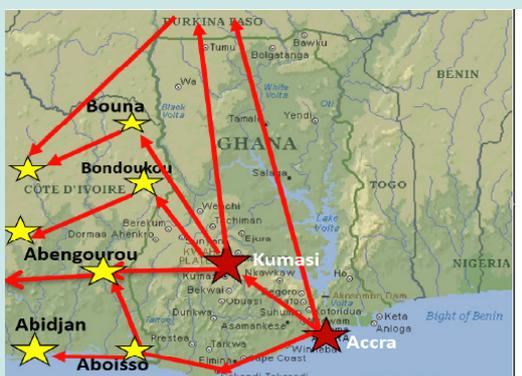


Figure B5.1. Major pesticide smuggling routes in West Africa

Source: Yao (2018)

Trade in fraudulent pesticides poses serious problems for farmers and for legally licensed traders. Farmers complain about adulteration and the difficulties they face in identifying good quality inputs. Independent laboratory testing of the region's most commonly sold pesticide, glyphosate, suggests that fraudulent generic brands contain 10% less active substance than registered brands as well as more variable dosages (Haggblade et al., 2019). Licensed traders who comply with regulatory testing requirements face higher costs than the smugglers. As a result of their lower cost structures, fraudulent pesticides take market share from legally registered brands.

In the face of limited public regulatory resources, private sector stakeholders have begun to spearhead anti-fraud campaigns directly. CropLife Africa Middle East, a trade association of major pesticide producers and distributors, has led a series of media outreach, stakeholder training, and legislative lobbying campaigns to combat fraudulent pesticides in key markets across West Africa. From 2013 to 2015, CropLife and allied industry groups convened a series of cross-border training workshops involving pesticide regulators as well as customs and police officials in Ghana and in Côte d'Ivoire. Many other training workshops target farmers and other end-users with the aim of providing knowledge and tools for identifying, and thus avoiding, the use of fraudulent pesticides.

The private sector has, likewise, worked with national regulators to enact legislative reform in Côte d'Ivoire leading to the formation of district pesticide committees through which local authorities, farmer groups, traders, agriculture ministries, and customs and police officials share information on fraudulent pesticides and target enforcement efforts. Together, industry stakeholders estimate that these efforts have reduced fraudulent pesticides on sale in Côte d'Ivoire perceptibly, from 40% to 20%.

Taken together, these private sector initiatives suggest that, while the private sector can serve as an effective catalyst for improving regulatory enforcement, ultimate success requires working closely with relevant public authorities.

Alongside this, several global and local initiatives aim to support private industry in its journey to providing safer foods. Among these are the standard setting and certifying bodies that ensure products to be placed in the market shelves conform to the standard. Consumer trust in these certificates as a gold standard remains low (Eden et al., 2008). However, the growth and uptake of voluntary certification schemes (for example, GLOBAL GAP) offer a path for private industry to take ownership of food safety processes in the supply chains that serve urbanizing markets. The level of uptake of such voluntary schemes within the formal sector has been high, and is growing annually (Oya et al., 2017). Often, such schemes require investments in local laboratory and testing capacity to ensure these laboratory-based certifications are implemented locally, and at scale. The level of knowledge about such certificates and their value to certify the safety of foods remains low among small and medium enterprises and consumers in LMIC. Engaging consumers and creating demand for such certification is key for private industry to have clear economic incentives to invest in them.

Beside these specific initiatives, several international initiatives seek to promote food safety in LMIC. One of the earliest and most prominent initiatives at African level is the Partnership for Aflatoxin Control in Africa (PACA), launched in 2012. At a global level, initiatives such as the Global Food Safety Partnership (GFSP) of the World Bank and the private Consumer Goods Forum of the Global Food Safety Initiative (GFSI) are essential to catalyze international will and know-how to support transitioning economies and developing countries to continue improving the safety control systems in their agricultural value chains.

5.6 Informal sector responses

While urbanizing African cities are gradually seeing more modern supermarkets and infrastructure-heavy supply chains, a large portion of those living in these cities will continue to be low-income earners who depend on the food sold through informal channels to meet their nutritional demands for the foreseeable future. These channels have an essential role to play in food security and nutrition, local economy, and for

livelihoods, especially for poor families (Alonso and Dominguez-Salas 2019). Assuring food safety in such informal chains comes with its own challenges. The lack of formal registration of businesses and absence of traceability processes, among others, mean inspection and certification are difficult to implement. Self-regulation can be implemented by a business which sets out and monitors its own processes and standards. Group regulation can add more accountability and transparency. It is primarily through the establishment of business groups that determine the “standards” and keep members accountable to comply. The horticulture subsector is a good example where best practices of the smallholder farmers are benchmarked with one another for accountability (Ouma, 2010). The dairy sector in Kenya recognizes that the stakeholders’ organization is key to providing services, including self-regulation (GoK, 2013). The success of such self-regulation mechanisms is variable, with issues around governance often leading to failures accentuated by creation of cartels that promote protectionism, lack of competitiveness, and of legal floor to enforce the regulations (Kiambi et al., 2020; Swire, 1997).

Assuring the safety of the foods in the informal markets requires a combination of approaches. First, countries need to invest in capacity development efforts to equip food business operators along the supply chains with the know-how about food hygiene, food handling, and food safety. Capacity development must facilitate actors’ access to equipment and facilities (credit, water, sanitation, and incentives for change). Capacity building needs to show that a focus on food safety leads to better business (happier customers, greater revenues, and legitimization from government). Governments need to develop the legal framework that allows for the progressive inclusion of businesses operating in informal channels, support their progressive upgrading towards formalization, and continue to provide the livelihood and nutritional security service they now provide. A demand for safer food must be created among consumers, who feel powerless, or helpless, and have little knowledge about how to demand and access safe food.

5.7 Policy implications

The food safety policy environment in Africa's growing urban food markets will be influenced by several factors. First, globalization and reducing trade restrictions have had a large impact on formulation of food safety policies in Africa. The continent exports fresh foods to world markets. To access these markets, African agriculture had to attain pertinent global food standards. This transformation meant that African urban markets benefitted from accessing food of high quality and safety. Globalization and free market policies have the potential to act as catalysts for food safety changes in the rural food value chains that supply urban markets. What is the future of these two global trends amidst the rising return to nationalism and protectionist policies that are now creeping into the global scene? The potential for COVID-induced departure from globalization and free-market policies risks slowing down the impetus for food safety transformation of African rural food systems that serve urban markets.

Second, the African population (1.34 billion; UN, 2020) is growing fast, at the rate of 2.7% (World Bank, 2020), and is expected to double by 2050 (Suzuki, 2019). This large population is expected to bring with it challenges of food security as the urban population grows to about 50% of the African population by 2035 and of the sub-Saharan population by 2050 (World Bank, 2010). This includes challenges to assure the safety of products sold, and often produced, in urban and peri-urban settings. **A rethink of policies and strategies to deliver adequate and safe food to urban markets is imperative.**

Third, the African Union in 2003 (AU, 2003) committed its membership to increase the budget to agriculture to about 10% of the budgetary allocation to stimulate agricultural production to meet the demands of its growing population. In 2014 at Malabo (AU, 2014), the Union decreed to support a tripling of intra Africa trade in foods by 2025. Food safety is one factor that can undermine human health and development, and the competitiveness of African agriculture to attain

the AU goals and the UN sustainable development goals (SDG). **To achieve these great milestones, African countries need to prioritize food safety and adopt food safety friendly policies.**

Under CAADP, each country is expected to select five value chains to focus on for the biennial peer review. The CAADP lists about 15 such value chains. In cognizance of the permutations of the value chains across the continent, different hazards that affect these value chains, and cultural food preparation practices, it is clear that there cannot be a "one size fits all" ranking of the most important value chain and hazards when it comes to food safety. **Countries therefore need to prioritize the hazards and value chains that are important to them.** Many countries are prioritizing similar value chains and lessons learned in improving the value chains in terms of food safety in one country could be shared to help other countries benefit and pull together. **For this to happen, greater importance and resources should be placed on the biennial peer review process and evaluation of the performance.**

The prioritization should be based on sound scientific evidence that takes into account the prevalence, route of transmission, the severity of disease (acute, chronic, and disability), population at risk, and cultural practices. This will help calculate risk and identify the risky nodes and actors that can be targeted for surveillance and management. Food-borne diseases caused by failure to adopt food safety measures cost Africa about US\$16.7 billion annually (Jaffee et al., 2019). In view of the budgetary constraints experienced by African governments, the focus should be directed to the value chain that results in the greatest loss or burden (productivity and treatment costs). **Bacterial, viral, parasitic, and chemical FBD hazards will continue to top the list of food safety concerns until continental, regional and national attention is shifted to food safety as a matter of priority in a manner akin to National Security, considering its health, economic, and social impacts.**

Prevention of FBD is considered the best practice to avoid outbreaks that are costly to the industry and a country's human health. This can only be achieved

if there exists a surveillance system and a chain of laboratories that are fit for the purpose. Once the surveillance and laboratory results are available, the management needs to assess the risk and institute appropriate management options that are science evidenced. The COVID-19 pandemic has brought to the fore the lack of preparedness in the surveillance and laboratory capacity of many countries in Africa. **The countries need to commit to invest in human resources, laboratory infrastructure, and personnel capacity that would support the surveillance and laboratory analysis.**

As mentioned above, the burden of food safety compares to that of malaria, tuberculosis, and HIV. The complexity of foods and hazards (WHO, 2019) intertwined in diverse economic, social, and cultural contexts, clearly means **transdisciplinary approaches (for example, One Health)⁸ are more amenable to addressing hazards at the human, animal, and environmental interface because prevailing health needs are beyond the skills and competence of any one discipline.**

Consumers of goods in high-income countries play a great role in demand for safer foods. In LMIC, consumer demands (the “pull” from consumers for safer food) are not yet a great force in improving food safety. To increase consumer participation in demanding safe food, the prerequisite is to increase their awareness of food safety. In many countries, this role is left to civil society that is not well resourced or organized. The COVID-19

pandemic has galvanized a sustained campaign by governments to increase population awareness on the risks posed by the coronavirus. Increase in government participation in food safety issues is critical. **Promulgation of policies and regulations that set up a government-funded food safety lobby umbrella with the mandate of creating consumer awareness is pivotal (the “push” from regulations towards food safety).**

Actors along value chains should be able to demonstrate that the food they sell is safe. Food value chains that serve urban markets are mainly informal and applicable food safety standards are non-existent. With the participation of the value chain actors, **food standards bodies should develop codes of practice and checklists that would be adopted as food safety measures by informal market actors. Audits of compliance to these measures would be recognized by regulators and incentives (branding) awarded to promote adherence to good practices.**

If such a multifaceted strategy is adopted, a graded improvement scheme of informal markets could be achieved. This would help change the image of regulators, who are nowadays seen as revenue collectors and out to punish non-compliance, to a body working with actors to facilitate compliance. **This change also requires creating awareness of the regulators, as well as of business operators, on the shared responsibility to provide safe food by the regulators and value chain actors.**

⁸ One health is the principle that human health, animal health, and environmental health are interlinked and that collaboration between the sectors is necessary. One health addresses food safety issues with an approach of designing and implementing programs, policies, legislation, and research in which multiple stakeholders communicate and collaborate to achieve better public health outcomes.

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6 The role of African cities in strengthening food systems

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Key messages

- 1 Cities house vital parts of African food systems, including its major markets, food storage and distribution centers, agroprocessing and food preparation businesses, food information and innovation hubs, food waste management, farm input supply depots and distribution centers, laboratory facilities, and scientific capacity necessary for monitoring food safety, food security and public health.
- 2 Urban policy makers and city managers take decisions that affect the opportunities, well-being and sustainability of rural areas and the people based in them, and vice versa. As a result, the urban–rural continuum offers a series of important entry points for strengthening the performance of the food systems feeding African cities.
- 3 Spatially, the food systems feeding African cities span rural agricultural zones, small towns, large metropolitan centers and peri-urban spillovers. As a result, territorial models of planning, zoning, infrastructure provision, policy making and governance become central to the effective functioning African food systems.
- 4 Currently, a broad array of private sector groups, national ministries, district and municipal governments take actions — often uncoordinated and independently — that influence the efficiency, inclusiveness and safety of Africa’s food systems.
- 5 Improved efficiency, inclusiveness, and safety of urban food systems will require governance models that harmonize and coordinate actions among relevant private sector stakeholders, civil society groups and various levels of government along the urban–rural continuum.

6.1 Urbanization and its impacts on Africa’s food systems

6.1.1 Trends in urbanization

By 2050, two-thirds of the world’s population is projected to be urbanized with 2.5 billion additional people born in or migrating to urban areas. Africa and Asia currently have 40% and 47% respectively

of their populations living in urban areas and are expected to account for 90% of this growth. Just three countries — China, India, and Nigeria — are projected to add 900 million urban residents by 2050 (UNDESA, 2014).

Rural areas, in contrast, house approximately 40% of the developing world’s population (IFAD, 2020a, b). Some 80% of women, children, and men living in rural areas live in extreme poverty, and they mostly depend on small-scale, family farms for their income

¹ UN-Habitat and UN Standing Committee on Nutrition

and sustenance (IFAD, 2020a). Although rural populations have grown more slowly than those in urban areas (see Chapter 1, Figure 1.1, this volume), a continuous densification is taking place in rural Africa with a population forecast of over 1 billion inhabitants in rural Africa by 2050 (UN, 2018).

Africa has experienced rapid urbanization over the past two decades, a trend that is expected to continue. The urban population nearly doubled in the 20 years between 1995 and 2015. Over the ensuing 20 years, it is expected to double again (UN, 2018). Urbanization trends include a range of city sizes, from megacities — such as Kinshasa and Lagos in Democratic Republic of Congo (DRC) and Nigeria respectively — with populations of more than 10 million, to secondary cities such as Tema in Ghana and Ndola in Zambia, with populations of less than 750,000 people (Roberts, 2014).

Small and intermediate cities account for over half of all urban populations in Africa. Roughly one-third of urban inhabitants live in cities under 100,000 in population, while over 50% live in cities under 500,000 (Chapter 2, this volume). As a result, urbanization in Africa has been characterized by lower densities than in other regions. This is particularly evident in West Africa, a region that has experienced one of the most dispersed urbanization trends in Africa. While 60% of West Africa's urban population lives in secondary cities, often near large cities and along transport corridors, only 40% live in major metropolitan areas (Hollinger & Staatz, 2015). This dispersed pattern of urbanization provides multiple benefits. Migration to small towns, for example, is associated with more integrated and inclusive economic growth and development (Agergaard, Tacoli, Steel, & Ørtenblad, 2019). Similarly, a recent study from Tanzania found that migration to secondary towns or the rural non-farm economy has a much larger effect on poverty reduction than does migration to metropolitan areas (World Bank Group, 2015).

6.1.2 Opportunities in urban food markets

Growing urban food demand provides the single largest market opportunity available to African farmers (FAO, 2017; Figure 8.1). In most cases,

rural and peri-urban farmers supply the bulk of food demanded by Africa's large and growing urban areas (Satterthwaite, McGranahan, & Tacoli, 2010). Though most of the urban population in Africa is engaged in non-farm activities, some cities encourage urban farming, which Africa's generally low urban population densities allow (FAO, 2012). Looking forward, many urban food system specialists believe that "short supply chains" though which urban and peri-urban farmers supply urban consumers will offer significant benefits in terms of food quality, reliability of supply, and sustainability of food production (FAO, 2018b).

Changing urban diets similarly provide opportunities for farmers to increase and diversify food production. The fastest growing urban food markets include high-value proteins such as dairy, poultry and meat as well as fresh fruits and vegetables (see Chapter 2, this volume). These high-value perishables offer high returns that can improve farmers' livelihoods and contribute to solving malnutrition problems. Recent evidence from Ethiopia, for example, documents the rapid recent emergence of peri-urban horticulture production serving the Addis Ababa market (Minten, Mohammed, & Tamru, 2020). The perishability of these high-value foods encourages production in close proximity to urban markets, fueling the growth of short supply chains feeding African cities.

Small and medium agribusiness firms across Africa have become increasingly active in storage, processing, transport, and wholesale and retail activities catering to urban markets (FAO, 2017). As incomes rise, demand for processed and non-perishable foods increases sharply (Chapter 2, this volume). This, in turn, presents an opportunity for expansion of employment in food manufacturing, processing, storage, distribution, retailing, and food preparation. The resulting "hidden middle" of small and medium agroprocessing and distribution firms in Africa have proven very dynamic over the past decade, accounting for most of the food volumes processed and sold in urban food markets (Chapter 4, this volume; Reardon. et. al, 2019).

A majority of the urban poor (and middle class) rely on the informal economy for accessible and affordable food. A study conducted in Nairobi informal settlements identified multiple benefits of urban informal food markets, including affordability, availability in small quantities, and accessibility (Githiri, Ngugi, Njoroge, & Silverdick, 2016).

6.1.3 Challenges for nutrition, food security and the environment

Nutritional challenges emerge prominently as urbanization and a growing middle class lead to a dietary transition toward increased consumption of highly-processed and animal-based foods which, in turn, lead to serious public health challenges in the form of overweight and obesity. Although growing urban demand for processed and packaged foods presents an opportunity for the expansion of food manufacturing and in processing, it may also constitute a risk to health and nutrition if these products contain high levels of sugars, salt, and fats. Several African countries (WHO Regional Office for Africa, 2017) already face the double burden of malnutrition characterized by the coexistence of undernutrition with overweight and obesity. Although the double burden of malnutrition typically emerges as countries achieve middle-income status, evidence is growing that the problem is now emerging at earlier stages of countries' economic development. African countries need to formulate policies that address food security and nutrition that aim to solve the double burden of malnutrition. These policies need to ensure a stable supply of a diverse range of foods, especially vegetables, fruits, pulses, and whole grains.

Urban poverty, food insecurity and malnutrition are increasing in Africa as urban populations grow, similar to other regions globally (FAO, 2018c; Ravallion, Chen & Sangraula, 2007). The urban poor face severe food insecurity and nutrition challenges, including poor access to nutritious food, inadequate employment, poor housing, inadequate social protection, and inadequate water, sanitation, and hygiene facilities. Urban policies have focused on challenges that include inadequate

housing, poor infrastructure and public services, environmental degradation due to urban sprawl, and increased food insecurity.

Informal food markets, likewise, face multiple challenges ranging from city government "harassment" and aggressive control, to inadequate services (water, sanitation, and waste management), and a lack of cold storage and market infrastructure Resnick et al., 2020; Smit, 2019). Inadequate municipal services in urban food markets, in turn, have implications for food safety.

Rapid urbanization and population growth are expected to put increasing pressure on the global food system as agricultural production comes under increased threat from environmental degradation, urban sprawl, climate change, extreme weather conditions, and limited arable land for the expansion of agricultural production. Moreover, as urbanization has accelerated in some developing countries, so has the triple burden of malnutrition which is defined as the coexistence of hunger (insufficient caloric intake to meet dietary energy requirements), undernutrition (prolonged inadequate intake of macro and micronutrients), overweight and obesity.

COVID-19 has compounded pressures on urban food systems already confronting multiple stressors, including growing urban populations, climate change, and growing environmental pressures (see Box 6.1). COVID-induced dislocations in business activity, employment, labor mobility, and global food supply chains have aggravated already severe pressures on the urban poor. Disruptions in long-distance food supply systems have triggered shortages and price spikes as well as the closure of school feeding programs for vulnerable groups. At the same time, unskilled labor earnings have diminished in the face of economic shutdowns and slowdowns. As a result, the urban poor find themselves squeezed between rising food prices and declining purchasing power. These converging forces require that cities become more effective managers of both food access and food supply.

Box 6.1: Impact of COVID-19 on the agri-food system

COVID-19 has provoked a crisis in food systems globally. Responses to the COVID-19 public health risk have ranged from restrictions on movement to complete lockdowns which, in turn, affect food security in various ways. The closure of food processing activities, food markets, restaurants, and shops has limited access and availability of food to both urban and rural dwellers, restricting what, when, where, and at what prices food can be found. In many African locations, food vendors have neither the skills nor knowledge, or digital infrastructure to transition to online platforms and so instead they closed down, limiting food access and availability for urban consumers depending on such outlets. In some places, like Nigeria, partial lockdowns limited intercity and inter-region movements of people and food as well as scheduled opening of markets (GAIN, 2020). The closure of international borders also led to limited availability of some commodities where countries rely on imports, and consequent price hikes.

Among farmers, market closure in urban areas led to temporary constriction in demand for supplies from rural producers, resulting in losses for farmers of perishable goods. As schools closed down, restaurants and hotels closed, restricted social gatherings and tourism contributed to less demand of bulk farm produce. There were also instances of seasonal laborers engaged in food production moving back to their homes. Limited movements during lockdown in some contexts may have resulted in shortage of fertilizers, veterinary medicines, and other inputs that could affect agricultural production (FAO, 2020c, d, e).

Urban consumers, likewise, faced serious repercussions. Widespread business closures, including urban wholesale markets on which informal vendors depend, have led to widespread compression in the purchasing power of vulnerable groups. Global projections suggest that COVID-19 may cause an additional 83 to 132 million to become newly hungry (FAO, 2020a).

As countries open up in the medium and long term, the risk remains of permanent damage to vulnerable groups due to COVID-induced asset liquidation and consequent reductions in production and financial assets as most livelihoods have been lost with unemployment rates rising. Food-dependent countries will struggle to find the resources required to restock and rebuild.

Looking forward, a variety of strategies are being proposed to ensure that future pandemics do not disrupt the food sector so severely. These include creation of more inclusive food value chains, strengthening the link between consumers and local producers and smallholders and markets, and reducing the digital divide between rural and urban areas. Data are also key, including local data from civil society among others in addressing food-related concerns in both urban and rural areas. Harnessing and strengthening small and intermediate cities will help build more resilient food systems through provision of relevant infrastructural services. Integrated spatial approaches will prove key in devising appropriate strategies to insulate vulnerable groups from future pandemic shocks. COVID-19, like any other pandemic, cannot be addressed in isolation as it affects not only the health sector, but also the economy, social and other very essential sectors as food and nutrition (UN-Habitat, 2020).

6.1.4 Emerging policy responses

Rapid urbanization in Africa has been critical in shaping the food systems and nutrition trends that are expected to continue in coming decades. City managers and food policy makers therefore have turned increasing attention to consideration of how the expansion of cities is managed and how this influences agricultural supply chains, trends, and local and global food security.

Acute pressures on vulnerable groups in urban areas from COVID-19 have exacerbated longstanding problems of food access, nutritional quality, and food system sustainability and motivated accelerated commitments to improving urban food system management and outcomes. Short-term individual responses — reverse migration as urban residents abandon precarious informal jobs in crowded, polluted, and increasingly expensive cities to return to their areas of origin — are helping to motivate and catalyze structural reforms in urban food system management involving a more balanced approach to territorial development as well as increased justification for investing in rural infrastructure, storage, processing, cold chains, digital access, and support services for small-scale producers. Broadly, these ongoing reform efforts have centered around strengthening the capacity of municipal governments to manage urban food systems more effectively and coordinating cross-jurisdictional policy through territorial models of food system governance.

Over the past decade, a series of international initiatives have emerged to address the multi-faceted challenges facing urban food systems. The New Urban Agenda (NUA), agreed to by 167 national governments across the world at the Habitat III Summit in 2016 includes over 17 paragraphs addressing the need for integrated urban and rural development, food security, and nutrition (UN-Habitat, 2016). Agenda 2030 similarly requires national governments to consider economic, social and environmental dimensions of development in a more integrated way which this paper seeks to achieve.

The UN Decade of Action on Nutrition, launched in the same year as NUA, has complemented

these efforts through a parallel focus on nutrition. One recent review of urban food planning efforts summarizes the emerging confluence of interests as follows: “National governments across the globe have now acknowledged, through the New Urban Agenda, the importance of local governments in achieving the 2030 Agenda, with food and good nutrition being a core element. Local governments, often with limited resources, have started to promote food system planning as an important entry point to ensuring improved well-being through availability of and access to proper nutrition for all city dwellers.” (Cabannes & Marocchino, 2018, p. v).

An international coalition of mayors has led local government efforts to improve urban food systems through the Milan Urban Food Policy Pact (MUFPP), signed in Milan in 2015. This Pact supports urban food system governance reforms through direct exchange and learning among cities (FAO, 2018b). To date, mayors from nearly 30 African countries have signed the pact (MUFPP, 2020b). As part of their thematic, professional exchanges, the MUFPP organizers have held a series of four regional mayoral consultations in Africa over the past four years (MUFPP, 2020a).

To support the various urban food system reform initiatives currently under way, a network of international agencies, foundations, urban planners, and think tanks have launched a series of urban food planning and governance reform initiatives and best-practice guides. A closely related set of conceptual frameworks has emerged from this growing interest, associated field testing and experimentation, including: urban–rural linkages (URL), city region food systems (CRFS), and territorial perspectives for development (TP4D) summarized in a series of recent reviews best-practice guides (Blay-Palmer et al., 2018; Hussein & Suttie, 2016; TP4D, 2019; UN-Habitat, 2018).

In general, most of the emerging efforts conclude that interventions are needed to strengthen urban–rural linkages through improving policy coordination, investing in short value chains, leveraging food systems support role of small and

intermediate cities, making critical investments (such as infrastructure, basic services, and technology) in non-urban areas, and promoting social protection measures that simultaneously contribute to reducing hunger and malnutrition for rural and urban dwellers while providing markets for peri-urban and rural farmers (Suttie & Hussein, 2015; UN-Habitat, 2018). Given that urban food supply chains span wide geographic space and multiple administrative jurisdictions, a territorial perspective proves necessary to capture relevant food system linkages and to coordinate policy and public investment decisions across a given set of value chains serving Africa’s urban food markets (TP4D, 2019). The remainder of this chapter unpacks and explores these themes in detail.

6.2 Urban–Rural Linkages

6.2.1 Overview

Urban–rural linkages include the physical, economic, social, and political connections that link the most remote rural areas to the densest megacities, often through nearby smaller towns and cities surrounded by rural areas. These connections allow for flows of goods, people, social relations, information, finance, and waste across space, and also promote links between sectors such as

agriculture, water, sanitation, health, education, infrastructure, environment, markets, and manufacturing (Figure 6.1).

Strong urban–rural linkages help propel economic development and improvements in food security and nutrition (Hussein & Suttie, 2016). Conversely, poorly articulated linkages, which may result from inadequate investment in farm to market road, cold chains, and distribution systems, prove to be an all too frequent reality that leads to inadvertent, implicit policies favoring international food imports over domestic “proximate” markets (FAO, 2020f). Strengthening these urban–rural linkages leads to better coordination among all the actors in the food system, incorporating other interrelated sectors such as transportation and infrastructural services, potentially enhancing inclusivity and effectiveness (Table 6.1). For example, when urban–rural linkages are strengthened farmers sell most of their produce in urban markets. In African contexts laborers commute or migrate to nearby towns for seasonal work, but continue to have strong ties with their family networks in rural areas through remittances. Urban businesses are key beneficiaries of the increased demand for food and non-food items and from the supply of agricultural raw materials from rural areas while also providing technical assistance,

SUPPLY CHAIN ACTIVITIES AND ACTORS



RURAL - URBAN CONTINUUM



FOOD - SECTOR FLOWS



Figure 6.1. Food from small farms to big cities

Source: Adapted from von Braun (2007)

credit, and consumer demand information to smallholder in rural areas. Due to the mutual dependency of urban and rural areas, weak or broken links between rural and urban spaces cause both to suffer.

Over the past decade, a broad consensus has emerged underscoring the importance of URL in food system planning and governance (Cabannes and Marocchino, 2018; FAO, 2018b, MUFPP, 2018; Suttie & Hussein 2015; CFS 2017; TP4D, 2019;

Table 6.1. Key actors supplying public goods necessary for Africa's growing agri-food system

Value chain stages	Private collective action	City and local governments	National governments	Africa regional organizations
Urban Consumption	Advocacy groups monitoring food prices, poverty and undernutrition	Public health administration	<ul style="list-style-type: none"> • Trade policy • Food safety monitoring, testing, enforcement • Price monitoring services • Public health monitoring 	<ul style="list-style-type: none"> • Common food safety standards • Standardized testing protocols • Regional reference labs
Retail distribution Food environment	Trader organizations (associations, cartels)	<ul style="list-style-type: none"> • Retail market zoning, management, refuse collection • Trader registration • Market tax collection 	<ul style="list-style-type: none"> • Commercial regulation • Road, communication and financial infrastructure • Legal framework for food safety, processing and marketing 	
Trade and processing	Grades and standards	<ul style="list-style-type: none"> • Zoning • Sanitation • Wholesale market infrastructure and management 	<ul style="list-style-type: none"> • Licensing • Regulatory monitoring • National infrastructure investments 	<ul style="list-style-type: none"> • Trade corridors • Regional infrastructure (roads, electricity)
Farming/food production	Farmer organizations (input procurement; extension; output aggregation)	<ul style="list-style-type: none"> • Land allocation • Urban agricultural regulation, monitoring, zoning 	<ul style="list-style-type: none"> • Agricultural extension • Veterinary services 	
Inputs	Anti-fraud campaigns	<ul style="list-style-type: none"> • Water • Electricity 	<ul style="list-style-type: none"> • Regulation • Monitoring • Agricultural research 	<ul style="list-style-type: none"> • Common standards • Joint registration • Standardized testing protocols

Value chain stages	Private collective action	City and local governments	National governments	Africa regional organizations
Food distribution (transportation)	• Farmer groups		• Provision of roads	
Food waste collection and management	Community groups			
Food environment		<ul style="list-style-type: none"> • Food & nutrition education/ awareness raising • Access 		

UN-Habitat, 2018). A growing body of evidence confirms that urbanization is transforming rural landscapes and has major implications for food security, nutrition, and other economic, social, and environmental impacts (Hussein & Suttie, 2016; Losch, Freguin-Gresch, & White, 2012; Minten, Reardon & Chen, 2017; Satterthwaite, 2011; Satterthwaite & Tacoli, 2003; Tacoli & Agergaard, 2017). These impacts of food system change require greater attention from policy makers, practitioners, and researchers. A business-as-usual approach will add further stress to agricultural systems already suffering from low resource allocation for agriculture, environmental degradation, migration of young farmers, and other challenges (FAO, 2020a).

Recognition of these important economic linkages between urban and rural areas has motivated a series of international commitments to strengthen URL. In both the 2030 Agenda for Sustainable Development (SDGs) and the New Urban Agenda (NUA), United Nations Member States have agreed to enact policies that support *integrated urban and territorial planning and development*. Both agreements call for new, inclusive approaches and enhanced synergies between urban and rural communities and spaces — an essential component of the vision of Agenda 2030 to “leave no one behind”.

6.2.2 Why strengthening urban–rural linkages is essential for sustainability and resilience of the food system and improved nutritional outcomes

Given the complexity of the various economic, social, and environmental interactions at play connecting urban and rural spaces, the following discussion focuses on four major benefits of investing in and strengthening urban–rural linkages.

Weak links lead to food system breakdowns

Food systems encompass all the elements (environment and natural resources, flora, fauna, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to food production, processing, distribution, preparation, consumption, and waste, and the impacts of all these activities, including socio-economic and environmental outcomes. Food value chains convey food produced by rural smallholder farmers to urban consumers, that is, rural to urban flows, and in the other direction convey inputs and services from urban areas to rural smallholder farmers, that is, urban to rural flows.

Weak links between urban and rural areas disrupt these food chains, leading to high costs and limited access to inputs such as seeds and fertilizers, greater food loss and waste, collapse of short or proximate food chains, among other negative

impacts. The weakening of links may result from poor transportation, lack of processing, milling, or cold storage infrastructure, lack of electricity poor Internet or telephone connectivity, and limited or no market information. The Nigerian case described in Box 6.2 offers an example of poor value chain linkages for rice which led to increased demand for imported rice affecting actors in the local food system.

Governance across borders is necessary

Urban and rural areas are mutually interconnected but governed by different local administrations in Africa, as in most parts of the world. When food and nutrition-related challenges arise within their boundaries, the local administration in most cases devises solutions that are within their locality without recognizing the potential of strengthening the links with surrounding areas. For example, urban policy makers have, in some contexts, recommended urban agriculture as a means of addressing food insecurity, despite there being little evidence as to how urban agriculture alone could substantially reduce food insecurity and malnutrition (Siegener, Sowerwine, & Acey, 2018). Similarly, rural policy makers frequently fail to consider how rural households and farmers could benefit from connections to urban areas.

Other impacts from a lack of shared governance include natural resources and environment. As urbanization continues with urban sprawl into previously agricultural lands, the resulting peri-urban areas risk degrading environmental resources and, in the case of marshy lowlands, compromising public health. Changes in dietary patterns and rising food demand, likewise, increase pressure on natural resources, for example by land conversion to livestock production in settings without proper drainage and waste removal. In cases such as these, shared governance would assist local urban and rural authorities to deliver integrated solutions that offer win-win outcomes for both urban and rural spaces and communities.

Investment in non-urban infrastructure and small and intermediary cities development is key to improved food security and nutrition

Infrastructure improvements in rural and peri-urban areas — including roads, electricity, Internet access, markets, and other infrastructure — are essential for agricultural development, pro-poor growth, and improved livelihoods. Inadequate rural infrastructure leads to the isolation of communities. Infrastructure investment has the potential of literally paving the way for other

Box 6.2: Nigeria domestic rice value chain

Rice is one of Nigeria's most-consumed staples and the government has prioritized boosting local production of the crop. However, 60% of the rice that is bought in urban areas is imported due to concerns about locally produced rice by consumers which include inconsistency in quality, labelling, and taste. These problems are due to poor vertical integration in the domestic rice value chain in the country. The key activities in the rice value chain are first, post-harvest processing, which includes milling, parboiling, and cleaning. Second is marketing which includes activities such as weighing, bagging, and branding. The fragmented value chain in Nigeria leaves the small and medium-sized rice millers that process 80% of the country's rice with limited skills, little scope to upgrade varieties or technologies, and limited access to services and information. This results in poor quality of the final product characterized by discoloration and presence of stones. There are limited links between the production and consumer preference due to difficulty in tracking the value chain and inconsistencies between rice varieties and labeling of the final product. This has resulted in most urban consumers preferring imported rice — and yet there is enough rice produced locally.

Source: Awotide, Fashogbon, & Awoyemi (2015)

investments improving food security and nutrition such as schools, health, and markets. In contrast, inadequate road infrastructure contributes to poverty and post-harvest food losses along the value chain.

Investment along the urban–rural continuum in small and intermediate towns is vital and strategic (Box 6.3). These rural townships and medium towns serve as intermediary settlements connecting rural areas to urban areas while providing social and economic benefits. Apart from being service delivery nodes for rural producers and linking the rural economy to markets, potentially reducing transaction and transportation costs, small and intermediary cities (SICs) also provide non-farm employment in agroprocessing and other commercial or industrial activities. As a result, investments in small and medium towns typically generate more equitable patterns of growth and enhanced poverty reduction (Christiaensen & Todo, 2014; Christiaensen, DeWeerd, & Todo, 2013).

The economic potential of agriculture is greatly affected by dilapidated transportation systems which contribute to long travel times. Poverty levels increase in the presence of by poor road infrastructure, especially where agriculture is unprofitable and distances to employment are long (Fan & Rao, 2003; Fan, Zhang, & Rao, 2004). In DRC for example, access to markets is the weakest in Africa, raising farm production costs and reducing the scope for profitable trade and non-farm investments.

Diet change affects both urban and rural spaces

Urbanization and higher urban incomes have contributed to broad dietary transition characterized by increased demand for animal-based foods, fats and oils, refined grains, and fruits and vegetables (see Chapter 2, this volume). Production of some of these foods increases pressure on natural resources by the use of inputs like land, water, and energy, and generates more greenhouse gas emissions (FAO, 2020a). The dietary transition should be guided in a way that contributes to sustainable use of natural resources as well as contributes to healthy diets, which are largely based on vegetables, fruits, whole grains, and pulses and contain moderate amounts of animal-source foods. Considering food security and nutrition in urban-rural planning (infrastructure, markets, etc.) would contribute to strengthening the urban–rural linkages and achieving food security. This could be through such actions as: improving transportation between urban and rural spaces and adequate storage/cooling facilities contributing to lower prices of healthy foods such as fruits and vegetables in urban markets. Also, institutional buying for schools, hospitals and other public institutes can contribute, linking rural producers with urban consumers. The procurement of healthy local food can benefit the urban poor who are often limited to cheap, unhealthy and less nutritious dietary options.

Box 6.3: Support to the small and intermediate cities in the Ethiopia Urban Development Policy

Small towns are a key entry point to Ethiopia’s urban policy. The country’s Plan for Accelerated and Sustained Development to End Poverty (2005–2009) prioritized improvement of rural access roads, telecommunication access, and market infrastructure. These are central components of the country’s strategy to maximize synergistic growth for towns and the respective rural areas. Urban centres account for about 50% of purchases of agricultural inputs and up to 75% of agricultural produce sales, underscoring the important role of local market towns. Secondly, over half of household food and non-food spending and the bulk of artisanal product sales, especially by women, takes place in these towns. Proximity to local market towns influences rural economic activities. Better access to these towns through improved roads, had positive impacts on household welfare.

Source: Government of Ethiopia (2005)

6.3. Creating an enabling environment for food systems

6.3.1 Food systems governance² in Africa

Africa is characterized by high urban populations, high urbanization rates, and severe food insecurity levels (FAO, 2020c; IFPRI, 2017). This necessitates a deep examination and understanding of the food system so as to better address the challenge of urban food insecurity and urban poverty. The quality of governance in urban and rural areas affects food system performance and outcomes. From the perspective of the citizenry, performance can be assessed along six dimensions: (i) participation at local levels; (ii) transparency of information; (iii) vertical accountability; (iv) control of corruption; (v) public administrative procedures; and (vi) public service delivery (Acuna-Alfaro, Cuong, Anh, & Tung, 2014).

From the perspective of decision makers in the food system, effective governance translates into interventions in the following key arenas:

- **Public service delivery:** Infrastructure provision such as water, electricity, technology, and roads, are essential for food processing, distribution, consumption, waste management, innovations and storage.
- **Public administrative procedures:** These affect finance and skills support (advice, credit, tax incentives, etc.) for all activities in the food value chain.
- **Vertical accountability and control of corruption:** This could be achieved through legislation, regulations, policies, and plans, as it impacts the whole food value chain.
- **Transparency of information:** Education and raising awareness (both formal and informal)

² Governance entails the interactions and processes between the various actors in the food system; whether government, civil societies, academia, private sector among others. In governance, it is essential to recognize that a wide variety of actors is involved, and their roles should be appreciated (Smit, 2016a).

about nutrition and diet can impact on the types of food that are produced and consumed. Awareness could be about market demands, new products, innovations on various activities in the food chain among others.

Though critical, governance of the food system is also very complex (see Box 6.4). Decisions and outcomes result from the interplay and interaction among a range of different actors with different agenda who shape urban food security in different ways through their impact on food production, distribution, retail, processing, packaging, waste among others. Power in food systems is not distributed evenly, but is instead often concentrated in the hands of a few powerful actors.

Two recent reviews of African food system governance permit the following enumeration of key actors and their sometimes complementary, sometimes competing interests (Smit, 2016b, 2019):

- a) **Local government** often bears the formal responsibility for activities that fundamentally affect urban food systems (such as providing infrastructure, land use planning, regulating trade, and enforcing health regulations) (Raja, Clark, Freedgood, & Hodgson, 2018). Most African countries did not have strong local governments in the colonial or early post-independence eras. However, since the 1980s there was a shift towards decentralization towards improving urban management. Decentralization has often been uneven and partial which has resulted in weak local governments in relation to the assigned roles. Increased decentralization in recent years has also necessitated privatization and partnerships (Nunan & Satterthwaite, 2001; Sardan, 2011). In Nigeria, for example, since the 1990s, public services that were previously administered by local governments (such as health centers, water supply, road repairs, and the management of public facilities and parks) were to a large extent privatized (UN-Habitat, 2008). Privatization of service delivery often disadvantages the urban poor, who are unable to pay for adequate levels of service provision.

- b) **Traditional leaders** who are more accessible than politicians to residents could play a role in the pre-food production stage of land allocation. There are, however, limitations due to widespread corruption and interests in maintaining power and patronage.
- c) **Large private sector organizations** such as multinational food production companies control large amounts of production. However, their actions are often damaging to the smallholder farmers and informal traders who may be automatically kicked out of the system
- d) **Informal business organizations** have a key role at the retail stage, where small-scale food entrepreneurs have a platform for relaying their concerns to government authorities. However, they are limited in that they pay taxes but adequate basic services are not provided. Box 6.5, below, describes in detail the governance of the informal economy in the case of Nigeria.
- e) **Consumer organizations** have a role in creating awareness on nutrition but also safety of the food consumed, thus influencing that which is supplied and produced. A variety of parents groups, school associations, non-governmental organizations (NGOs), public health advocates, and religious associations have become involved in various locations in monitoring junk food, diet quality, human nutritional outcomes, changing cost of a basic food basket, and food security outcomes among vulnerable groups.
- f) **Civil society associations** such as ethnicity-based networks, home-town associations, youth associations, savings groups, and funeral groups, among others play a role in all the aspects of the food system but especially at the retail and consumption levels, including food safety but also waste. Some community groups also could play a role at the food production and processing levels. NGOs could contribute by way of enabling communities to organize and articulate their demands.
- g) **Religious associations** contribute to issues related to humanitarian interventions and food distribution to vulnerable groups. In addition, some engage with the whole food chain to improve food availability and facilitate access by the needy.
- h) **Public goods transport associations** contribute to ensuring that food is distributed between the producers and consumers. Their decisions on prices are mainly negotiated and privatized and in the long run affect the prices of good at the market.
- i) **Farmer organizations** contribute to the support of farmers and more so smallholders towards their accessing markets and other incentives.

6.3.2 Integrated territorial food planning across the urban and rural space

Food and nutrition have previously been considered primarily a rural issue, given the predominance of food production in rural areas and longstanding concerns about rural poverty and hunger. However, the recent past has seen a shift towards explicit acknowledgement of the need to incorporate food and nutrition into urban planning and policy as well (Carbonnes & Marocchino, 2018; FAO, 2019). As urban populations have exploded across Africa, and as urban hunger and malnutrition have become increasingly visible, concerns have mounted across the continent, from local authorities to national governments to international organizations. Previous assumptions that food security solutions required a focus on agriculture have given way over time to the emerging consensus that there is need to consider the whole food system including urban food consumption, peri-urban farming, food processing, distribution, retail, and waste (FAO, 2018b; Hussein & Suttie, 2016; MUFPP, 2018).

A new generation of territorial approaches to urban agricultural and food system planning have emerged over the past decade as a variety of intersecting efforts have converged in a series of recent best-practice guides (TP4D, 2019; UN-

Box 6.4: Contrasting efforts at integrated governance

South Africa, an unsuccessful experience (Termeera, Drimieb, Ingramc, Pereirad, & Whittinghame, 2018)

In South Africa three approaches relevant to the food system were analyzed for integrated governance. The approaches are: the Integrated Food Security Strategy (IFSS) 2002, the South Africa Integrated Nutrition Programme (INP), and the Land Care Programme. Despite attempts to develop more integrated food strategies well-articulated on paper, little success was achieved from these governance approaches (Pereira & Drimie, 2016). This was not a result of inappropriate policies or a lack of knowledge about relevant solutions, but the tensions between the ambitious objectives of the policy programs and the administrative constraints of implementing them. These constraints included weak coordination structures, budget and funding rules that impede collaboration, inadequate human resources, and inflexible administrative procedures which were identified as the most significant contributors to the lack of progress.

Zambia experience: From coherence towards commitment: Changes and challenges in Zambia's nutrition policy environment (Harris, Drimie, Roopnaraine, & Covic, 2017)

An integrated approach was reinforced in Zambia towards eliminating silos in managing nutrition in the country. To assess this, a study was conducted that entailed reviewing the relevant policy frameworks, stakeholder mapping, and soliciting views of actors from the government and different categories of stakeholders. This was conducted between 2011 and 2015 in Mumbwa district as a case study. The coherence of written policy on nutrition in Zambia was found to be strong in 2015 both vertically within nutrition policy and horizontally across sectors. The study found that there were joint multi-sectoral planning activities at the national level taking place, among government ministries and development partners which translated to local levels. The research demonstrated how actions in one district are a product of, but also an input into, changes at the national level. This is an example of how a policy framework may cascade downwards although not yet completely to the community level.

As an outcome, there were positive stories of change discussed in Zambia, specifically a decline in stunting sustained over several years and momentum for nutrition policy processes that built coherence over the years. There has been intra-institutional learning from the experiment in Mumbwa district combined with international best practices. Some of the strengths identified that informed the success of policy coherence on nutrition revolved around: a) policy coherence across sectors; b) political and financial commitment to nutrition; c) cross-sectoral governance; and d) implementation of community experiences in nutrition services.

Other successful experiences are Ethiopia and Nepal which launched multi-sector nutrition plans to address food security and nutrition issues. In the context of these two countries the proxies to the success were committed leadership, effective coordination across sectors, and sustained engagement across a wide range of stakeholders (Kennedy et al., 2016).

Habitat, 2019). Work on URL, city region food systems (CRFS), various spatial development initiatives and territorial programs for development (TP4D) and the role of small towns in urban and rural development have together contributed a large body of empirical evidence and operational experience from which newly integrated best-practices have emerged (Blay-Palmer et al., 2018; FAO, 2017; Hussein & Suttie, 2016; Losch & Magrin, 2013; Suttie & Hussein, 2015; Tacoli & Agergaard, 2017; TP4D, 2019; UN-Habitat, 2019).

The aim of urban food planning includes creating and promoting healthy conditions and environments for all the people, to make right use of the land for the right purpose by zoning, to ensure orderly development, avoid encroachment of one zone over the other, social, economic, cultural and recreational facilities, , and preserving the aesthetics in the design of all elements of town or city plan (Carbonnes & Marocchino, 2018).

The planning process comprises four major phases: diagnosis, formulation, implementation, and monitoring and evaluation (M&E). Diagnosis includes a series of related tasks: identification and definition of problems, defining the objectives, data collection and analysis, and making projections/ forecasting. To aid in these efforts, resurging interest in territorial development models and city-region food systems has brought with it a new generation of spatial analysis and diagnostic tools. For recent examples of urban food system diagnostics, see the detailed spatial analysis conducted in Kitwe and Lusaka, Zambia (FAO, 2018a, FAO & RUAFA, 2019). Formulation entails designing and fixing the priorities while formulating action plans. Then, implementation of the action plans takes place at community levels, and finally comes review, evaluation and feedback. In Ghana, for example, a multi-stakeholder process conducted on food led to the integration of urban farming in national agricultural policy and in the Accra Urban Development Plan. South Africa's Integrated Development Plan 2012 acknowledges municipal

health in the context of food control and urban farming, addressing the benefits of rainwater harvesting for urban food gardens (FAO, 2018b). Some other ways to incorporate food systems into the planning process can be found in Figure 6.2. For example, in the diagnosis phase planners should be able to incorporate objectives as: managing urban food wastes, devise strategies to enhance food supply to urban markets, including urban farming while also providing services such as water, sanitation and storage facilities in these markets.

Urban and territorial development planning includes multiple components: demography, physiological characteristics, transportation, infrastructure and basic services, social amenities, environment and natural resources, economic development, and employment (Table 6.2). All these are relevant to the food system in various ways. For example, demography defines the food demand, transportation determines food distribution. Basic services such as water, sanitation, and solid waste management are key in the context of urban food waste, food retail and also production. As plans endeavor to conserve the environment through various ways, the food system impacts these through deforestation to expand agricultural activities, food waste, food processing and food distribution. These among other issues in the food system demonstrate that a holistic food system approach should be considered in urban and territorial planning.

Because agri-food system flows frequently transit national boundaries, food system planning and governance need to consider cross-border infrastructure, trade and agricultural policies as well (see Chapter 7, this volume). Indeed, the notion of cross-border governance is essential to effective food system planning since most borders in Africa de facto cut across bioregions and natural market sheds which would provide a more logical context for food systems planning (Battersby & Watson, 2019; Haggblade, 2013; World Bank, 2012).

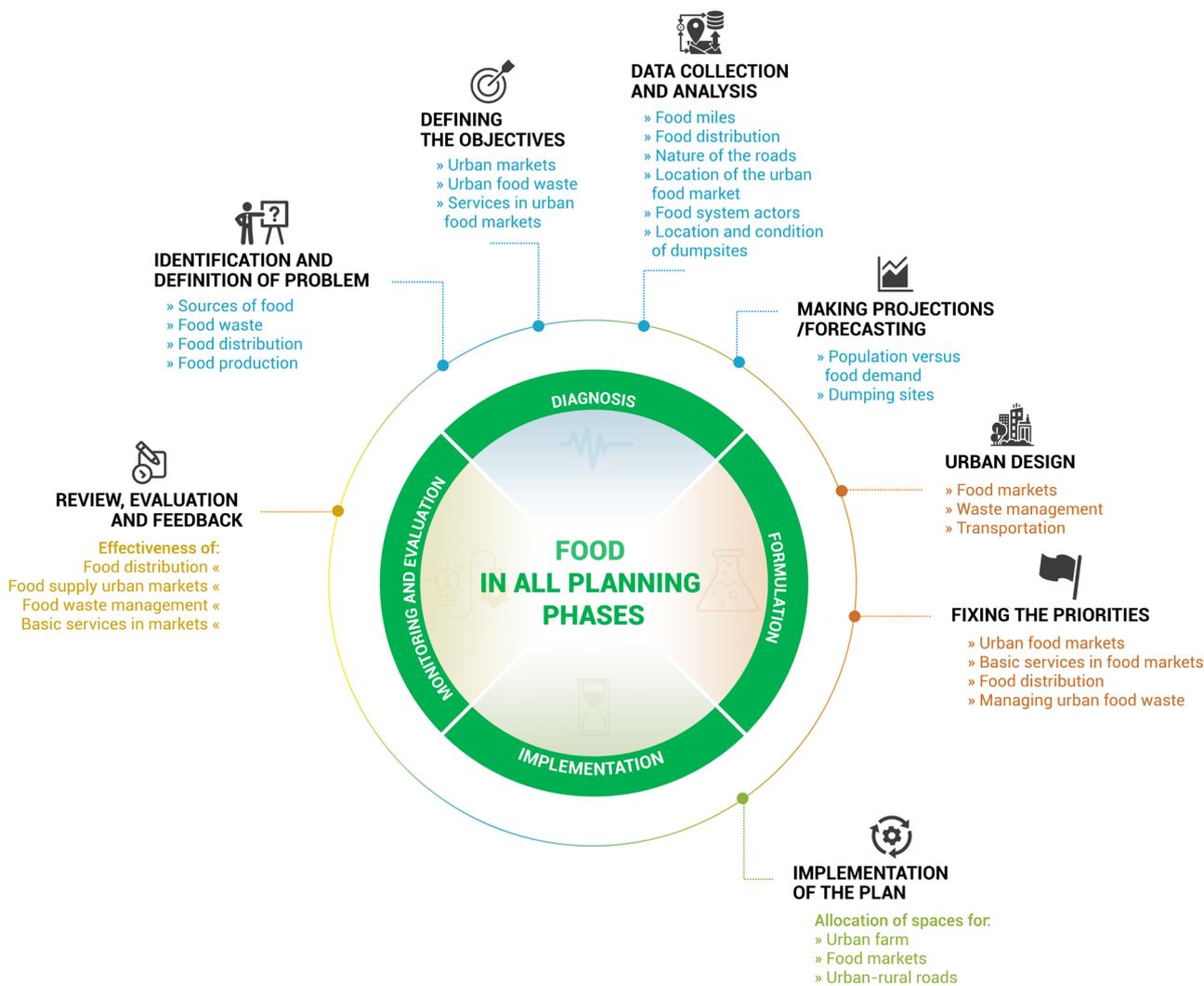


Figure 6.2: Food in all planning phases

Source: adopted from the (UN-Habitat, 2018)

Table 6.2. Urban and territorial planning and the food system

Urban plans formulation components	Relevance to the food system
Demography (population size, fertility rates, birth and death rates, etc.)	Food demand versus supply (food production, Food distribution, food waste, food distribution)
Transportation and IT infrastructure	Food distribution and food waste
Basic services (water, sanitation, solid waste management, drainage)	Food production, food waste, food retail
Electricity	Food retail, food consumption
Social amenities (health, education)	Food consumption
Environmental and natural resources	Food production, food waste, food distribution
Economic development and employment	All

6.3.3 Managing inclusive agricultural markets for smallholders and informal traders

Access to markets by smallholder farmers is key to strengthening urban–rural linkages while supporting their livelihoods (Hussein & Suttie, 2016; Suttie & Hussein, 2015). There are approximately 33 million smallholder farms in sub-Saharan Africa which represent 80% of all farms in the region, and contribute up to 90% of food production in some sub-Saharan African countries (Wiggins & Keats, 2013). Most poor and subsistence farmers do not have access to markets due to various reasons such as remoteness, low production, low farm gate prices, and lack of information among others. To overcome these challenges, support mechanisms would include improved access to inputs, technical advice, insurance, credit and other financial services, and general infrastructural and public service provision in rural areas (Hazell, 2017; IFAD, 2020a).

Informal traders, likewise, play a critical role in African food marketing and distribution systems (Skinner, 2018; Tacoli, 2016). As urban food markets have grown, employment and investment by small and medium enterprises has increased rapidly over the past decade, the midstream of African food systems (food processing, wholesale, and logistics) (Reardon et al., 2019). Meanwhile, informal traders continue to dominate urban food retailing (see Chapter 4, this volume). Despite their economic importance and the key role they play in providing income to low-income urban populations, informal food traders and food processors typically encounter an intermittent combination of official neglect and harassment (Battersby & Watson, 2019; Resnick et al., 2020). Urban wholesale markets on which they depend on face severe growing pains as cities leapfrog their boundaries to accommodate population growth and in-migration. Box 6.5 provides an example of the synergy as well as the tensions that exist between informal traders and urban wholesale market managers in secondary cities in Nigeria.

To help improve accessibility to urban markets by smallholder farmers and informal traders, various tools have been developed, including market information systems (MIS), inventory credit (IC) and contract farming (CF). These tools can be effective in improving food value chains in Africa, achieving better food security in urban and rural areas, and increasing incomes of farmers. Some of these tools are mainly used in industrialized nations, however, in some Eastern and Southern African countries, there has been widespread use of MIS.

6.3.4 Local government financing

Decentralization is taking place at different paces and in differing contexts across Africa. With notable exceptions (such as Kenya and Ghana), national governments have typically delegated only limited powers, financial resources, and technical capacities to local administrations. Despite generally limited financial and manpower resources, local authorities nonetheless confront major responsibilities for urban service delivery and implementation of projects or activities on the ground where national government staffing is often limited. Local government responsibilities typically include activities such as constructing and managing urban food markets, providing basic sanitation, security and waste disposal services in food markets, commercial zoning, traffic control, public health monitoring and food safety monitoring and enforcement, among others (Smit, 2019).

Given their limited authority to raise revenues from direct taxation, local governments need to raise revenue from outside grants or continue to rely on what the national government provides. Yet financial transfers from national government authorities sometimes lack transparency and predictability. Table 6.3 illustrates the generally low levels of municipal government financial resources as well as their frequent reliance on central government transfers. It is quite alarming to see the over-reliance on grants. In Kenya, Côte d'Ivoire, Rwanda, Senegal,

Box 6.5. The enabling environment for informal food traders in Nigeria's secondary cities

By Danielle Resnick

Informal vendors are a critical source of food security for urban residents in African cities. However, the livelihoods of these traders, and the governance constraints they encounter, are not well-understood outside of the region's capital and primate cities. This study focused on two distinct secondary cities in Nigeria: Calabar in the South-South geopolitical zone of the country, and Minna in the Middle Belt region. Interviews were collected with local and state officials in each city on the legal, institutional, and oversight functions they provide within the informal food sector. This was complemented with a survey of approximately 1,097 traders across the 2 cities to assess their demographic profile, contributions to food security, key challenges they face for profitability, engagement with government actors, and degree of access to services in the markets. The analysis highlighted the following findings.

Harassment. Informal traders face a complex array of actors regulating their activities, which can create opaque lines of accountability and opportunities for extortion and harassment. Our interviews asked informal traders about their experiences with multiple types of harassment, including seizure of goods by authorities, forced removals, and arrests. In contrast to Lagos, where documented experiences of harassment and even brutality are quite high, this has not been a major problem in these two secondary cities. Eighteen percent of food traders in Calabar reported ever experiencing any type of harassment at all while the corresponding figure in Minna is only 3% (Table B6.1). Nonetheless, of the 115 traders who were harassed across the 2 cities, 70% were women and most of them reported experiencing a seizure of their goods. This is a troubling dynamic given the importance of informal trade to their livelihoods.

Table B6.1. Trader experiences with forms of harassment by government authorities (%)

Types of harassment	Calabar (observations)	Minna (observations)
Ever harassed at all	18.3 (97)	3.2 (18)
Goods seized	13.0 (69)	2.1 (12)
Forcibly relocated	8.7 (46)	1.4 (8)
Arrested	0.8 (4)	0 (0)
Other	2.3 (13)	0 (0)

Source: Resnick et al. (2019, Table 4).

Public service delivery. While traders in these secondary cities do not face high levels of government harassment, their daily efforts to earn a living as traders can be thwarted by the substandard service environment in which they operate. Despite the range of licensing and oversight activities that state and local government officials claim to execute over traders, many traders in our sample had not been exposed to these activities, except for revenue collection. On average, 78% of the sample in each city noted that they had never had an inspection by a health officer of their food handling or food quality in the 6 months before the survey. This was even true for markets that have sanitation officers housed in the market, such as Kure market and Kasuwan Gwari, as well as for a major meat market in Calabar known as the Suya Arcade.

Access to clean running water and health facilities are major deficiencies in the markets of both cities (Table B6.2). Toilet access is a particular concern in Minna while insufficient drainage, which can contribute to cholera and other food-borne diseases during the rainy season, is more problematic in Calabar. In addition, more than half the traders in each city lack access to trash collection, which can attract pests and vermin with negative impacts on human health. Collectively, these infrastructure deficits pose a serious challenge to the availability of safe food for the urban poor.

Table B6.2. Share of market traders reporting access to key services in the market (%)

Service	Calabar	Minna
Trash collection	43.1	44.5
Toilets	62.1	36.2
Electricity	40.2	66.1
Clean running water	16.7	8.9
Safe storage facilities for merchandise	28.3	37.6
Shelter during bad weather	28.3	55.2
Fire extinguishers	2.2	1.1
Security	74.3	82.5
Health facilities	1.9	2.9
Proper drainage	15.2	53.7
Total observations	269	348

The percentages of the italicized categories do not sum exactly to the overall harassment percentage because some respondents experienced multiple types of harassment

Source: Resnick et al. (2019, Table 6).

Local government resource constraints. Rather than harsh repression of their activities, food traders in these two cities operate more in an environment of benign neglect. This benign neglect seems closely tied to both low capacity and a high degree of opacity in governance of informal vending. Low levels of staff and resources were directly reported through interviews by the government actors in charge of overseeing informal food trade. Insufficient compliance by traders with revenue payments exacerbates the situation as there are not enough resources for the city authorities to invest back into the infrastructure of the markets.

Differing policy prescriptions. This study has identified important differences in the needs of traders across cities. These differences suggest that policies focused on food safety and improving the livelihoods of this constituency more broadly need to be properly nuanced even at the subnational level.

Source: Resnick et al. (2019).

Table 6.3. Local government revenue sources in selected African countries

Country	Year	Taxes	Grants	Others	Total	Per capita (\$)
Congo	2016	41	38	21	100	14
Cote d'Ivoire	2018	5	83	12	100	16
Kenya	2018	3	91	6	100	73
Morocco	2011	22	64	14	100	135
Rwanda	2018	12	83	5	100	42
Senegal	2018	1	83	16	100	11
South Africa	2018	17	31	52	100	533
Tanzania	2016	11	86	3	100	37
Uganda	2018	2	96	2	100	20
Zambia	2005	39	20	41	100	2

Sources: IMF (2020); World Bank (2020). 6.4. Nutrition and the food system

Tanzania, Uganda, Uganda, and Tanzania, over 80% of local government resources come from grants, primarily from national government. On average, the reliance on grants is over 60%, which is high and raises concerns as to how effective the work of the local government would be without the grants. Unfortunately, most urban local authorities currently cope with increasing demands despite limited financial resources, inadequate financial regulations and operating procedures. Compounding these inadequacies, many of the key sources of local revenue are generally inelastic, that is, they do not have the capacity to yield additional revenue in proportional response to inflation, growth of personal incomes, and population growth (UN-Habitat, 2010). At times, central governments fail to notify local governments of grants until well into the fiscal year, or central governments may effect sudden reductions. Another concern about grants from national governments is the bureaucracy involved that may not be less effective in managing emergencies. In order to meet their obligations to growing numbers of urban constituents, local governments authorities will need to expand their capacity to raise their revenues if they are to execute their functions effectively without depending on the national governments and external donors.

6.4.1 Food base etary guidelines as an entry point to transform food systems

The dietary transition described in Chapter 2 (this volume) has had a huge impact on nutritional status, on the demand for food, and thus on production systems. These consequences have not always been positive, considering one out of three people worldwide is malnourished. Food systems, likewise, cause up to one-third of all greenhouse gas emission, while they contribute to land degradation, biodiversity loss, and pollution of soil, water, and air (FAO, 2020a).

The promotion of healthy and sustainable diets has the potential to address both nutrition and the environmental problems. Many food systems in Africa can be characterized as traditional systems or systems in transition. To make sure these systems do not aggravate negative impacts on the environment in similar ways as industrialized systems, and to enhance their nutritional impact, it is important to guide these transitions. Food-based dietary guidelines and environmentally sound farming practices, especially those with sustainability criteria, inform consumers about healthy diets that are based on the local context. They can include cultural preferences and take sustainability into account. Such guidelines can inform policy makers as to what production to stimulate through fiscal measures, taxes or subsidies

and thus stimulate (local and territorial) production of crops and products that contribute to healthy diets.

6.4.2 Potential of public institutional buying and homegrown school feeding

Financing mechanisms and investments emerging from territorial planning and programs can and should have a significant impact on nutrition. For example, financing mechanisms can support diversifying food production and processing, storage, transportation, market information, and infrastructure, leading to shorter food chains with positive benefits for nutrition (UNSCN, 2020). Nutrition-specific finance mechanisms (such as nutrition impact bonds, and taxes) should incorporate inclusive approaches to address nutrition impacts across the urban–rural continuum. Financial mechanisms capable of adequately addressing funding requirements and supporting more balanced and harmonized links between urban and rural areas need to be put in place with supporting policy and legislation. Funding decisions should be consonant with the requirements of a territorial approach and guided by meaningful participation of stakeholders in rural and urban areas.

Budgets will need to reflect the varying roles, responsibilities and revenue-raising mechanisms across governance units, including the effects of national versus more decentralized structures. Government policies and investments can significantly affect food systems in ways that promote or undermine healthier diets. These policies, including regulatory frameworks, can have important territorial characteristics. For instance, policies and programs arising from regional planning with a territorial dimension can seek to diversify food production and improve processing, storage, transportation, market information and infrastructure, thereby lowering costs and promoting the consumption of local foods. This leads to shorter food chains and higher incomes for market actors across the rural–urban space. In this way, planning and investments deliver a greater variety of nutritious, safe, affordable, and seasonal foods to both rural and urban residents

and potentially reduce greenhouse gases. Public procurement can be another important avenue for impact.

School meal programs, especially home-grown school meal programs offer good examples. They have the potential to improve diets of school-aged children, stimulate local production, processing, and marketing, and thus the local economy. Local farmers and small to medium enterprises may need to be supported with public investment and facilitation to promote the shared use of infrastructure, pooling of resources or connections to urban consumer demand or supply chains (Dubbeling, Carey, & Hochberg, 2016). In India, the government has now sanctioned the purchase of healthy, but underutilized grains, such as millets, for school meal programs, creating significant market demand and, thus, financing to strengthen links between farmers and urban-based consumers (Notaro, Padulosi, Galluzzi, & King, 2017).

6.4.3 Food systems and nutrition sensitive water management

The dietary transition described earlier in this chapter has huge implications, not just for nutrition and health, but also for the use of natural resources. Agriculture is the biggest user of fresh water and its demand is projected to grow over the coming decades (Rosegrant 2016; Rosegrant, Cai, & Cline, 2002). In addition, there is competition for water from other sectors. Water scarcity is a growing problem across the world due to growing demand and aggravated by climate change. This imposes several challenges also in the context of urban–rural linkages. Expanding cities cause huge demand for water and water resources (infrastructure, hygiene, and sanitation), both in quantity and quality. At the same time, nutritional needs must be met, which requires new production systems that can deliver more “nutrients per drop”.

Nutrition sensitive water management has the potential to address several challenges at the same time. Among others, it integrates nutritional considerations into the planning of water projects and looks at the improvement of the natural

resource base. Regarding agriculture, it explicitly considers the nutrient value of the crops produced and promotes the participation of women in irrigation projects (Bryan, Chase, & Schulte, 2019).

6.5. Emerging territorial development initiatives

While the territorial approach does not have a single definition, it can be characterized by development of a territory, including urban and rural spaces, addressing development of multiple sectors by multiple stakeholders in a multilevel governance framework. Territorial approaches are key in enabling governments to address rural-urban inequalities in investments, access to services, and infrastructure. Territorial approaches provide tools to recognize great diversity across geographic space and bring a more holistic lens to development than sectoral approaches. Territorial initiatives also offer specific advantages in the implementation of the 2030 Agenda for sustainable development. This is in the context of interdependence among the goals and the thus the need for more holistic, multidisciplinary, multi-sector, and multi-stakeholder approaches, characteristics which serve as key anchors of the territorial development initiatives. A closely related set of concepts, analytical constructs and organizational frameworks currently contribute to the implementation of territorial initiatives. Some of these constructs include: Urban–Rural Linkages: Guiding Principles and framework for action (URL-GP), promoted UN-Habitat; International guidelines on urban and territorial planning (IGUTP); CRFS, promoted by FAO; the MUFPP for cities, among others. Framing these efforts is the NUA. This chapter will discuss five of these approaches in detail: NUA, URL-GP, CRFS, MUFPP, and TP4D.

6.5.1 New Urban Agenda

In December 2016, the United Nations General Assembly formally endorsed the New Urban Agenda (NUA), committing Member States to a set of proposals and principles initially introduced at the United Nations Conference on Housing and Sustainable Urban Development (Habitat III) in Quito, Ecuador, in October 2016.

The NUA is an action-oriented and people-centered agenda that incorporates not only urban areas but also rural spaces and all sizes of human settlements. The development gap between urban and rural areas is still great and urgently needs to be bridged. It is widely acknowledged that urban growth has positive impact on economic development, but still most of the world's poor live in rural areas. They lack access to basic services, water and sanitation, energy, education, medical and social services, and food. Strengthening urban–rural linkages offers one way of implementing the NUA and making sure no one is left behind.

Substantively, the NUA explicitly advocates coordination of urban and rural development strategies as well as integrated, spatial approaches to urban planning and development. The text of the NUA formally encourages *“international and regional organizations and bodies, including those of the United Nations system and multilateral environmental agreements, development partners, international and multilateral financial institutions, regional development banks, the private sector, and other stakeholders, to **enhance the coordination of their urban and rural development strategies and programmes to apply an integrated approach to sustainable urbanization, mainstreaming the implementation of the New Urban Agenda**”* (para 82, New Urban Agenda, Quito, 2016).

To operationalize these broad aspirations, implementing agencies have drawn on and helped to articulate series of analytical constructs and participatory processes that enable urban planners, food system stakeholders and their international partners to advance spatially integrated urban–rural development initiatives. The remaining discussions explore four major tools and initiatives underway to advance the aims of the NUA.

6.5.2 Urban–Rural Linkages: Guiding Principles and Framework for Action³

Building on previous work, in 2015 UN-Habitat took the lead during the formulation process of the NUA and coordinated with different UN agencies such as the Food and Agriculture Organization of

³ <http://www.milanurbanfoodpolicycompact.org/>

the United Nations (FAO), the International Fund for Agricultural Development (IFAD), the United Nations Environment Programme (UNEP), the United Nations Population Fund (UNFPA) and the Convention on Biological Diversity (CBD) to jointly draft the Habitat III Issue Paper Number 10 on Urban–Rural Linkages. This paper was a guiding document for the Special Session on Urban–Rural Linkages during the Habitat III conference.

To help operationalize commitments under the NUA, UN-Habitat convened more than 130 stakeholders from over 40 international organizations to participate in an initiative — called *Urban–Rural Linkages: Guiding principles and framework for action (URL-GP)*⁴ (UN-Habitat, 2019) — which identified food security and nutrition as a key area of action. The structure of the URL-GP consists of 10 short guiding principles that serve as the foundation for strengthening urban–rural linkages within and across sectors such as planning, finance, economic development, health, environment, transport, food system and agriculture, etc.

Equally important and even more concrete for implementers (planners, program managers, development agencies, donors, etc.) are the 11 potential entry points in the Framework for Action (FfA). Five focus on improving the enabling environment for strengthening urban–rural linkages, while the remaining six suggest potential sectoral and thematic entry points: territorial economic development; coherent approaches to social service provision; infrastructure, technology and communication systems; integrated approaches for food security and nutrition; environmental impact, natural resource and land management; and addressing conflict and disaster along the urban–rural continuum.

The URL-GP, thus, provides a two-part tool for implementation: first, applying the guiding principles to projects and programs, and second, incorporating URL into specific interventions in concrete spatial and functional applications at

the national or subnational level. The URL-GP is available in seven languages (English, French, Spanish, Portuguese, Russian, Chinese, and Arabic). Presently UN-Habitat is developing mechanisms, tools, and methodologies to support Member States in the implementation of the URL-GP. UN-Habitat (2020) provides detailed case study examples of recent applications.

6.5.3 City region food systems (CRFS) approaches⁵

The CRFS approach is an initiative of the FAO and the Resource Centre for Urban Agriculture & Forestry (RUAF) Foundation, who aim to partner in building sustainable, resilient and dynamic city–regional food systems by strengthening rural–urban linkages. The city region is defined as a given geographical region that includes one or more urban centers and their surrounding peri-urban and rural hinterland areas across which flows of people, food, goods, resources and ecosystem services occur. A CRFS encompasses all food system actors and activities taking place in the city region and over which the local and regional governments have planning and intervention powers. Any city region will always be fed by multiple food sources, be it local, regional, national, or international, so that a city regional food system does not exist in isolation from a global food system.

The CRFS program assists local governments in defining and mapping key food system flows, identifying and understanding gaps, bottlenecks and opportunities for sustainable planning, informed decision-making, prioritizing investments, and designing sustainable food policies and strategies to improve local food systems. Key objectives include: 1) strengthening capacity of actors in a local food system; 2) improving diagnostic skills and understanding of key food system flows; 3) fostering multi-stakeholder, multi-sector and multilevel dialogue processes; 4) strengthening urban–rural linkages for more inclusive, efficient, and resilient activities of smallholder farmers; and finally 5) scaling up local

4 http://urbanpolicyplatform.org/wp-content/uploads/2019/10/URL-GP-Framework-for-Action_English.pdf

5 <http://www.fao.org/in-action/food-for-cities-programme/approach-old/crfs/en/>

successful practices. Figure 6.2 summarizes the continuous participatory multi-stakeholder dialogue process which CRFS promotes.

The approach emerged partly as a response to rapid global urbanization, which has posed challenges to the conventional industrial food production and supply system. These processes have exposed key vulnerabilities among poor urban populations who face the risks of rising volatility in food prices, natural disasters, and climate change. These threats demand urgent action by the international community and others to develop tools and methodologies to address food and nutrition security, agriculture, and management of natural resources. CRFS has emerged as one key response to the growing risks facing vulnerable urban populations (Blay-Palmer et al., 2018).

Operationally, the CRFS toolkit provides guidance on how to assess and build sustainable city region food systems in seven simple steps.⁶ It includes support material on how to: define and map your city region; collect data on your city region food system; gather and analyze information on different CRFS components and sustainability dimensions through both rapid and in-depth assessments; and

how to use a multi-stakeholder process to engage policy makers and other stakeholders in the design of more sustainable and resilient city region food systems. This approach had been implemented in the city regions of Colombo (Sri Lanka), Lusaka (Zambia), Kitwe (Zambia), Medellín (Colombia), Dakar (Senegal), Utrecht (The Netherlands), Quito (Ecuador), and Toronto (Canada). For good recent examples of concrete application of the CRFS diagnostic processes (see FAO, 2018a; FAO & RUAFA, 2019).

6.5.4 Milan urban food policy pact⁷

The origins of the Milan Urban Food Policy Pact (MUFPP) date back to 2014 when Milan was preparing to host the expo 2015 whose theme was “Feeding the Planet, Energy for Life”. It was then that the Mayor of Milan innovatively decided to launch an international protocol aimed at tackling food-related issues at the urban level, to be adopted by world cities, named as MUFPP. This was announced on February 1, 2014 at the C40 Summit in Johannesburg. Later in the year Milan and over 40 cities from every continent began to exchange views to define the contents of the pact virtually. In February 2015 standards and indicators in the protocol were discussed during a meeting in London. A technical team and advisory group were

⁶ <http://www.fao.org/in-action/food-for-cities-programme/toolkit/introduction/en/>

⁷ <https://urbanpolicyplatform.org/urban-rural-linkages/>

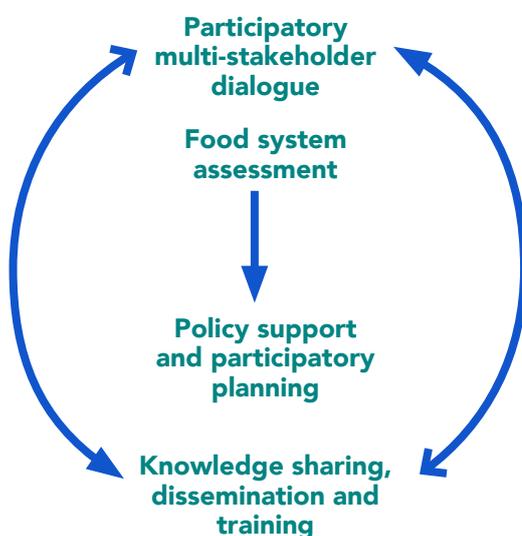


Figure 6.2. Multi-party stakeholder dialogue processes under city region food systems (CRFS)

set up by the international organizations to draft the pact. The MUFPP was signed on October 15, 2015 in Milan by more than 100 cities and presented the day after to the then UN Secretary General Ban Ki-moon on the occasion of the World Food Day celebration.

The Pact outlines its key premises and justifications as follows:

- Cities which host over half the world's population have a strategic role to play in developing sustainable food systems and promoting healthy diets
- Current food systems are being challenged
- Accelerated urbanization is profoundly impacting our world — in economic, social, and environmental dimensions
- Hunger and malnutrition in its various forms exist within all cities
- Family farmers and smallholder food producers (notably women producers in many countries) play a key role in feeding cities and their territories
- Urban and peri-urban agriculture offers opportunities to protect and integrate biodiversity into city region landscapes and food systems
- Food policies are closely related to many other urban challenges and policies
- Civil society and the private sector have major roles to play in feeding cities
- Cities have made commitments to address climate change on urban food systems
- Cities and their neighboring territories will be active in operationalizing international processes such as SDGs and targets in the post-2015 Development Agenda

Upon signing the pact, mayors agree to support each other in formulating plans of action that promote the following activities and aims:

- Develop sustainable food systems that are inclusive, resilient, safe, and diverse, that provide healthy and affordable food to all people in a human rights-based framework, that minimize waste and conserve biodiversity while adapting to and mitigating impacts of climate change
- Encourage interdepartmental and cross-sector coordination at municipal and community levels, working to integrate urban food policy considerations into social, economic, and environment policies, programs, and initiatives, such as, inter alia, food supply and distribution, social protection, nutrition, equity, food production, education, food safety and waste reduction
- Enhance coherence between municipal food-related policies and programs and relevant subnational, national, regional, and international policies and processes
- Engage all sectors within the food system (including neighboring authorities, technical and academic organizations, civil society, small-scale producers, and the private sector) in the formulation, implementation, and assessment of all food-related policies, programs, and initiatives
- Review and amend existing urban policies, plans and regulations in order to encourage the establishment of equitable, resilient, and sustainable food systems
- Use the Framework for Action as a starting point for each city to address the development of their own urban food system and share developments with participating cities and national governments and international agencies when appropriate; the Framework comprises six categories of recommended actions: Governance, Sustainable diets and nutrition, Social and economic equity, Food production, Food supply and distribution, and Food waste
- Encourage other cities to join our food policy actions

Through the MUFPP, a global coalition of world mayors has committed to supporting urban food system governance reforms through direct exchange and learning among cities (FAO, 2018b). Since launching the MUFPP in 2015, the mayors have convened four annual learning forums in Africa involving over 20 major African cities (MUFPP, 2019, 2020a).

6.5.5 Territorial perspective for development (TP4D)

Given widespread interest in spatial and territorial models of urban food system governance and reform, a broad group of interested international stakeholders has recently convened to help standardize terminology, and identify core principles and best practices emerging from the many broad strands of spatial and territorial development initiatives currently under way. Under the auspices of multiple international stakeholders — including the EUC, OECD, UNCDF, BMZ, GIZ, AFD, CIRAD SPELL OUT, FAO and NEPAD — a group of technical specialists has worked together to prepare a white paper outline outlining core principles and best practices in territorial perspectives for development (TP4D, 2019).

The TP4D guide identifies eight core principles of successful territorial development initiatives: a) people-centered; b) place-based; c) cross-sectoral; d) multi-level; e) multi-stakeholder; f) multi-dimensional; g) integration and synergies; and h) flexibility. The broad processes advocated involve a set of spatial diagnostics, definition of relevant territorial boundaries, identification of key existing economic and environmental flows, drivers of change, and key weaknesses and gaps in current outcomes. These diagnostics then lead to a set of collective stakeholder reflections, defining key priorities for reform and governance structures followed by implementation of territorial projects and programs (TP4D, 2019). Recent application of these guidelines in Kenya, Madagascar, and Niger reveal considerable flexibility in focus and design (GIZ, 2020; Government of Niger, 2020).

The TP4D team concludes with a call to action involving raising awareness of the power of

territorial approaches, engaging development partners, mobilizing multi-disciplinary research, and building the capacity of local governments and local institutions to more effectively participate in urban-centered territorial food system and development reforms.

6.6 Policy and governance recommendations

As the trend of urbanization continues in Africa, achieving food system and nutrition for all depends on interventions and approaches that build, strengthen, or transform urban–rural linkages. The following discussion summarizes lessons learned over the past decade about key requirements for strengthening urban–rural linkages and thereby improving agri-food system performance in urban areas.

a) Improve policy coordination between urban and rural areas

Recommendations

- Improve the governance of food system and nutrition (FSN) at the national and local level, by setting up policy and institutional frameworks that can help coordinate local actors in planning, implementing and evaluating FSN-related policies
- Develop inclusive FSN national policies that mainstreams the territorial approach
- Improve FSN governance to facilitate the coordination of local actors for planning, implementing, and managing public and private investment in this area. This will help improve local governance of food system and nutrition.
- Improving inter-sectoral coordination and ensuring the functionality of existing institutions, including the regional, district and communal committees of the 3N Initiative.

Policy coordination is key to working effectively across urban, peri-urban, and rural spaces which are

governed by different local entities in most African contexts. To leverage the different strengths across the urban–rural nexus calls for policies that take into account the contributions of each space as well as interactions and synergies. For example, urban policy makers should look beyond urban agriculture to improve food security and nutrition needs while coordinating with rural and peri-urban counterparts on how to facilitate the flow of agricultural products into urban centers. Rural policy makers should recognize the opportunities of urbanization and promote market opportunities for food actors in the urban–rural continuum. Political entities should work closely to enhance urban–rural linkages in order to facilitate sustainable food production, storage, transportation, and marketing of safe and nutritious food to urban consumers while reducing waste and losses. Key aspects of policy coordination include planning and regulating use of land, water, and other resources that are critical to food production and other activities in the food value chain. To achieve this requires political will, effective financial allocations, and decision-making power to secure better horizontal and vertical coordination across central and local governments and policy domains. Rural–urban partnerships offer new possibilities for creating effective frameworks for cooperation and joint governance.

b) Promote efficient and inclusive territorial food value chains

As urbanization continues in Africa, impacts such as urban sprawl and overall scarcity of land near urban areas can lengthen food value chains even as food demand increases. Furthermore, changing dietary patterns can lead to shifting employment patterns in the food system, from agriculture to non-farm sectors such as transport, wholesaling, food processing, food vending, and retailing. To accommodate these shifts, public infrastructure and policies will need to make urban–rural linkages initiatives more efficient and inclusive while improving vertical coordination. In Ethiopia, for example, coffee cooperatives improve vertical coordination by providing marketing and input supply services and connect producers to export markets.

Working to strengthen connections between various segments of the food value chain fosters wider market opportunities for smallholders and can lead to inclusive outcomes for rural areas and urban areas. Aspects of inclusivity in the food value chain include, for example, the input supply stage, training, and employment of people as input vendors in distribution networks. Others include ensuring equal access by smallholders, particularly rural women and youth, to improved seeds, other agricultural inputs, rural finance, and advisory services. At the processing and marketing stages, efforts will need to focus on upgrading storage facilities, using modern technology to distribute information and addressing infrastructure challenges.

c) Support small and intermediate cities

Supporting small and intermediate cities (SICs) is vital in the urban–rural continuum as they act as intermediaries between urban and rural areas. They also provide opportunities to rural farmers for agro-processing and accessing markets thus enhancing their incomes and reducing food losses. Therefore strategies that enhance urban–rural linkages are those that address specific challenges faced by people living in different places along the urban–rural continuum. Each area has a role to play in addressing rapid urbanization and finding synergies that strengthen the agri-food system. Rural towns and SICs in general facilitate the economic and social connections between the urban and rural areas. Decentralization can play a key role in allowing local governments and local actors in the food system to identify the needs and priorities and, thus, respond appropriately. However, this has to go hand in hand with integration with surrounding territories this being a two-way approach. Therefore, SICs are key in devising localized strategies to the food-related activities in rural areas due to proximity while also creating a bridge to bigger cities. Development of transport infrastructure, electricity, health, education facilities, basic services, among others are key in SICs as they contribute to opening up of the rural areas, thus, the food value chain.

d) Inclusive public investment

Investing in farm and non-farm sectors is key to reducing rural poverty and strengthening the economies in rural areas. Targeted and well-strategized investments in rural physical infrastructure such as feeder roads, electricity, transportation, communications, and cold storage, and social amenities as health and education are necessary (AGRA, 2017). They contribute to increased incomes for smallholder farmers due to increased access to markets and the ability of rural residents to access rural non-farm jobs (Fan & Rao 2003; Fan, Zhang & Rao 2004). Other areas of investment include reliable agricultural information, including prices, technology, innovations, and market demand. As the rural farmers benefit, the urban dwellers also benefit through reduction in urban poverty through growth in national economy and reduced prices of food leading to win-win outcomes for both urban and rural spaces through rural investments.

e) Social protection in urban and rural areas

Social protection measures in the midst of rapid urbanization are necessary since some people are left behind, exacerbating social and economic inequalities. Promoting decent job opportunities, improving access to information, infrastructure provision, access to education, fostering inclusive growth, targeted safety nets to mitigate risk while building productive assets, among others, are key. Policies should be developed that help rural small-scale farmers increase productivity or participate in non-farm economic activities such as value addition among others. Integrating nutrition in social safety net programs could also boost nutrition programs. Policy and institutional barriers that restrict in-country movement should be removed to help realize the potential of remittances from migrant workers. These remittances increase income for rural residents, diversify incomes, and promote capital investment for rural non-farm economy and small towns.

f) Build capacities for territorial approaches to food security and nutrition

Recommendations

- Strengthen technical, technological and institutional capacity at all levels, in particular those of local authorities, to implement food system and nutrition (FSN).
- Strengthen the capacity of human resources at all levels, in particular of local authorities. Raise awareness of the multi-sectoral nature of FSN and the importance of adopting a holistic approach. Promote effective transfer of skills and competences in the decentralised context to implement the territorial approach.
- For FSN financing, promote private domestic financing, public–private partnerships (PPP) and unlocking domestic resources to design, finance, and implement FSN policy.

g) Build resilience of the food system and nutrition in the urban–rural continuum

- Strengthen the resilience of local food systems, by promoting economically and socially viable FSN infrastructure and investments that can sustain both food supply and value chains and prevent land and environmental degradation.
- Promote and scale up the experience of successful programmes that use the territorial approach to FSN.
- Integrate the land dimension into national policies and enhancing the authority of land commissions to mitigate land disputes and ensure sustainable FSN.

h) Adopt territorial or city-region food system approaches

- Align territorial planning and food policy.
- Strengthen urban–rural linkages to secure well-functioning supply chains, protect and strengthen livelihoods and to increase access to markets and employment, while providing ecosystem services.
- Reconnect producers and consumers by connecting public procurement with local producers and facilitating new market spaces for local products.

i) Create decent jobs in food systems, particularly for women, youth, and migrants

One of the FAO areas of policy support and governance is rural decent employment (FAO, 2020f). However, this should go beyond rural to the food system as a whole, thus, the urban–rural continuum. Untapped potential for farm and non-farm job opportunities in the food systems should be strengthened and made available to women, youth, and migrants. This can be achieved by identifying drivers of change on labor demand and supply, investment in the agri-food system and on private sector engagement alongside skills development and social protection. Policies must also ensure that agri-food system jobs deliver fair income, security at workplace, social protection of families, and freedom for the workers to express themselves.

j) Incorporate the urban poor in territorial food systems

Urban food insecurity is characterized by unique features due to the socio-economic and gender disparities of the urban poor. Tailored policies and programs for the vulnerable would be key, they include:

- Targeted interventions and policies to create a more enabling environment for healthy, safe, and nutritious food for the urban poor.
- Where space allows, promote and support urban agriculture.
- Regulate production of safe, affordable, and nutritious street foods, including provision of training to street food vendors.
- Support and manage the informal sector economy and harness its potential to protect the livelihoods of the poor.
- Design cost-effective, well-targeted social protection instruments to help the urban poor cope with income or price shocks and build assets.
- Address inequalities of the urban poor to access infrastructure and social services.

k) Enhancing nutrition policy options

There are various actions that could be incorporated for nutrition in policy at national and local levels. Figure 6.3 shows the various entry points from the term “NOURISHING”. The policy areas are categorized into three: the food environment, food systems, and behavioral change. The food systems policy proposition is the most relevant in the context of the territorial approach as it incorporates integration of space and sectors. However, the other two policy areas are also key to addressing nutrition as whole, which is also relevant for this work.

POLICY AREA		
FOOD ENVIRONMENT	FOOD SYSTEMS	BEHAVIOUR CHANGE
N	Nutrition label standards and regulations on the use of claims and implied claims on food	
O	Offer healthy food and set standards in public institutions and other specific settings	
U	Use economic tools to address food affordability and purchase incentives	
R	Restrict food advertising and other forms of commercial promotions	
I	Improve nutritional quality of the whole food supply	
S	Set incentives and rules to create a healthy retail and food service environment	
H	Harness food supply chains and actions across sectors and ensure coherence with health	
I	Inform people about food and nutrition through public awareness	
N	Nutrition advice and counseling in health care settings	
G	Give nutrition education and skills	

Figure 6.3. Policy actions for nutrition

source: <https://www.wcrf.org/int/policy/policy-databases/nourishing-framework>

6.7 Conclusions

Urban and rural areas do not exist in isolation. Urban areas provide vital markets, food storage and distribution centers, agricultural input supply, and research. Rural areas, serve as production, agroprocessing, and storage hubs in most contexts. The urban–rural interactions explored in this chapter underscore the important role of cities in the food systems. As a result, food system governance and policy reforms require integrated

frameworks that take into account the many reciprocal exchanges that occur between rural and urban spaces in order to feed Africa’s growing cities. The various frameworks outlined in this chapter offer principles, guidelines and links to ongoing food system governance reform efforts under way. Taken together, the evidence emerging from these ongoing initiatives suggests clearly that, in order to be most effective, policies, strategies, and plans will need to address the changing food system and nutrition in a territorial context.

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7 Intra-African food trade

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Key messages

- 1 Intra-African food trade is essential for agricultural growth and transformation, food security, resilience to shocks, regional economic development, and regional integration.
- 2 Most countries in Africa depend on food imports from around the world, more so than from other African countries.
- 3 Non-trade barriers constrain cross-border trade in agricultural products and African farmers' access to growing urban food markets.
- 4 Addressing policy, regulatory, and market systems challenges around food markets requires a deep understanding of the political economy landscape under which these constraints manifest.
- 5 There is need for increased effort to implement policy actions (at continental, regional and national levels) to address constraints and strengthen opportunities to accelerate African farmers' access to growing urban food markets and growth in intra-African food trade.

7.1 Introduction

Most African countries are net food importers despite their agricultural potential, natural resource endowments, and intra-regional complementarities. However, the growing food demand is increasingly met through imports from international markets compared to intra-regional food trade. About two-thirds of African countries are net food importers (Signé & van der Ven, 2020) and in 2018, sub-Saharan African countries imported US\$13.7 billion worth of cereals. Despite this reality, farmers and producers in Africa can potentially meet the rising food demand and provide substitutes for imports

from international markets (World Bank, 2012). Over time, African economic growth is creating massive market opportunities. This chapter aims to explore prospects for expanding the share of growing urban food demand furnished by local and regional suppliers within Africa.

Intra-African food trade forms an essential component of food systems, particularly ensuring that food moves from areas of production surplus to processing, packaging, distribution, retailing, and consumption. Also, such trade helps create and/or strengthen forward and backward linkages in national and regional food systems that generate socio-economic opportunities for many actors

¹ Alliance for a Green Revolution in Africa (AGRA)

from farmers to the market. Improvements in intra-African agricultural trade can leverage efforts to improve productivity along food value chains, provide adequate incomes to producers, and stimulate economic growth (Badiane, Odjo, & Collins, 2018). Also, increased intra-Africa cross-border food trade contributes to the achievement of national, regional and continental development goals that include, job creation, food and nutrition security, poverty reduction, economic growth, and regional integration.

The challenge for food and nutrition security remains acute in many parts of the continent. This is exacerbated by the multiple risks across many areas such as the COVID-19 pandemic, climate variability and extremes (such as droughts and floods), desert locust invasion, persistent armed conflict, and insecurity. The benefits of intra-regional agricultural trade are an integral part of efforts to achieve food and nutrition security, agricultural, and sustainable development goals in Africa. The 2014 Malabo Declaration Commitment 5 to triple intra-African trade in agricultural commodities and services by 2025 from the 2014 baseline level (AUC, 2014) demonstrates the commitment by African member states to leverage the potential of regional integration of food markets. African countries should step up efforts to develop regional and continental intra-Africa food trade to improve the food and nutrition situation and provide alternative substitutes to imports from international markets (Doss, 2019).

Africa is also experiencing rapid urbanization accompanied by a transition in dietary patterns that is impacting food systems. Dietary transition due to higher incomes in urban areas increases the demand for processed foods, animal-source food, vegetables, and fruits (FAO, 2017a; World Bank, 2012). The growing African urban population largely depend on food from the market, creating market opportunities for farmers across the continent. With food demand concentrated in growing urban cities, regional food trade has a significant role to play to move food from areas of strategic production zones to deficit/consumption zones such as the urban

areas (de Zeeuw & Prain, 2011; Ericksen, 2008; Smit, 2016). Farmers across the continent, however, face more trade barriers and trade costs than producers from the rest of world, affecting their access to farm inputs and constraining their ability to move their food to deficit consumption areas such as urban areas. In supplying large coastal cities, in particular, internal transport costs are sometimes higher than costs of transporting the food from outside a country; it may, for example, prove more costly to bring food from Douala to Bangui, than from Chicago to Douala. As a result, African farmers fail to exploit the potential to produce enough food to meet the rising demand in the continent.

This chapter discusses the intra-Africa food trade opportunities, challenges, and policies for linking African farmers with growing urban food markets. The chapter starts with an overview of the current status of intra-African food trade. This is followed by a discussion of the thorny political economy issues affecting intra-regional trade policy. The ensuing section examines the spatial distribution of surplus production zones and major urban markets. The trends in cross-border trade in agricultural products are also analyzed, focusing opportunities and constraints in cross-border trade in agricultural products related to linking African farmers with the growing urban food markets. The last section discusses the impact of cross-border trade and non-trade barriers and policy actions to accelerate intra-African food trade.

7.2 Current Status of Intra-Africa agricultural trade

Intra-Africa cross-border agricultural trade has increased over the past decade, although the absolute level of cross-country food trade remains low and well below its potential. Currently, intra-regional agricultural trade in Africa accounts for 27% and 17% of total agricultural food exports and imports respectively with this trend generally similar across all the regional economic communities (RECs) (FAO, 2020). In a separate study, Viljoen (2018) found that intra-Africa agricultural trade is concentrated mostly among neighboring countries.

Informal cross-border trade (ICBT) accounts for most of the agricultural trade among neighboring countries in Africa, where it is a major source of employment and general livelihood for the many low-income households. While accurate data on the contribution of ICBT to regional trade is limited because of the informal and unstructured nature of the sector, several studies have attempted to estimate the contribution of this trade to the economies of developing countries, and to the employment and general livelihoods of low-income households. Informal trade contributes to approximately 40% of gross domestic product (GDP) in Africa and contributes to 55.7% of total employment on the continent (FAO, 2017b). Other estimates suggest that ICBT contributes approximately to 30–40% of total intra-regional trade in the Southern African Development Community (SADC) region and 40% in the Common Market for Eastern and Southern Africa (COMESA) region. Women and youth form a disproportionate number of informal cross-border agricultural traders with studies by USAID (2012) showing that women conduct approximately 60–90% of agricultural production and trade activities in West Africa. The study also shows that 79.3% of cross-border traders rely solely on the trade as their source of income.

Boosting intra-African agricultural trade requires countries and RECs to converge towards intra-regional integration and creation of free trade areas that allow for unfettered movement of goods and services across borders. Currently, Africa has eight RECs which are promoting regional integration, namely the Economic Community of West African States (ECOWAS), COMESA, the Economic Community of Central African States (ECCAS), East African Community (EAC), SADC, the Southern Africa Customs Union (SACU), the Intergovernmental Authority on Development (IGAD), the Community of Sahel-Saharan States (CEN-SAD), and the Arab Maghreb Union (AMU). The Africa Regional Integration Index (ARII) assesses the regional integration status and efforts of countries that are members of the eight RECs recognized by the African Union (AU). The ARII measures the level of regional integration across

five indices, namely trade integration, infrastructural integration, productive integration, free movement of people, and macroeconomic integration, indicating which areas work better and require improvement. The level of regional integration across these different RECs is summarized in the Table 7.1.

The results show that while there are varying levels of integration across the different RECs, the overall level of integration in Africa remains low with a continental average integration score of 0.327 (Table 7.1). Across the different RECs, the East African Community (EAC) currently has the highest level of integration and COMESA has the lowest level. The results also demonstrate that countries are least integrated in terms of infrastructure and production. The low levels of production integration demonstrate the need for countries to increase their productive capacity to help increase regional trade. Increased investment in physical as well as information infrastructure is also critical for the movement of raw materials to factories and for goods to reach consumers.

The increase in intra-Africa agricultural trade has been supported by increasing trends towards regional integration with countries converging towards a more integrated continent that allows for freer trade. The African Continental Free Trade Area agreement (AfCFTA) established by Heads of State and Government on 21 March 2018 in Kigali, Rwanda, demonstrates the commitment for action in the 2014 Malabo Declaration, particularly the commitment on tripling the value of intra-African trade in agricultural commodities and services by 2025. The AfCFTA creates a market of a combined GDP of more than US\$3.4 trillion, more than 1.2 billion people, and a growing middle class (Tralac, 2019). The AfCFTA will contribute to promoting intra-African food trade, and boost economic growth and development. Also, AfCFTA will enhance harmonization and coordination of trade facilitation and procedures, reducing and eliminating trade and non-trade barriers that are currently impeding food trade across RECs and the continent. As of 6 May 2020, a total of 30 countries

Table 7.1: Africa Regional Integration Index 2019*

Index ¹	COMESA	ECCAS	SADC	AMU	IGAD	ECOWAS	EAC	CEN-SAD
Trade integration ²	0.445	0.357	0.34	0.481	0.444	0.438	0.444	0.377
Infrastructural integration ³	0.317	0.373	0.214	0.509	0.480	0.298	0.555	0.302
Productive integration ⁴	0.328	0.323	0.239	0.449	0.321	0.220	0.434	0.256
Free movement of people ⁵	0.385	0.469	0.49	0.438	0.540	0.733	0.664	0.508
Macroeconomic integration ⁶	0.365	0.684	0.422	0.571	0.423	0.469	0.660	0.441
Average	0.367	0.442	0.337	0.488	0.438	0.425	0.537	0.377

* AUC, AfDB, and ECA (2019).

- 1 The index is constructed as follows: each of the indicators is given equal weight in the calculation of dimension scores using the sum of the average of the indicators in a dimension. The index uses the standard minimax method of scaling results from 0 (least) to 1 (best). That includes a standardization of the results to get the same unity of measurement to aggregate the data.
- 2 Trade integration includes the following indicators: level of customs duties on imports, share of intra-regional goods exports (% GDP), share of intra-regional goods imports (% GDP), and share of total intra-regional goods trade.
- 3 Regional infrastructure includes the infrastructure development index (transport; electricity; information and communications technology; and water and sanitation); proportion of intra-regional flights; total regional electricity trade (net) per capita; and average cost of roaming.
- 4 Productive integration includes the share of intra-regional intermediate goods exports (% total intra-regional exports goods); share of intra-regional intermediate goods imports (% total intra-regional imports goods); and merchandise trade complementarity index (total absolute value of the difference between share of imports and share of exports of a member state in an REC).
- 5 Free movement of people includes ratification (or not) of the REC protocol on free movement of persons; proportion of REC member countries whose nationals do not require a visa for entry; and proportion of REC member countries whose nationals are issued with a visa on arrival.
- 6 Financial and macroeconomic integration includes regional convertibility of national currencies and inflation rate differential (based on the harmonized consumer price index).

had ratified the AfCFTA Agreement (Figure 7.1). Trading under this Agreement, which was supposed to begin on 1 July 2020, was postponed to next year due to the COVID-19 pandemic. The African Union Commission (AUC) is scheduled to announce a new date in due course.

In the 2014 Malabo Declaration, Heads of State and Government committed to triple intra-African trade in agricultural commodities and services by 2025 and to create and enhance policies, institutional conditions and support systems (AUC, 2014). Despite the ambitious efforts to increase intra-Africa food trade, results have been disappointing:

the 2019 Comprehensive Africa Agriculture Development Programme (CAADP) Biennial Review (BR) results show that volumes of intra-African food trade remain low. Figure 7.2 presents the 2019 CAADP BR results on the commitment to boost intra-African trade in agricultural commodities and services. Only 29 countries were on track to achieve Commitment 5 compared to the 36 countries that were on track in 2017. Also, the results of the indicator on boosting intra-African trade in agriculture commodities and services show that only six countries were on track in 2019 and only three countries in 2017 (Figure 7.3).

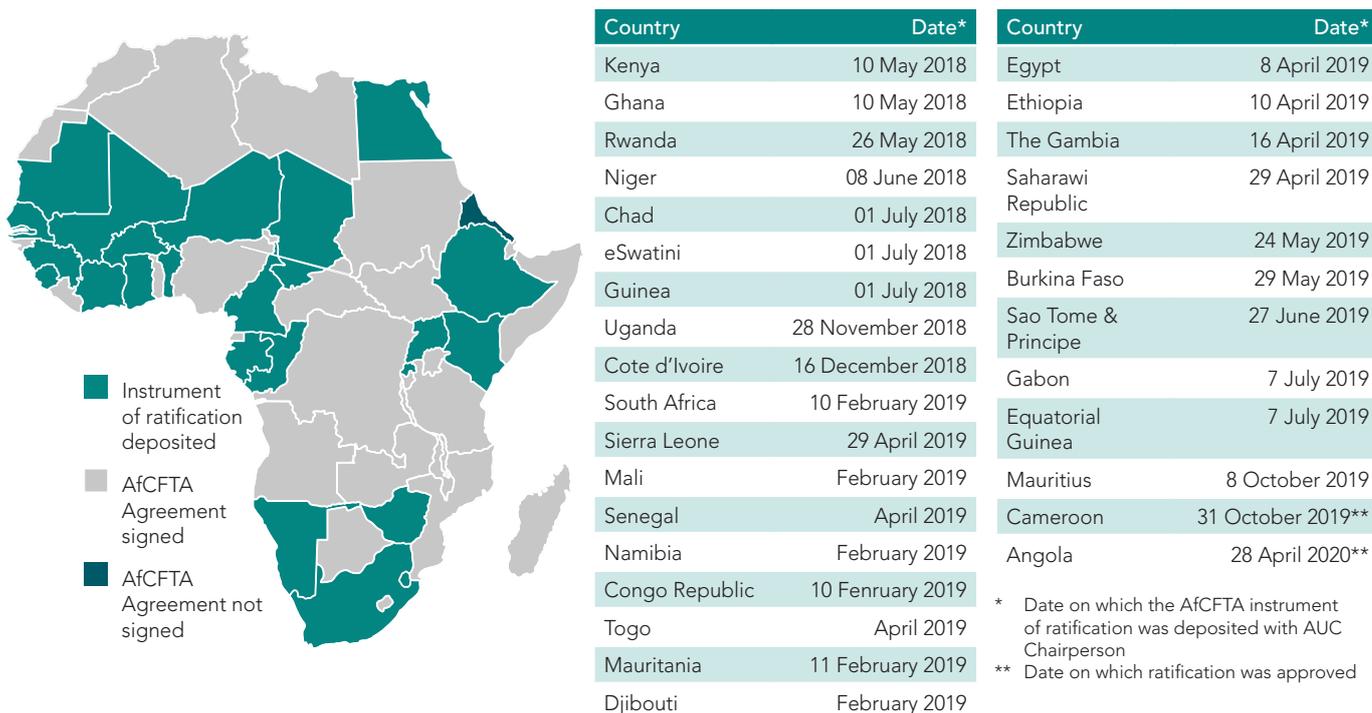


Figure 7.1: Status of AfCFTA ratification as of 6 May 2020

Source: Tralac (2020)

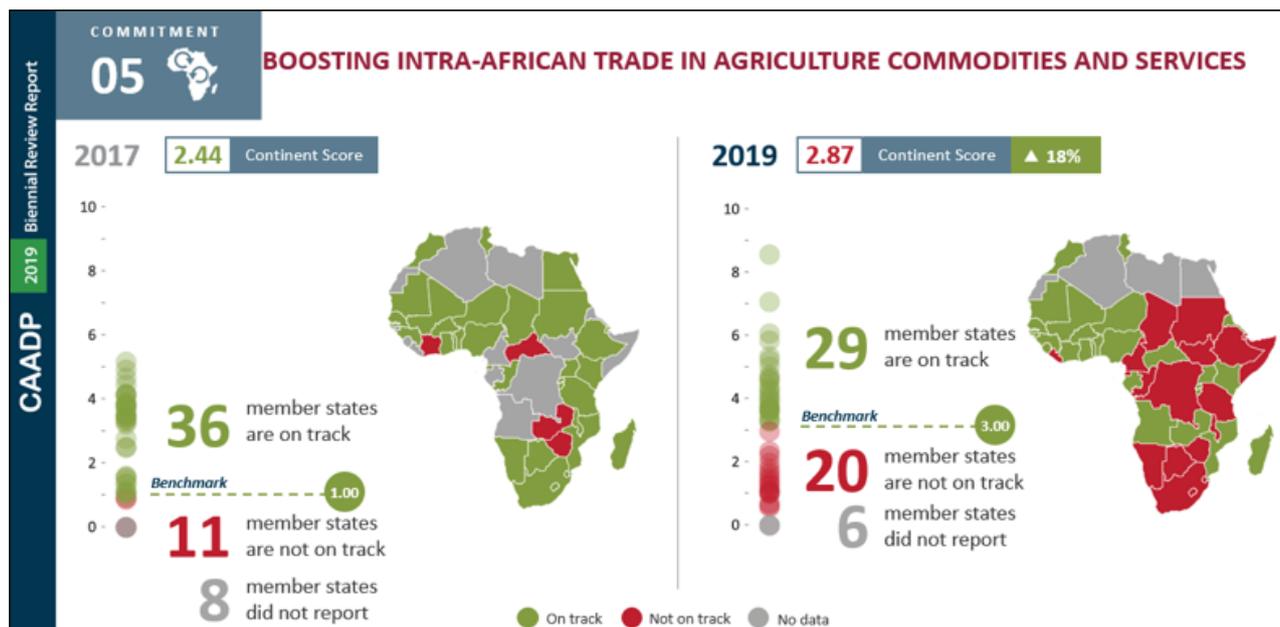


Figure 7.2: CAADP Biennial Review results (all indicators): Boosting intra-African trade in commodities and services

Source: AUC (2020)

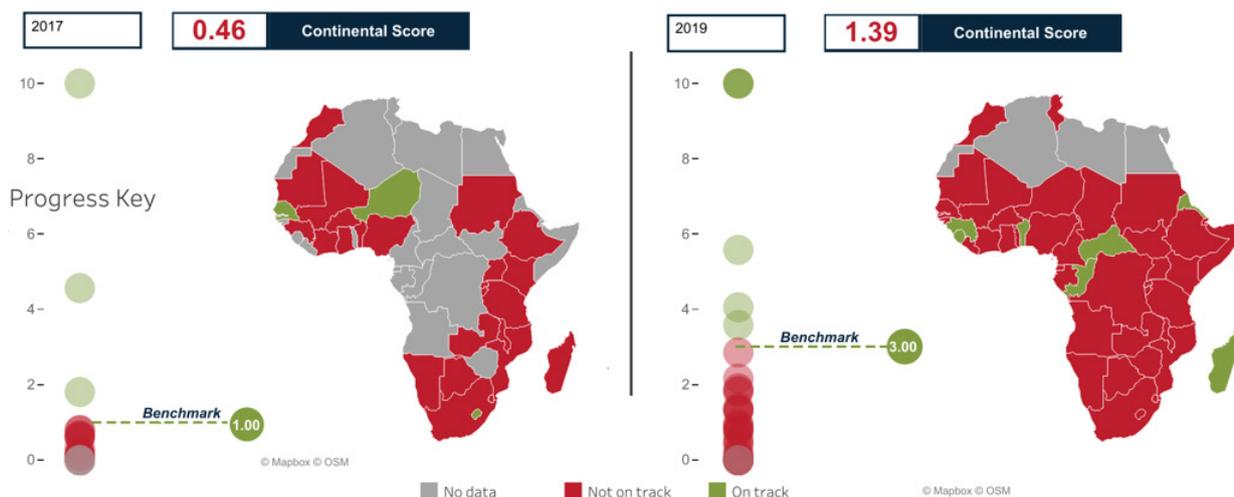


Figure 7.3: CAADP Biennial Review results: Boosting intra-African trade in agriculture commodities and services
Source: AUC (2020)

7.3 The political economy of food trade in Africa

The lack of transparency and predictability in food trade and pricing policies diminish potential investments to expand production and trade in the affected crops/products, especially the main staples. Key food producers affected by lack of policy predictability may be forced to exit these sectors entirely or invest in alternative enterprises that are less controlled, adversely affecting national and regional agricultural growth and development goals, and food and nutrition security goals. Predictable and open-border trade policies contribute to low food price volatility and faster growth in food production than situations where countries implement unpredictable trade and pricing policies (Chapoto & Jayne, 2009).

Despite the benefits from improved trade, vested interests mean that there is always resistance to improve trade facilitation. Bouët & Odjo (2019) observe that Africa has the highest aggregate cost of trade in agricultural product by ad valorem equivalents. The 2019 Africa Agriculture Trade Monitor estimates that for imports, the ad valorem cost is almost 100%. For example, local companies that do not depend on imports, customs officials, and intermediaries who assist importers to clear their goods at ports of entry benefit from relatively

lower costs of business and would oppose efforts to improve trade facilitation. Also, improved trade facilitation is beneficial to companies from other countries; governments can decide to make it conditional on the benefiting companies or their governments contributing to the costs of improving trade facilitation. Moreover, trade facilitation is a multi-dimensional and complex problem involving administrative procedures and practices to achieve any significant decreases in trade costs (Hoekman & Shepherd, 2015). Many of the trade costs such as border clearance procedures, products standards, the quality of transport and communication infrastructure, and competition in service markets can be affected by trade policies that help enhance the regulatory environment (Hoekman & Shepherd, 2015).

Cross-border trade in agricultural food commodities has remained a very contentious issue globally owing to its role in meeting social and economic benefits such as food security and income growth in consuming and producing countries respectively. The same applies to Africa, government protectionist behaviors persist (Bouët & Odjo, 2019) in their formulation and implementation of food trade policies aimed at safeguarding national food self-sufficiency agenda at the expense of producer and consumer welfare. Despite the continent's tremendous progress in development and

implementation of regional integration frameworks leading to a significant reduction in tariffs, the persistence of non-tariff measures coupled with non-commitment to implementation and information asymmetries, have resulted into poor agricultural trade performance (Engel, Jouanjean, & Awal, 2013).

These behaviors are common during periods of food shortage which are characterized by high price volatility creating incentives for both governments and private sector actors to intervene. Given the critical role of trade to food security, the scarcity of food presents opportunities for operators to make supernormal profits. Politicians (and policy makers) desire to intervene in food markets to mitigate price increases with evidence in the main subsectors such as rice in West Africa and maize in East and Southern Africa. The confluence of these opposing interests creates room for rent-seeking by those in positions of authority through lobbying and enforcement of interventionist policies and measures. Sometimes even benevolent governments fail in their role due to complicated relationships marred by distrust between the private and the public sectors, resulting in perverse policy incentives and unintended consequences that undermine intended outcomes (Watson II, 2015).

In Africa, at least US\$35 billion worth of food² was imported in 2015 from global markets to meet local food needs; this figure is estimated to triple by 2025 (AFDB, 2016). At the same time, most³ of the continent's small-scale farmers and businesses are directly involved in the agriculture sector for their livelihoods, making this a central focus of national and regional governments (AGRA, 2019a). Thus, any policy choices that governments take have far-reaching impacts on these actors as well as on consumers. A study carried out by International Food Policy Research Institute (IFPRI) researchers in 2013 in Tanzania revealed that although the contribution of maize to food price inflation is rather

limited, banning cross-border maize exports lowers the national food price index by only 0.6–2.4% compared with the free-export scenario (Diao & Kennedy, 2016). However, the same study estimated that the impact on maize producer prices was much larger ranging between 7% and 26% depending on region (Diao & Kennedy, 2016). Much more recent analysis by Pernechele, Balié, and Ghins (2018), using nominal rate of protection (NRP) analysis⁴, revealed similar trends in Ethiopia where farmers faced heavy price disincentives (also referred to as anti-agricultural bias) over the 2005–2016 period showing that restrictive trade policies (export bans) and prohibitive marketing costs did not allow for effective price transmission from the international to the domestic level, thus hurting producers. Baliño et al. (2019) further note that measuring anti-agricultural bias is useful for understanding the political economy of policy reform, and that the main source of this bias in countries is market failures arising in part from policies⁵ that distort agricultural markets.

While the future of agricultural food trade is likely to include more high value, nutritive and also processed foods owing to changes in income and population dynamics (IFPRI, 2018), the important role of cereals can never be underestimated. Several authors (Chapoto et al., 2016; Chirwa & Chinsinga, 2015; Nzuma, 2015) have attempted to understand the dynamics and impacts of the political economy landscape for key staples, that is, maize and rice, in countries where these crops form the primary staple such as Malawi, Kenya, Nigeria, Côte d'Ivoire, and Zambia to demonstrate the role of policy and vested interests of key actors on agricultural trade development with similar results:

- During the period of food crises in 2008/2009, governments resorted to interventionist measures both on the supply (subsidies and price support) and demand (tax measures and food safety nets) side to cushion price spikes.

2 Largely comprising wheat, vegetable oils, sugar, rice, dairy products, meat, fish, and maize (see Chapter 3).

3 AGRA (2019a) estimates that small and medium enterprises (SMEs) comprise at least 60% of all activities in the agricultural value chain in Africa.

4 This indicator compares the farm gate price for a commodity to a reference price, usually based on the world price. If the farm gate price is higher, this shows a positive NRP.

5 Mainly subsidies and taxes, tariffs and export restrictions, price information, and trade regulations and agreements.

The interventions present room for rent-seeking and lobbying.

- Baliño et al. (2019) observed that the extent of anti-agricultural bias calculated as negative NRP was highest in key food security value chains such as maize, teff, and beans in Ethiopia (-61.3%), Malawi (-20.7%), Mali (-25.5%), and Rwanda (-10.9%).
- For Kenya, Nzuma (2015) found that among other factors affecting the slow food price transmission were political economy challenges. The author found that policy positions⁶ resulted into local prices defying the global food price trends to continue rising throughout 2009–2011 and remained high relative to world food prices.
- In a related study, AGRA (2019b) identified additional sources of market inefficiencies (see Figure 7.4) resulting in welfare losses by small-scale farmers and consumers who are denied direct and beneficial market opportunity to supply the National Cereals and Produce Board (NCPB).
- Figure 7.4 identifies examples of political economy trigger points, that is, state intervention in markets through NCPB, control of imports, and poor subsidy targeting affecting the performance of food markets in Kenya. The Government of Kenya has since taken measures to address most of these issues to ensure a more inclusive food market system (Ministry of Agriculture, 2020).
- In Nigeria, AGRA (2019) found that government vested interests in cereal crop trading are limited. Instead, it is Nigeria's complex import restrictions and the conflicting roles played by State institutions that create scope for corruption and market failure. Intra-governmental competition and poor coordination are critical features of the Nigerian political environment. For example, import bans

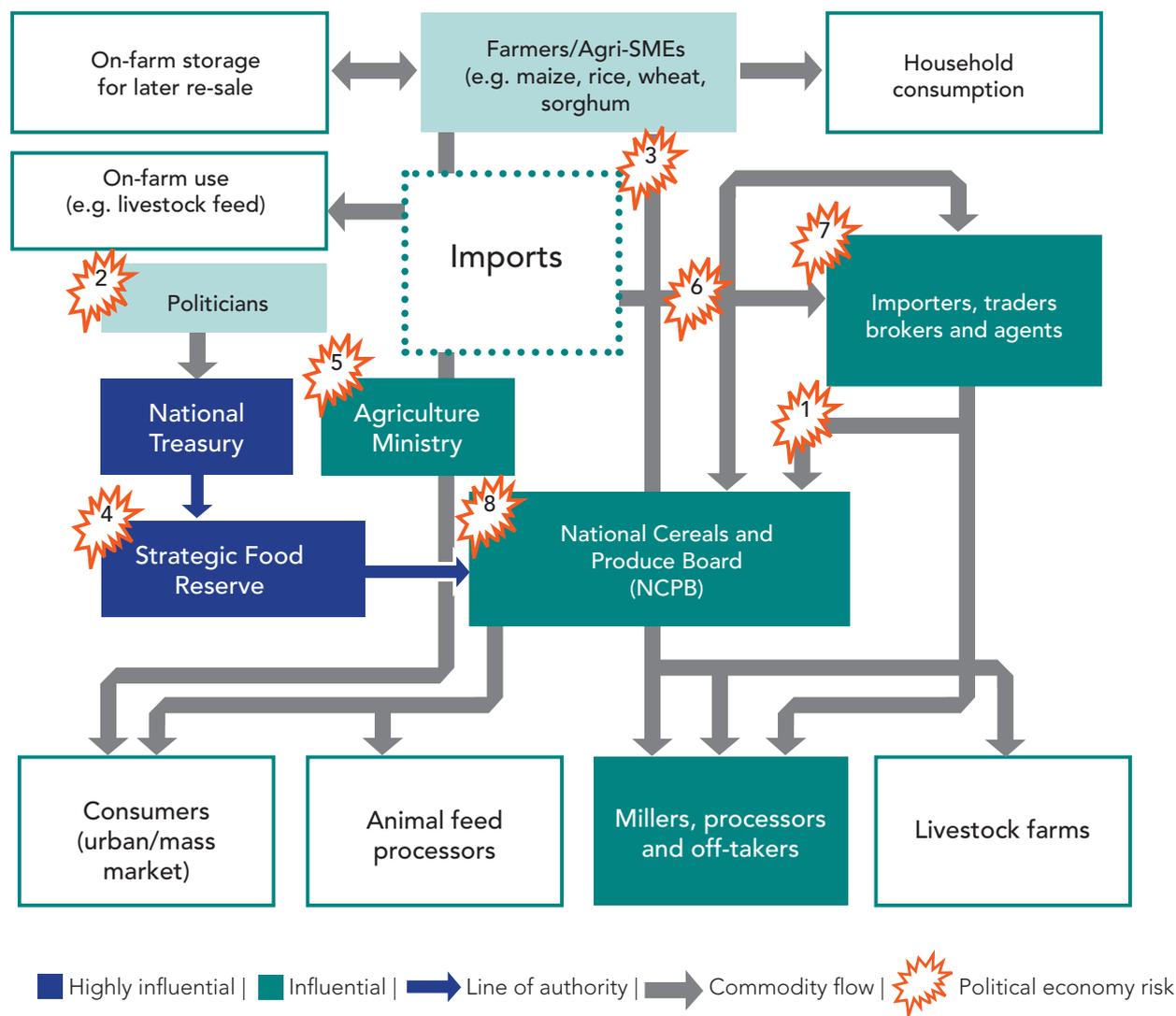
and high tariffs encourage smuggling, while private sector players operate within “grey areas” caused by conflicting, territorial, and overlapping State regulators and institutions. Thus, formal cross-border trade in food staples remains at very low levels.

- In West Africa, Torres and van Seters (2016) revealed that despite the high agriculture production potential, the region still has a high negative food trade balance in part because of increasing purchasing power, increasing population, and changing consumption patterns. In addition, the region is further characterized by substantial private sector interests that block key reforms (for example rice importers of rice and trucking cartels); the ruling elite often pursuing short-term interest for political survival; and limited commitment to the implementation of regional agreements.
- In Southern Africa, Malawi, and Zambia where maize is a prevalent food security crop, the interactions between politics and the business of maize production and trade are very tight. Chapoto et al. (2016) identified a “command triangle” involving the presidency, finance, and the agriculture ministry as the most influential in determining policy around maize. The authors note that millers' associations and fertilizer companies form the most influential lobby group influencing those policy choices to maintain astronomical rents to their constituency while disregarding the adverse effects on the whole sector, that is, high food price volatility. In the same vein, Phiri (2014) postulates that for Malawi, despite the increasing trend in support, all producer support estimates (PSEs)⁷ over the study period (1970–2010) were negative, implying that producers are implicitly taxed through

⁶ That is, politically motivated release of stock from strategic food reserves, trade/export permits to Sudan in early 2008 and later export restrictions which increased incidence of informal trade, further increasing costs.

⁷ Policies that are aimed at transferring support/incentives from consumers or taxpayers or to farmers.

Flow of crops through Kenya's food market system



Key	
1	Farmer disenfranchisement: Farmers selling low to traders when they fail to meet minimum thresholds required by large buyers.
2	Collusion between politics and business: Traders and brokers are often linked to those with political influence.
3	Barriers to collection action: Farmers face barriers to collective action due to wide-spatial dispersion, poverty, and lack of access to information.
4	Limited accountability or rules-based approach at strategic food reserve for implementation of market-based triggers.
5	State interventions through trade controls and poor targeting of input subsidy programs.
6	Tax evasion and mislabeling of imported produce as "local" enables importers to undercut the domestic market.
7	Below-market stock releases: Stock releases from NCPB silos at concessionary prices can undercut local farmers, forcing them to sell at a loss.
8	Purchasing of food staples at market-distorting prices: through market purchases or subsidies online

Figure 7.4: Political economy trigger points

Source: AGRA (2019b)

policies that transfer income from producers to consumers. Pernechele et al. (2018) also confirm this finding in a more recent study as observed earlier in the case of Ethiopia and Tanzania. Governments are therefore deemed to be more concerned with keeping food prices low for consumers and implement policies (such as export bans, bureaucratic export licensing, price setting, and food subsidies) that maintain the price at levels lower than the border price at the expense of farmers.

Based on the synthesis of various findings and the 2019 AGRA political economy study of select markets (AGRA, 2019b), Table 7.2 presents the key impediments to food trade in Africa. The analysis revealed that state interventions, information asymmetry, informality, corruption and non-

adherence to standards are some of the most common impediments to food trade in the region. This calls for a concerted effort by all stakeholders supported by a predictable and inclusive policy regime that bolsters the functioning of food markets.

7.3.1 Major Findings and Recommendations

- Agricultural trade remains a critical economic activity supporting regional food security and inclusive income growth in Africa. For all policy and regulatory choices around food security and trade, there are winners and losers or those who benefit in form of rents and profits and those who suffer an erosion of incentives of price and stable market. The analysis reveals that officials and businesses that help shape or influence policy usually benefit at the expense of smallholder farmers who have limited influence.

Table 7.2: Key policy and regulatory issues identified as critical for regional food trade

Issue	Nigeria	Rwanda	Mali	Burkina Faso	Ghana	Uganda	Kenya	Zambia	Tanzania	Mozambique	Cote d'Ivoire	Malawi	Ethiopia
1 State intervention in market price	●	●		●			●	●	●		●	●	●
2 Ad hoc export and import bans	●			●			●	●	●		●	●	●
3 Limited market information	●				●	●	●	●	●	●	●	●	
4 Opaque strategic grain reserve operations							●	●					
5 Arbitrary taxation on imports or exports	●		●				●	●	●		●		
6 Limited enforcement of SPS, quality standards (aflatoxin) prevalence of informal trade	●	●	●	●	●	●	●	●	●	●	●	●	
7 Limited enforcement of SPS, quality standards (aflatoxin)	●	●		●	●	●	●		●	●		●	
8 Lack of transparency in issuance of export permits								●	●				
9 Limited structured markets, no functional commodity exchange	●	●	●	●	●	●	●	●	●	●		●	●
10 High levels of corruption; insecurity	●		●	●	●		●		●		●		
11 Uneven implementation of regional integration regime	●		●						●				●
12 High cost of formalization of business/trade	●								●	●	●		
13 Coordination gaps at multiple levels	●				●			●	●	●			

● denotes existence of gap

Source: AGRA (2019b)

- The analysis has revealed that among other factors, political economy dynamics manifest in form of ad hoc trade controls, other State interventions in markets, high prevalence of informal cross-border trade, lack of enforcement of regulations, low commitment to implementation of regional integration agenda, lack of transparency in issuance of trade permits, and opaque and arbitrary taxation.
- Governments should take proactive steps to address these gaps and ensure fair distribution of incentives among all players involved, from producers to consumers and everyone in between.

7.4 Spatial distribution of surplus production areas and major urban markets

7.4.1 Spatial distribution of surplus production areas

Africa has traditional areas of food production surplus and food deficit. The food production surplus areas constitute the highly productive agricultural agro-ecological zones characterized by favorable and reliable agroclimatic conditions. The food deficit areas include drought-prone areas such as the Sahel and the Horn of Africa that typically experience crop failure. Areas that experience persistent armed conflict and insecurity that disrupt agricultural production and marketing activities (such as parts of West Africa, Congo Basin, and the Horn of Africa) also experience food deficits (World Bank, 2012). Achievement of the food and nutrition security goals in Africa depends on significant improvements in agricultural productivity together with the successful coupling of the areas of strategic production zones and cross-border deficit food markets on the continent. The political borders in Africa separate surplus food areas of strategic production zones from major deficit markets to which they have to supply (Haggblade, 2013; World Bank, 2012). Further, the current political borders partition natural market sheds and agro-ecological zones, acting as barriers impeding agricultural trade and technology transfer, and dampen incentives for farmers and agribusinesses to invest in many

strategic production zones across the continent. The management of cross-border relationships remains critical to harnessing the potential of the continent's areas of strategic production zones to produce enough food to feed Africa's population and export both within and outside the continent. This section discusses the spatial distribution of areas of strategic production zones and major urban markets in East, Southern, and West Africa.

East Africa: The main staple foods in East Africa include maize, rice, wheat, and sorghum. Maize is an important staple food crop and is produced, consumed, and traded in the region. Food deficit urban areas provide natural markets for surplus production across the region, especially in rural areas. Figure 7.5 presents typical maize production and market flows as well as projected 2019/2020 maize regional supply levels. The strategic production zones for maize in the region are Ethiopia, Tanzania, and Uganda; the consuming deficit markets are Burundi, Kenya, Rwanda, Somalia, and South Sudan.

Southern Africa: Maize is the most important staple crop produced and traded in Southern Africa. Figure 7.6 shows the typical maize production and regional trade flow as well as the projected 2019/2020 regional maize trade flows. The strategic production zones for maize in the region are South Africa, Tanzania (sometimes considered as part of East Africa) and Zambia. Angola, Malawi, and Mozambique are self-sufficient. However, cross-border trade occurs either informally with neighboring countries and/or formally in surplus seasons. Major deficit consumption markets include Botswana, Democratic Republic of Congo (DRC), Eswatini, Lesotho, Namibia, and Zimbabwe. South Africa is the largest producer and exporter of maize, producing more than 40% of the regional production and annually exporting about 690,000 tonnes (FEWSNET Southern Africa, 2016). Maize production is typically in surplus in South Africa, Zambia, Tanzania, and Malawi. The net maize deficit consumption areas are Botswana, Eswatini, Lesotho, Mozambique, Namibia, and Zimbabwe. Trade opportunities vary between surplus and deficit

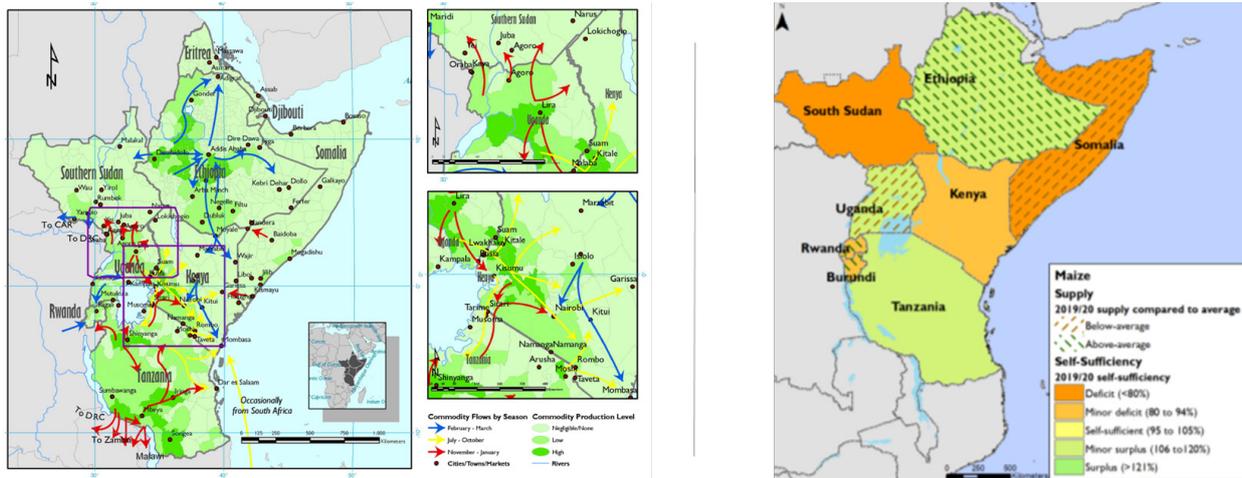


Figure 7.5: Normal maize production and market flows in East Africa | Projected 2019/2020 maize regional supply levels

Source: FEWSNET East Africa (2007) | FEWSNET East Africa (2019)

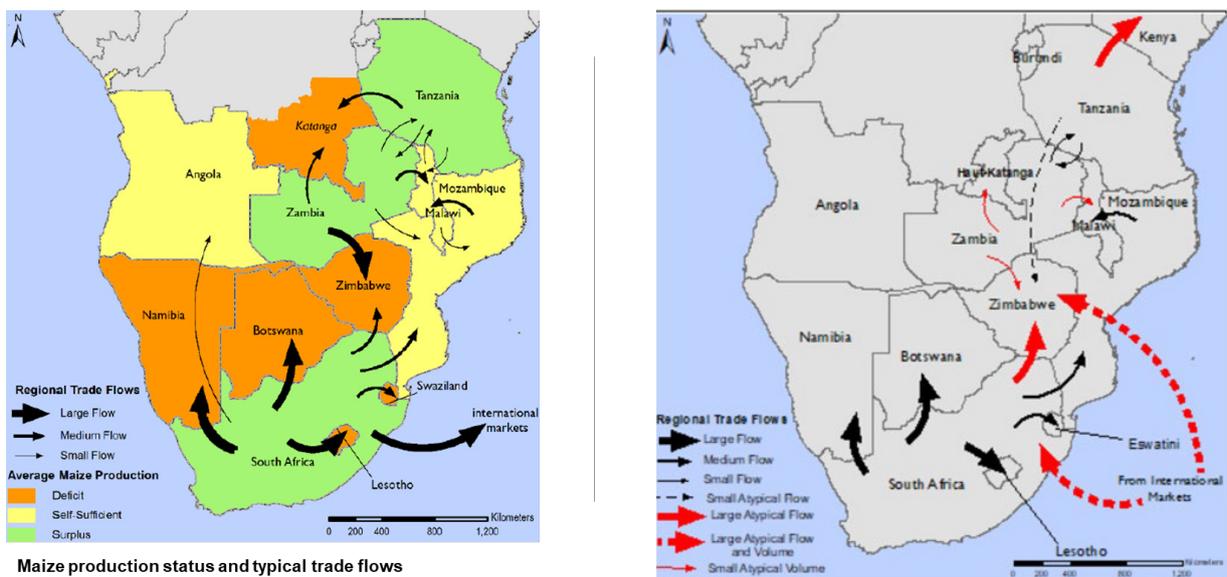


Figure 7.6: Maize, production and typical trade flows | projected 2019/2020 regional maize trends

Source: FEWSNET Southern Africa (2016) | FEWSNET Southern Africa, IAPRI and WFP (2019)

maize-producing areas within and among countries. The region has three main marketing basins. The northern marketing trade basin comprises trade flows from Zambia into DRC and Malawi, and includes bilateral trade with Tanzania. Tanzania also exports surplus to DRC and Malawi. The southern marketing basin consists of trade flows from South Africa into neighboring Botswana, Eswatini, Lesotho, Mozambique, Namibia, and Zimbabwe.

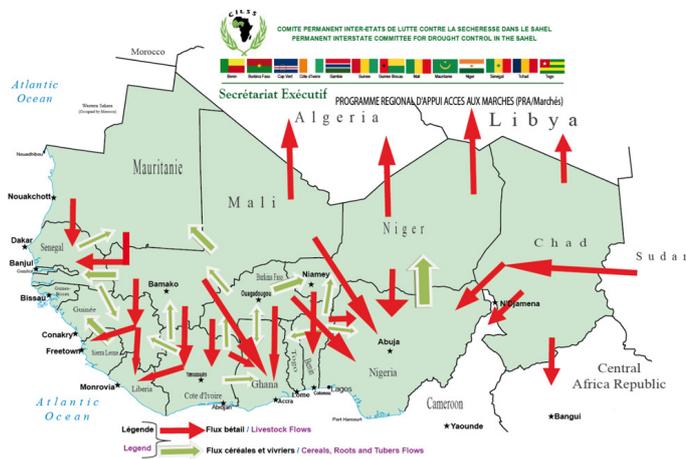
The third marketing basin covers trade flows from Zambia to Malawi and Zimbabwe.

West Africa: West Africa has three main agro-ecological zones, namely the Sahelian, Sudanese, and Coastal zones that have distinct production and consumption patterns of main staple foods. Millet is the main crop produced and consumed in the Sahelian zone. In the Sudanese zone, maize and sorghum are the main staples produced and

consumed along with rice, cassava, and yam. The Sudanese zone covers Benin, southern Burkina Faso, southern Chad, Côte d'Ivoire, Ghana, Guinea Bissau, Liberia, Mali, central Nigeria, Togo, Senegal, and Sierra Leone. The Coastal zone mainly produces and consumes yam and maize; cowpea also grows in this zone (CILSS, FAO, FEWSNET, & WFP, 2010). In addition to the agro-ecological zones mentioned above, West Africa has three main commercial networks around three hubs: the Eastern sub-area around Nigeria, the Centre commercial network around Ghana and Côte d'Ivoire, and Senegambia dominated by Senegal (Goura, 2018). Figure 7.7 shows the production and market flow map on intra-regional trade flows in major staples as well as projected 2019/2020 regional flows in West Africa.

The staples mainly move from areas of surplus production to deficit markets usually traded for food and nutrition security. Livestock trade is also significant in the region, especially from the Sahelian countries to coastal markets (Figure 7.8). The regional trade flows map of staple foods in the region from CILSS (2020) indicates that north-south trade flows dominate. There is also significant West-East (and vice versa) bilateral trade flows among neighboring countries. The staple trade flows indicate the regional patterns

of strategic production zones (strategic surplus areas) and the deficit areas they supply. Border trade based on exchanges of locally produced staples is facilitated by access to markets in neighboring countries (further enhanced by high hindering costs of accessing distant markets), and porous border posts. Regional food trade plays an important role in stabilizing supplies and prices among the countries between harvest and lean seasons (Badiane, Odjo, & Jemaneh, 2013). Border trade patterns can be reversed based on growing season and conditions among neighboring countries. Arbitrage trade is also a challenge and can be explained by informal transit re-exports and trade deflection such as trade in rice and poultry meat. Some countries import cheaper staples in large quantities beyond their domestic consumption requirements and the price differentials between local and world/ import price incentivizes traders to arbitrage at a profit between the markets. The closure of land borders by Nigeria in late 2019 has impeded trade with neighboring countries, particularly Niger and Benin. Further, the functioning of staple food and livestock markets has been significantly affected by persistent armed conflict and insecurity in the Greater Lake Chad, Liptako-Gourma, and Tibesti regions (FEWSNET West Africa, CILSS, & WFP, 2019).



Typical trade flows in West Africa

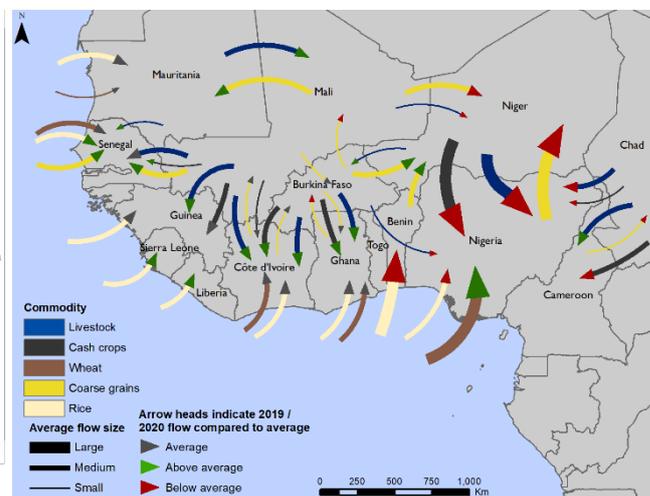


Figure 7.7: Typical trade flows in West Africa | Projected 2019/2020 regional trade flows

Note: Coarse grains include maize, millet, and sorghum

Source: CILSS (2020) | FEWSNET West Africa, CILSS and WFP (2019)

Based on the above discussion and other literature, Table 7.3 summarizes some of the main food surplus production zones and the markets they serve.

7.4.2 Major urban markets

Although the world population growth rate is slowing, the trends and projections for Africa indicate a significant population increase from an estimated 1.35 billion in 2020 to more than 2.5 billion people in 2050 (UN, 2018). Africa's urban population has been rapidly growing from an estimated 285 million in 2000 to 587 million in 2020 (Figure 7.8). The proportion of the continent's population living in urban areas has continued to increase with rising rates of urbanization. The urban population in Africa is projected to surpass the rural population in 2035 (Figure 7.8). The growing urban and total population and changes in dietary and demand patterns continue to increase demand for food in Africa (FAO, 2017a; World Bank, 2012). Also, dynamic urban cities are crucial for economic growth and development. The rapid urbanization across the continent, the emerging middle-income class, rising youth population, and technological advancements create centers of opportunities and growth. Further, rising consumers, increasing

wealth, and growth in technology and skills in urban cities create a critical mass that contributes to driving markets and human progress (Fraym, 2017).

The Fraym urban market index measures and ranks Africa's biggest 169 urban clusters based on three dimensions: (a) economic activity that measures the estimate of the metropolitan GDP of the urban cluster; (b) consumer size that estimates the population in the urban cluster that owns assets that characterize the emerging middle class (car, motorbike, television or refrigerator); and (c) connectivity that measures the strength of economic linkages among Africa's population centers (Fraym, 2017). Figure 7.9 presents the spatial distribution of Africa's biggest cities based on the Fraym urban market index. The results of the urban market index indicate that Cairo tops in the three dimensions, followed by Johannesburg, and Lagos. Nigeria ranks first in the top 100 biggest markets with 37 cities. South Africa ranks second with 9 cities making it the top 100. The major urban markets in East Africa are Khartoum, Nairobi, Addis Ababa, and Dar es Salaam. Johannesburg, Cape Town, and Durban are the major urban markets in Southern Africa. The major markets in West Africa

Table 7.3: Areas of strategic production zones and the cross-border markets they serve

Surplus food production zones	Cross-border markets they serve
Maize	Coastal areas of Benin, Ghana, Nigeria, Togo
Rice (Tanzania)	Burundi, Kenya, Rwanda, Uganda
Livestock (Sahelian countries)	Coastal markets in West Africa and parts of North Africa (Algeria, Libya)
Coarse grains (sorghum, millet), cowpeas (Sahelo-Sudanian and Sahel countries)	Coastal countries in West Africa
Maize, rice, roots, tubers and tropical fruits (lower Sahelo-Sudanian zones and coastal countries)	Landlocked countries in West Africa
Maize (Ethiopia, Tanzania, Uganda)	Rest of East Africa, parts of Central and Southern Africa (e.g., DRC, Malawi, Zimbabwe)
Maize (South Africa, Zambia, Malawi)	Botswana, Eswatini, Lesotho, Mozambique, Namibia and Zimbabwe
Millet, sorghum, and yams (Nigeria)	Neighboring countries in West Africa
Sorghum (Southern Mali)	Niger and coastal West Africa

are Lagos, Abuja, Kano, and Ibadan. Outside Nigeria, other major markets are Abidjan and Dakar. The increasing population and urbanization

trends across regional blocks and specific countries across the continent creates growing market opportunities for agricultural food products.

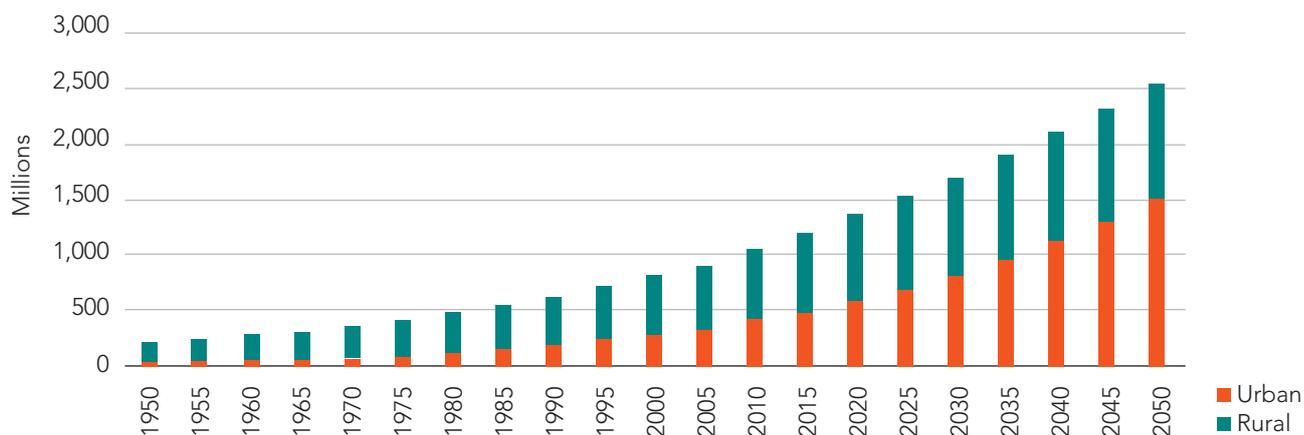


Figure 7.8 Growth in African urban and rural populations to 2050

Source: Authors' construction based on data from UN (2018)

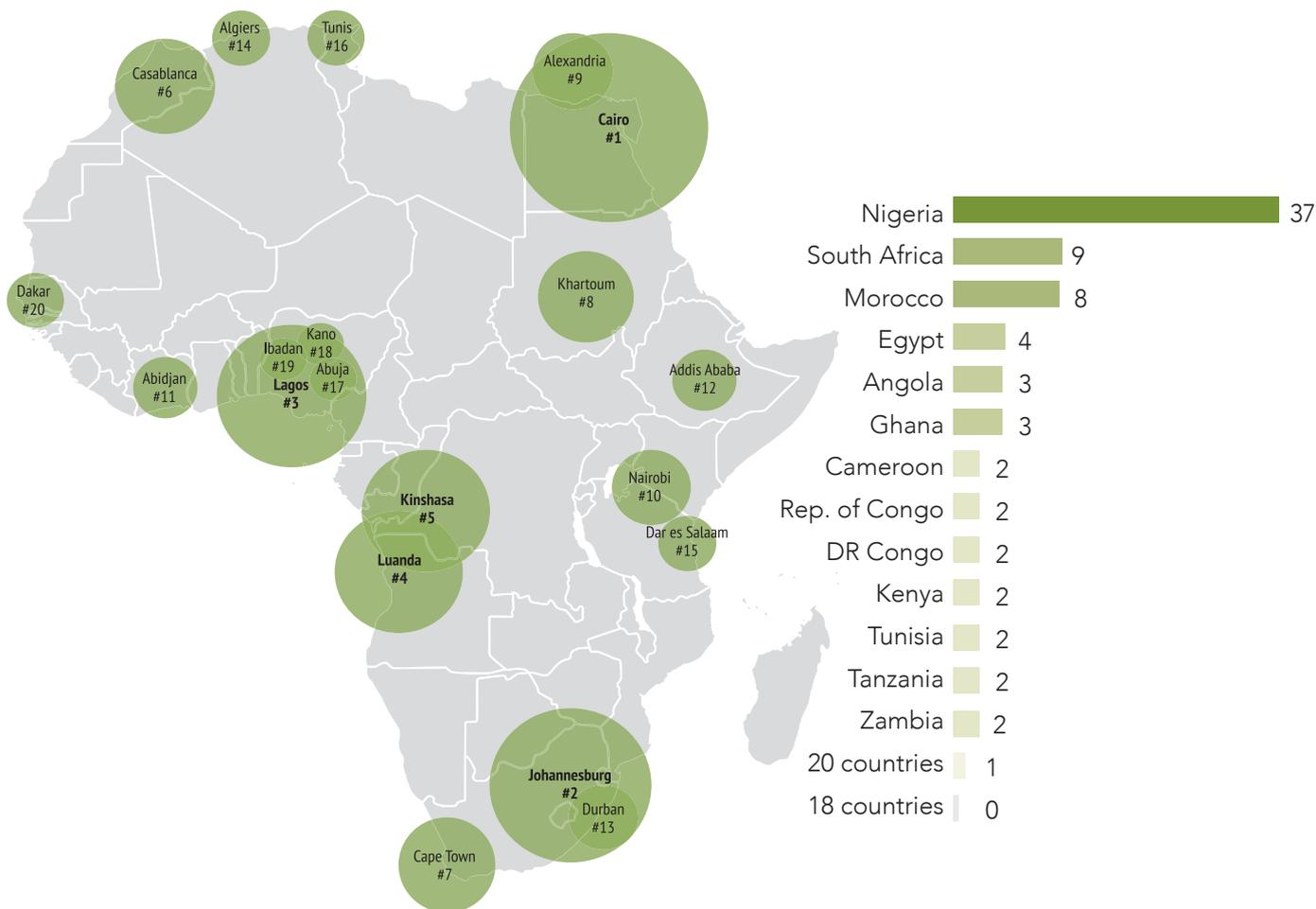


Figure 7.9: Africa's biggest urban markets based Fraym urban markets index

Source: Fraym (2017)

7.5 Cross-border trade in agricultural products: Opportunities and constraints

7.5.1 Opportunities emerging from cross-border food trade

Increasing cross-border agricultural trade is essential to driving economic growth and the achievement of development goals in Africa. Cross-border food trade is central to poverty reduction and improving food security as it facilitates the movement of food from surplus to deficit regions. This section discusses some of the specific benefits of reducing trade barriers and facilitating cross-border food trade.

Increased opportunities for increased investments in agriculture and other sectors: Despite the opportunities from cross-border food trade, barriers in many countries prevent individual farmers and producer organizations from benefiting from increased market opportunities (World Bank, 2019). Well-functioning cross-border trade generates incentives for increased production of export food commodities that generate further economic opportunities in vertically and horizontally linked sectors. Also, regional trade in food (staples and nutritious food crops and products) and farm inputs provides incentives for producers (farmers and organizations) to expand production in high-potential areas of strategic production zones (Haggblade, 2013). Reducing and eliminating barriers in regulatory processes facilitates trade in agricultural commodities and improves opportunities for farmers and other value chain actors to benefit from attractive market opportunities.

Increased intra-regional food trade, reduced food supply, and price volatility and improved food security in times of crisis: Regional food trade ensures that consumers in deficit areas (like urban areas) can access food. Also, intra-regional food trade enables governments to ensure food and nutrition security for their populations (World Bank, 2012). Food imports and stocks are traditionally

important political instruments to offset domestic food production fluctuations and ensure national food security. Comparing the variability of food production and supply to show potential gains from trade integration from the liberalization of food markets in West Africa, Kornher and Kalkuhl (2019) found that international trade integration has been relatively successful in offsetting food production fluctuations/instability. The same study found that food importers benefit the most from trade integration compared to self-sufficient grain producers such as Guinea and Mali. Regional trade integration and policy coordination that facilitates food market liberalization can create significant spillovers through reducing variability in supply (Badiane & Odjo, 2016; Kornher & Kalkuhl, 2019). However, the limitation of depending on food imports to stabilize domestic food prices and supply is that it depends on the trading partners' commitments to existing trade agreements (Gouel & Jean, 2015). For example, during the 2007/2008 global food crises, strategic food-exporting countries imposed export restrictions (bans and quotas) to stabilize domestic food prices and reducing global food supplies which resulted in shortages and fueled food price increases (Martin & Anderson, 2012; Porteous, 2017).

Contribute to food systems adaptation to the impacts of climate change (Figure 7.10): Food security in a changing climate is a double exposure of people and processes to climate and economic shocks. Trade restrictions result in double exposure to both rapidly changing climatic conditions and market volatility, leading to worse food security outcomes for millions of people (Brown et al., 2017). Adaptation to climate change affects food availability, food access, food utilization, and stability of food security for millions of poor people around the world. Trade helps ensure that sufficient and nutritious food is available and accessible to those experiencing shortages due to impacts of climate change and other shocks (Brown et al., 2017). Through stabilizing food prices under shocks such as climate change, trade contributes to improving access to food by millions of poor households (Brown & Kshirsagar, 2015; Wiebe, et

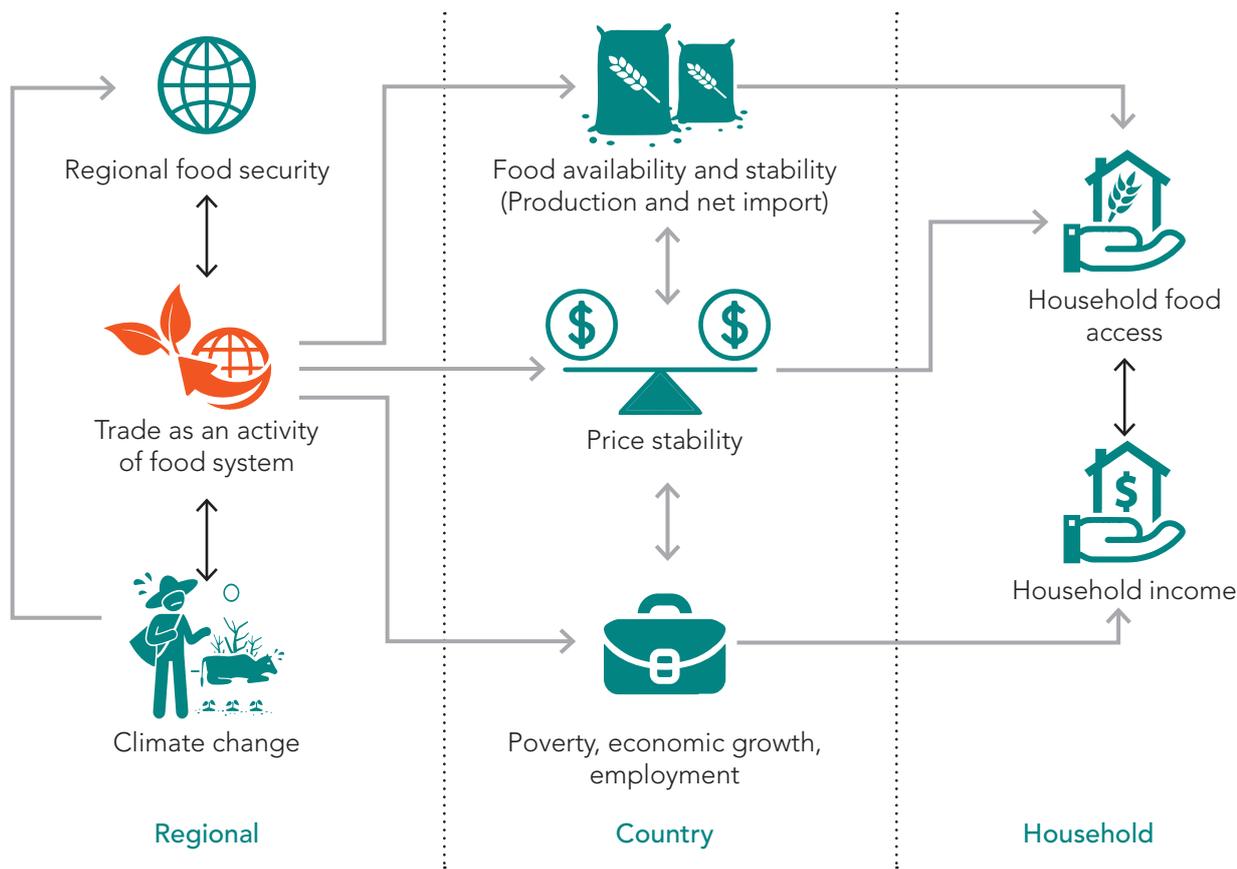


Figure 7.10: Regional, country, and household climate impacts

Source: Adapted from Brown et al. (2017)

al., 2015). Cross-border trade also helps contribute to building the adaptive capacity of food systems to climate change by facilitating the movement of climate-smart agricultural inputs and technologies such as improved inputs and livestock breeds across borders.

Contribute to improvements in net trade and food security: Despite high up-front costs, the benefits of reducing barriers and facilitating trade can significantly improve export diversification and supply chain trade, and outweighs the costs. Trade openness contributes to positive and significant impacts on food security through improvements in dietary energy consumption and dietary diversity (Dithmer & Abdulai, 2017; Hoekman & Shepherd, 2015; Kornher & Kalkuhl, 2019). Using an economy-wide multimarket and multi-country model for West Africa, Odjo and Badiane (2018) demonstrated that

moderate reduction in trading costs and removal of cross-border trade obstacles could considerably benefit Niger. The authors found that the policy measures that enhance trade facilitation would contribute to benefits in productivity, expansion of net imports and exports (including benefits to regional trade), and improvements in food security.

Allow regional economies of scale in input procurement, lower input prices for farmers: Regional trade contributes to stabilizing and lowering costs of farm inputs and facilitates economies of scale in procurement and distribution. For example, through economies of scale from bulk fertilizer imports, intra-Africa regional trade and regional logistics farm-level prices of imported fertilizer can reduce by between 30% and 50% (Gregory & Bumb, 2006; Morris, Kelly, Kopicki, & Byerlee, 2007). Furthermore, trade facilitation

“enables the influx of new technologies, products and practices” that will contribute to improving standards in the domestic market (USAID, 2015, p. 2).

Increase welfare to farmers, consumers and governments: Barriers to trade, therefore, contribute to the deterioration of trade and welfare. Free movement of food across borders is beneficial to farmers, consumers, and governments. Farmers can access bigger regional markets that act as incentives to produce more to meet the rising food demand. Increased food production and trade also create more economic opportunities along the different stages of the food value chain from production and distribution of farm inputs, transport and logistics, and processing, distribution and retailing (Ericksen, 2008; Hoekman & Shepherd, 2015; Smit, 2016; World Bank, 2012). Improvements in trade facilitation enhance economic integration through trade and under appropriate conditions, contribute to increasing national incomes, rising productivity growth and poverty reduction (Hoekman & Shepherd, 2015). Inefficiencies in transport, logistics, and management at ports of entry reflect in increased trade costs that are transmitted to final product prices. Lack of trade facilitation results in increased prices for imports and exports. For instance, for a given world price, increased red tape costs and delays mean exporters get a small share of that price (Hoekman & Shepherd, 2015). Government policies that improve trade facilitation help reduce trade costs and the gap between the world and domestic prices. This increases accessibility to food products and farm inputs that might typically be expensive in local markets compared to the world markets. However, free movement of food products creates winners and losers across producers and consumers. This makes trade policy reform a challenging process. Therefore, governments should ensure that the trade policy reforms find a way to support potential losers through for example safety nets and capacity building.

7.5.2 Barriers to cross-border trade

Although African countries have increased agricultural trade in recent years, intra-African food

trade remains low and below its potential. The low levels of intra-Africa food trade and integration illustrated earlier in this chapter demonstrate that the continent is not taking advantage of the potential for improving intra-regional food trade to address regional challenges such as chronic food and nutrition insecurity and poverty. Constraints impeding intra-African food trade include inconsistent regional regulations and standards, inefficient customs processes, poor quality of physical infrastructure, non-tariff barriers, and stringent food safety and traceability requirements in importing countries. Agricultural trade is also hindered by constraints affecting the agriculture sector such as under-developed connections between smallholder producers and other value chain actors, multiple shocks such as climate change, variability and extremes, and productivity constraints (Badiane et al., 2018).

Trade barriers have several negative impacts on the functioning of agricultural systems, ultimately affecting the achievement of desired food security outcomes. These barriers contribute towards increased transport costs, reduced marketing margins, higher urban food prices, and lower farm gate prices in surplus zones (World Bank, 2012). The impact is significantly higher among smallholder farmers who eventually fail to access critical productivity-enhancing inputs such as improved seeds and fertilizers available elsewhere in the world. The restrictions on the movement of these essential production inputs due to trade barriers can increase the vulnerability of farmers and their production systems to the impacts of climate change and other shocks. Inconsistent and unpredictable trade barriers limit private sector investments which are vital for facilitating agricultural trade and employment creation along agricultural value chains.

Several barriers have for years constrained cross-border agricultural trade in Africa. Non-tariff measures (NTMs) like sanitary and phytosanitary (SPS) measures and technical barriers to trade are significant hindrances to food and agricultural trade (Arita, Beckman, & Mitchell, 2017; Cadot, Asprilla, Gourdon, & Knebel, 2015; Li & Beghin, 2017).

NTMs hinder agricultural trade flows more than other sectors (Li & Beghin, 2017) and contribute significantly towards trade costs and food prices. The following discussion presents selected cross-border barriers and their impacts.

Bureaucratic border procedures coupled with numerous checks along trade corridors, which in most cases are unpredictable, often lead to increased trade costs and delays in the movement of goods across borders. The impact is especially significant for agricultural commodities, in particular for perishable products which require faster clearance to preserve product quality. Delays in the clearance and movement of these perishable products could lead to significant income losses if the quality is affected and the product is no longer marketable. The costs of lengthy border procedures account for 2–15% of the value of trade goods, a significantly high value (OECD, 2009).

The numerous stops and checks along trade corridors also contribute to increased trade costs and delays. A study by the Enabling Agricultural Trade project (USAID, 2011) reported that there were 14 checkpoints between Accra and Aflao, a distance of only 200 kilometers. The study also revealed that in West Africa, checkpoints along major transit routes require truckers to pay between US\$3 and US\$32 and to stop for approximately 9–29 minutes at each checkpoint, resulting in significant delays and increased business costs to the traders.

Inconsistent and unpredictable trade policies related to the implementation of export and import bans, tariffs, price controls, and implementation of standards, which are often poorly communicated, is also a significant impediment to cross-border agricultural trade. These measures create uncertainty in trade markets and limit private sector investments in areas that are key to driving trade activities.

In addition, the *lack of alignment in trade regulation policies*, specifically on measures related to food quality standards and SPS requirements limits the movement of agricultural products. For example, South Africa, the biggest producer of

maize on the continent, produces maize, which is generally not accepted by other countries in the region which have a strict policy on importing non-genetically modified products. However, during some years when these countries experience droughts and severe food shortages, they make ad hoc allowances for importing maize which further creates uncertainties in terms of policy implementation.

The low production capacity of smallholder farmers, who are the major producers of most staple food crops in Africa, is also a challenge to cross-border trade as it limits the amount of food supplies for the market. Smallholder farming systems in Africa are characterized by low productivity and high post-harvest losses which reduce the production of surplus that can be made available for trade. Reasons for this low production capacity and high-post harvest losses are numerous. They typically include limited access to and use of improved inputs, lack of access to finance, and lack of adequate post-harvest storage infrastructure.

Furthermore, the *low levels of smallholder farmer participation in regional value chains* limit food supplies that can be channeled towards trade markets. Smallholder farmers often are reluctant to participate in regional value chains through private sector linkages because of the *lack of dedicated regulations and legislations which govern contract farming* and protect farmers from unfair practices by traders. Most countries in Africa do not have regulatory frameworks for contract farming in food value chains. These are mostly implemented in cash export-oriented crops such as cocoa, tobacco, coffee tea.

Deficiencies in the physical infrastructure, including storage facilities, poor road conditions, unreliable electricity, and inadequate market information systems also create significant barriers to cross-border trade activities. The poor state of infrastructure is one of the significant barriers to regional trade integration in Africa (van Dijk, 2011). The quality and state of trade infrastructure coupled with transport costs are critical determinants of whether agricultural products can be transported

to the border for trade. Good road infrastructure and an efficient trucking system help improve cross-border trade efficiencies by reducing import and export costs. In addition to adding to trade costs, lack of adequate trade infrastructure also limits the ability of rural populations, especially smallholder farmers, to access domestic, regional, or global markets. Lack of storage infrastructure particularly along the cold supply chain has detrimental effects on trade in perishable agricultural products with studies from USAID (2007) showing that each day in transit for perishable goods, including vegetables and fruit, lowers the product price of the product by 0.9%. Another study by USAID (2015) reports that the lack of energy and transport infrastructure in Kenya accounts for approximately 30% productivity losses for Kenyan trade firms.

Non-tariff trade barriers remain the biggest impediment to agricultural trade in Africa. Despite the commitment by most African governments to promote free trade through the ratification of various regional and continental integration protocols, non-tariff barriers continue to restrict the free flow of goods on the continent. A study by Gillson & Charalambides (2012) reports that the cost of NTMs, namely of SPS and other technical barriers to trade, is much higher than that of tariffs. In East Africa, some of the common non-tariff barriers that have historically restricted cross-border agricultural trade include: cumbersome and numerous customs documentation and administrative procedures; non-recognition of the certificates of origin; varying standards and stringent application of SPS restrictions; delays at border crossings, roadblocks, weighbridges, police checks, and the attendant costs; and un-harmonized transit charges and procedures. In Southern Africa, the most common non-tariff barriers include SPS, non-automatic licensing requirements, export restrictions, and technical regulations. In West Africa, NTMs mostly relate to qualitative restrictions and SPS requirements.

Lack of trade support services, namely risk mitigation solutions creates barriers to trade by not providing incentives that encourage private sector

investment in trade value chains. Most countries do not have structured solutions which can help de-risk private sector investment and participation in trade activities. These solutions include export guarantee schemes, structured trade finance solutions, and export/import subsidy funds.

The COVID-19 pandemic has added to the already existing challenges facing cross-border agricultural trade activities in Africa. The movement restrictions and temporary border closures at the onset of the pandemic negatively impacted the movement of various products across borders, including agricultural products. The pandemic continues to have a disproportionate impact on informal cross-border traders who have been restricted from crossing borders. Consequently, trade volumes across borders declined significantly with reports by COMESA showing that import volumes through national borders in East and Southern Africa decreased over the March to April period. Import volumes in Malawi and Rwanda decreased by 32% over this period (COMESA, 2020a; 2020b) while in Zambia and Uganda they declined by 25% and 30% respectively (COMESA, 2020c; 2020d).

Weaknesses in trade facilitation. High levels of informal trade correlate to weaknesses in trade facilitation and contribute to increases in corruption, fraudulent products, and increased health risks (USAID, 2015). For example, the inability of the Government of Mali to enforce grades and standards contributed to the growth in informal trade. In Liberia, an estimated 80–90% of all agricultural imports enter the country without inspection or a permit due to infighting between border agencies and lack of clear division of responsibilities between the Ministry of Agriculture and Ministry of Commerce (USAID, 2015).

Additional barriers to intra-regional trade include openness to international markets. For example, in West Africa levels of protection of local production are very low despite the creation of high tariff rates of 35% for 130 agri-food commodities in the Common External Tariff (CET). The result has been the problem of re-export trade or quasi-official smuggling where a country imports excess

products to meet its own domestic consumption/ demand needs and exports them to neighboring countries, taking advantage of disparities in policies (Goura, 2018). For instance, Benin's annual national rice consumption requirements are estimated at 400,000 tonnes, however, the country imports around 900,000 tonnes annually, re-exporting above 500,000 tonnes mainly smuggled to Nigeria (Goura, 2018). This contributed to the closure of land borders by Nigeria in late 2019, a situation that affected cross-border trade in the region.

7.6 Policy actions to accelerate intra-African food trade

Removing barriers to trade is vital to the acceleration of intra-Africa agricultural trade and the achievement of the food security and economic development outcomes in Africa. Additionally, removing trade barriers will help increase smallholder farmer participation in regional markets, helping farmers increase their incomes and contribute towards building their resilience. Increased participation of smallholder farmers in regional markets in turn will increase the demand for various goods and services required to produce and distribute these food products along the regional value chain, attracting increased private sector investment. This increased investment ultimately creates employment opportunities across different stages of the value chain, contributing to economic development on the continent.

The following are some of the actions that can be undertaken to remove trade barriers and accelerate intra-Africa agricultural trade. Where applicable recommended policy actions that governments can adopt to facilitate the removal of these barriers through the proposed measures are also highlighted.

Implement consistent and predictable trade policies which avoid ad hoc export/import restrictions will help create an enabling environment for increasing agricultural trade and investment activities. Additionally, simplifying and harmonizing administrative and customs procedures at borders can help lower trade costs. This can be achieved by

developing trade policies which clearly indicate the circumstances under which governments intervene in agricultural markets through import and export restrictions and to what extent these interventions will be applied. This will enable private sector players and other stakeholders to proactively plan their activities depending on the performance of the market.

Streamline and strengthen the operational capacity of customs services to allow for more efficient and border processes and clearances. This is especially important for agricultural trade where most products are perishable and therefore need quick processing. The perishability of agricultural products attracts a disproportionate number of quality checks and paperwork to ensure food safety standards have been observed. Often these quality checks and test protocols are not communicated transparently and consistently resulting in significant delays at borders. This demonstrates the need for a more streamlined and harmonized customs process which simplifies testing protocols at borders. Governments can publish these quality requirements and testing protocols on various public websites where they are accessible to prospective traders. Simplified trade processes are especially important in Africa where small-scale and informal traders contribute significantly to cross-border agricultural trade. Simplified trade process can consist of a simplified customs document, a simplified certificate of origin, a common list of products, and a threshold for the value of the consignment.

Reducing costs and bureaucracy at the borders will enable these small-scale traders to use formal channels for trade which will contribute to increased trade revenue. The operational capacity of border custom systems can be strengthened through the use of information technology (IT) infrastructure to automate various customs processes, including border administrative and risk management procedures, and updating customs codes to integrate risk management practices that can help reduce complexity in clearing goods and reduce duplications.

Establish a single-window system: A single window system “is a countrywide facility that provides for all parties (regulatory agencies and the trading community) to submit standardized information only once, at a single entry point, to fulfil all import, export, and transit-related regulatory requirements” (USAID, 2015, p. 3). This system can help improve transparency, efficiency, and security of cross-border trade.

Invest in infrastructure beyond the border: This includes investments in physical infrastructure, including storage facilities, roads, energy supply, and market information systems which can help improve competitiveness and efficiency of agricultural trade.

Enhance efficiency in transport and logistics: The experience with the outbreak of COVID-19 has further exposed the lack of efficiency in transport and logistics in Africa. These disruptions across the continent severely impacted the movement of food from one country/region to another. Evidence of long truck queues at national border posts, such as in East Africa, showed the impacts of lack of efficiency in transport and logistics and how that contributes to increasing trade costs and food shortages to areas of need.

De-risk private sector investment through blended finance and export guarantee schemes to help increase agricultural trade by increasing private sector investment. Export guarantee schemes are a type of insurance policy that protects exporters

from potential payment default by an importer. These guarantees are typically offered by national export promotion agencies which provide insurance cover on an ad valorem fee that considers creditworthiness of the importer and country risk. Notable successful models of export finance mechanism can be seen from the Tanzania Export Credit Guarantee Scheme (ECGS) (Box 7.1).

Establish special economic zones: Special economic zones (SEZs)⁸ are key instruments for increased industrialization, which in turn attracts foreign direct investment, creating jobs and helping increase exports and foreign exchange earnings (Tinarwo, 2018). Governments can promote the establishment of SEZs through providing incentives for the creation of joint ventures between foreign and local companies. There is also potential to increase establishment of SEZs by establishing lower investment thresholds for local companies.

There are several types of SEZs, namely free trade zones⁹, export processing zones¹⁰, free ports¹¹,

8 Special economic zones (SEZs) — geographically delimited areas within which governments facilitate industrial activity through fiscal and regulatory incentives and infrastructure support.

9 Free trade zones, also known as commercial free zones, are small, fenced-in, duty free areas, offering warehousing, storage, and distribution facilities for trade, transshipment, and re-export operations and are usually located in most ports of entry around the world.

10 Export processing zones (EPZs) aim at accelerating industrialization mostly for export markets.

11 This type of SEZs incorporate large transport facilities like ports, airports, and goods and services-related trade activities; a good example is the large-scale free ports in China.

Box 7.1: The Export Credit Guarantee Scheme: Tanzania

The Government of Tanzania established the Export Credit Guarantee Scheme (ECGS) and the SME Credit Guarantee Scheme (SME-CGS) in 2003 and 2005 respectively to create an enabling environment for the expansion and growth of exports from Tanzania, and promote and support the start-up SMEs for domestic and export products.

The ECGS and SME Credit Guarantee Scheme were both funded by the country's Ministry of Finance and administered under an agency agreement, by the Bank of Tanzania. The SME-CGS was suspended in 2008 due to some capitalization and structural problems. However, ECGS is still active and making a significant impact, although it has encountered some problems

free enterprises¹² and enterprise zones¹³. The establishment of SEZs varies considerably in Africa: some countries already have established them, and others have expressed their commitment to establishing these in various strategy and policy frameworks.

Cote d'Ivoire, Mali and Burkina Faso launched a cross-border SEZ (Box 7.2) which is expected to increase integration among the countries and promote trade. Ghana currently has two free ports — at Tema and Takoradi, the Kotoka International Airport free zone. The country also has four export processing zones (EPZ): the Tema EPZ, located near the seaport in Tema; the Ashanti EPZ, located close to the inland port of Ghana Boankra; and Sekondi and Shama EPZs, both located near the seaport of Sekondi (WTO, 2014). Rwanda has committed to establishing SEZs and free economic zones to support the development of import-substitution industries for national and subregional markets (WTO, 2019). The government will support these zones with facilities to implement export quality standards for export, and support SMEs in value addition and diversification, access electricity, water,

12 These are also called single-company zones and are a variation of the EPZs, where the EPZ status is afforded to single enterprises outside the zone.

13 Enterprise zones are a type of SEZs meant for economic revitalization of distressed urban or rural areas through the provision of tax incentives and financial grants.

and credit. South Africa has nine SEZs across all its provinces. The government supports each of these zones through preferential corporate tax rates, VAT and customs duty suspension in customs-controlled areas, employment incentives, building allowance, and preferential land and utility rates¹⁴. Zambia has also recognized the need to boost exports through the reform which saw the amalgamation of the Export Board of Zambia and the Zambia Export Processing Zones Authority to form the Zambia Development Agency (UNCTAD, 2016).

7.7 Conclusion

Well-functioning intra-regional food trade systems create social and economic growth and development opportunities for different actors engaged at different stages of the food systems from production to consumption through vertical and horizontal linkages with other sectors. The intra-Africa food trade flows remain low hampered by low levels of regional integration and trade constraints, and high transaction costs which dampen incentives for producers to increase production in high-potential areas of strategic production zones. The constraints hinder African farmers from exploiting the potential to produce enough food for the increasing demand driven by growth in population,

14 <http://www.investsa.gov.za/special-economic-zones/>

Box 7.2: Burkina Faso, Côte d'Ivoire and Mali launch special economic zone

On May 14, 2018, the Prime Ministers of Burkina Faso, Côte d'Ivoire, and Mali launched a special economic zone (SEZ) in the SKBo triangle, comprising the Sikasso (Mali), Bobo Dioulasso (Burkina Faso), and Korhogo (Côte d'Ivoire) regions.

This is the first SEZ in West Africa that operates across borders. The legal framework foresees there will be fiscal advantages for companies that decide to operate in this cross-border area, and this could contribute to the integration of local economies. In particular, the three governments aim to attract private sector investment in agribusiness, agro-industry and the mining sector. The West African Economic and Monetary Union and partners support the development of an integrated territorial development approach for this area. Cross-border co-operation activities have been developed in the SKBo triangle for several decades. The region is part of the ECOWAS Cross-border Initiatives Programme (PIT) launched in 2005 that aimed to increase cooperation frameworks along intra-community borders.

urbanization, and incomes that are impacting food systems. The attainment of the food and nutrition security goals in Africa depend on significant improvements in agricultural productivity together with the successful coupling of the areas of strategic production zones and cross-border deficit food markets on the continent.

The commitment to triple intra-African agricultural trade in the 2014 Malabo Declaration and the establishment of AfCFTA demonstrate the resolve at continental level to address the limitations to promoting intra-Africa food trade. Despite continental and regional commitments to facilitate free movement of agricultural products and services across borders in Africa, implementation remains weak with governments implementing measures that impede cross-border food trade. Lack of transparency and predictability in the food trade and pricing environments at national and regional levels prevalent in many countries hinder farmers and the private sector from expanding investments in food production and trade.

Governments need to create a predictable policy environment that incentivizes farmers and private sector organizations to expand investments in food production and trade. Also, the governments and RECs should implement measures to facilitate trade, for example, streamline customs procedures and document requirements, improve the efficiency of port operations, and increase investments in transport and logistics infrastructure. These measures would contribute to reducing delays and trade costs for both importers and exporters and increase opportunities from trade liberalization for food value chain actors in both exporting and importing countries. Overall, countries should step up efforts to reduce and eliminate factors that are affecting improvements in the competitiveness of African agriculture and factors impeding intra-Africa food trade. It is critical to build a robust intra-Africa food market through developing and implementing measures that increase smallholder farmers' productivity and integration into regional food value chains, and the development of the agribusiness food industry.

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8 Improving urban agri-food system governance, performance and opportunities for African farmers to feed the continent's rapidly growing cities

Steven Haggblade¹

Key messages

- 1 Africa's cities provide the largest and most rapidly growing agricultural markets in Africa.
- 2 As a result, cities shape Africa's farming and agribusiness incentives in increasingly powerful ways: they affect spatial patterns of farm production, induce rapid expansion of food processing and trigger growing concerns about food quality, food safety, and public health.
- 3 New, non-traditional actors — including city planners, mayors, district councils, trader organizations, and public health professionals — have become key players shaping and implementing agricultural policy.
- 4 Effective governance of urban food systems requires inclusive models that coordinate and harmonize actions of the many diverse players now shaping African agri-food systems.
- 5 Pressures from the current COVID-19 pandemic exacerbate existing economic and social inequalities, aggravate problems of urban undernutrition, and accelerate the urgency of urban food system planning and governance reforms.
- 6 Key public goods required to ensure competitiveness of African farmers and agribusiness in growing urban food markets include: a) improved urban food system governance; b) efficient urban wholesale markets; c) food safety regulation and enforcement; d) regional free trade and agricultural policy harmonization; and e) agricultural research focused on high-growth, high-value food commodities.

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8.1 Agribusiness opportunities in Africa's growing urban food markets

8.1.1 Growing urban food markets

Africa's cities provide the largest and most rapidly growing agricultural markets in Africa. Since 2015, agglomerations of 10,000 or more inhabitants have housed the majority of Africa's population (Moriconi-Ebrard, Heinrigs, & Trémolières, 2020). Over the coming decades, global population projections forecast rates of African urbanization at 3.4% annually, the highest in the world (UN, 2018). Urban population growth coupled with the time constraints of urban lifestyles and rising opportunity costs of women's time lead to a growing demand for packaged, processed, and prepared foods. Simultaneously, growing per capita incomes accelerate these trends, driving consumer diversification out of unprocessed starchy staples and into processed and packaged staples and convenience foods as well as diversification into high-value perishables such as poultry, dairy, fish, meat, and, to a lesser extent, horticultural products. For over a decade, from 2000 to 2013, Chapter 2 describes how sharp gains in per capita consumption across Africa compounded the impact of rapid urbanization which together drove dramatic change in diets and in farming opportunities. Although per capita income growth has largely stalled across Africa since 2013, urban population growth continues to drive urban food demand, albeit at a slower rate than the prior decade, until the post-COVID period when global per capita income growth resumes. Today urban food consumption accounts for over half of the value of national food consumption in many African countries (Figure 8.1).

Consumption and trade data — compiled in Chapters 2 and 3 over time from across the continent — suggest growing commercial opportunities in three major urban food market segments: a) processed foods; b) high-value perishables; and c) prepared foods consumed away from home.

Processed foods, the largest of these three segments, already account for 35% to 50% of urban food purchases across the continent (Chapter 2). The biggest component among the processed foods includes a growing array of milled cereal products and starchy staple convenience foods made from maize, wheat, cassava, yams, sorghum, millet, cowpeas, and teff, which processors of varying sizes produce, market, and sometimes brand under their own house labels (Hollinger and Staats, 2015; Minten, Reardon, & Chen, 2017; Snyder, Ijumba, Tschirley, & Reardon, 2015; Theriault, Vroegindewey, Assima, & Keita, 2018). Import data highlight already large and growing imports of processed goods, including wheat flour, vegetable oil, sugar, and powdered milk (Chapter 3).

High-value perishable foods such as poultry, dairy, fish, meat, fresh fruits, and vegetables account for another 25% to 40% of urban food purchases. Consumption data from across East, West, and Southern Africa all document rising consumption of the high-value perishables — particularly poultry, dairy, fish, and meat — as incomes and urbanization grow (Chapter 2). Evidence on horticultural consumption shares is more mixed, though individual case studies point to rapid growth in some locations (Box 4.1; Minten, Mohammed, & Tamru, 2020). Generally, increasing imports of poultry, dairy, fish, meat, and horticultural products underline the strong demand for these high-value perishable foods. Rising imports, likewise, suggest that urban demand has grown faster than domestic supply for many of these high-value foods (Chapter 3).

Corroborating inferences come from a recent study of food price trends in Ethiopia over the past decade which reveals that real prices for animal-sourced proteins and horticultural products have risen much faster than for staple cereals, suggesting that urban demand has outpaced domestic supply for these high-value perishables (Bachewe & Minten, 2019). Analysis in Chapter 3 attributes the failure of domestic African agribusiness to fully meet growing demand in urban high-value food markets to a combination of pricing, quality, and domestic supply constraints stemming from poor in-

frastructure, high-cost financing, high energy costs, and disjointed, constraining policy positions, particularly those limiting intra-African trade. Viewed from a glass-half-full perspective, the US\$25 billion in an-

nual imports to these markets represent significant opportunities for future expansion of high-value domestic agriculture in Africa.

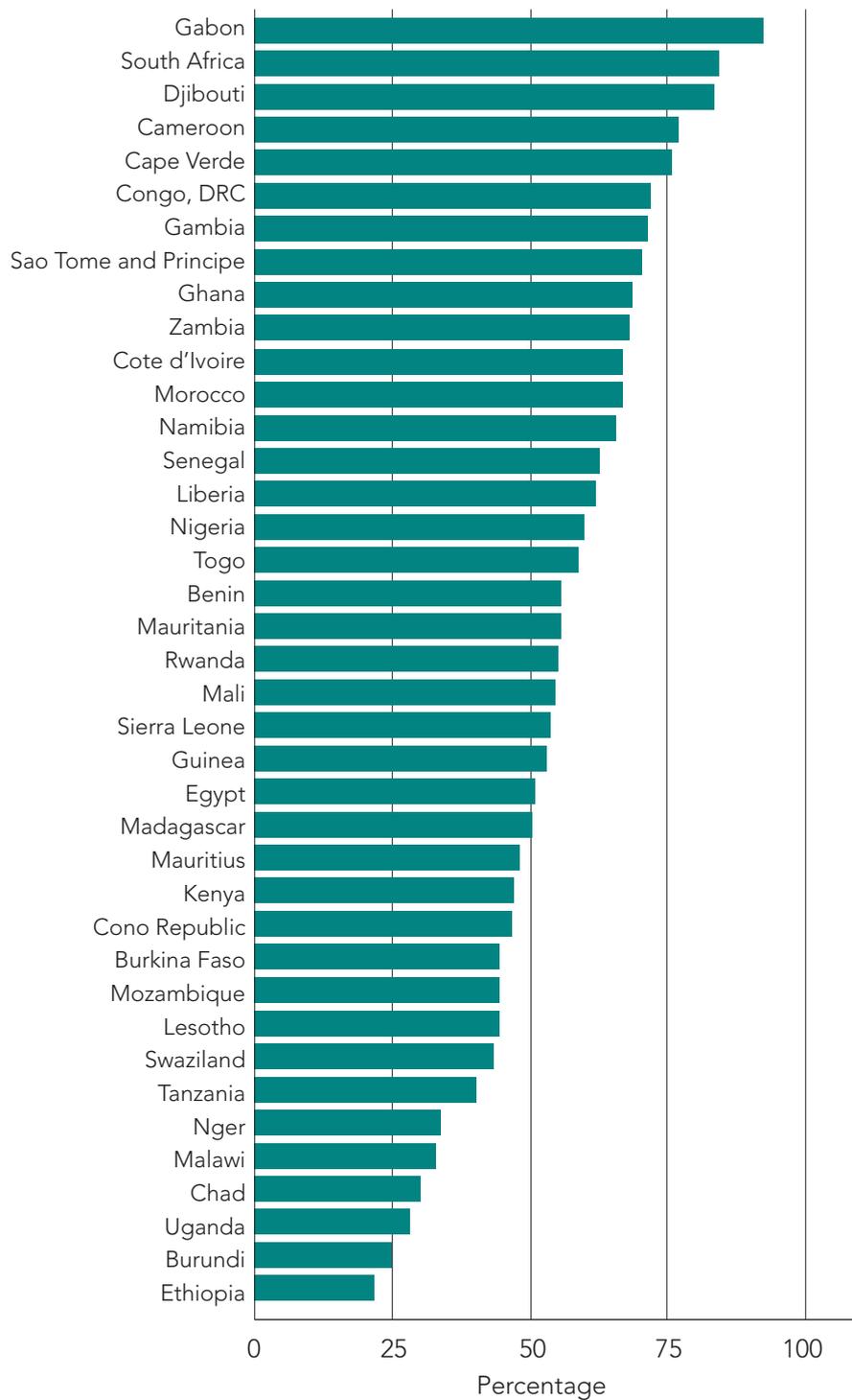


Figure 8.1. Urban share of national food consumption, 2010 (computed from 2010 PPP\$ values)

Source: World Bank (2020a)

Finally, prepared foods offer significant growth potential, though from a generally low initial base. Chapter 2 concludes that prepared foods account for only about 6% of urban food sales, on average. However, this proportion varies widely, rising to over 30% in cities such as Abidjan, Cotonou, and Lomé. Sales of street food, urban snack foods, and franchises selling fried chicken, pizza and other fast foods are growing rapidly in many African cities (Ayo, Bonabana-Wabbi J, Sserunkuuma, 2012; Haggblade et al., 2016; Steyn, Labadarios, & Nel, 2011). This growing demand for prepared foods opens prospects for significant employment growth among what are often small-scale, women-owned restaurants, canteens and itinerant food vendors. These street-food entrepreneurs innovate, with sometimes lasting changes in food patterns. Examples include the expansion of fried plantain banana (*aloko*) all across West Africa, *attiéké* made from cassava semolina in Côte d'Ivoire and nearby coastal countries (Bricas, 1992, 2008); rice and fish with oil and vegetables (*ceebu jën*) in urban

Senegal (Bricas & O'Déy , 1985), *baabenda*, a dish made from vegetable leaves in urban Burkina Faso (H ron, 2016), and the *kota* (or quarter), a popular street food among urban adolescents in South Africa which combines one-quarter of a loaf of white bread, chips (French fries), cheese, spam, and gravy (Feeley, Pettifor, & Norris, 2009).

8.1.2 Urban influences on agri-food system supply structure

In addition to the demand-side pull of urban food markets, Africa's cities shape the structure of agricultural supply systems, in sometimes obvious ways by serving as purveyors of farm inputs, equipment, and related services as well as warehousing and cold storage for agricultural outputs. Cities also serve as key governors of land and labor prices in nearby agricultural zones. Because of their growing scale, urban land, labor, and input markets generate pronounced spatial gradients in land valuations, wage rates, and agricultural input prices that, in turn, affect spatial

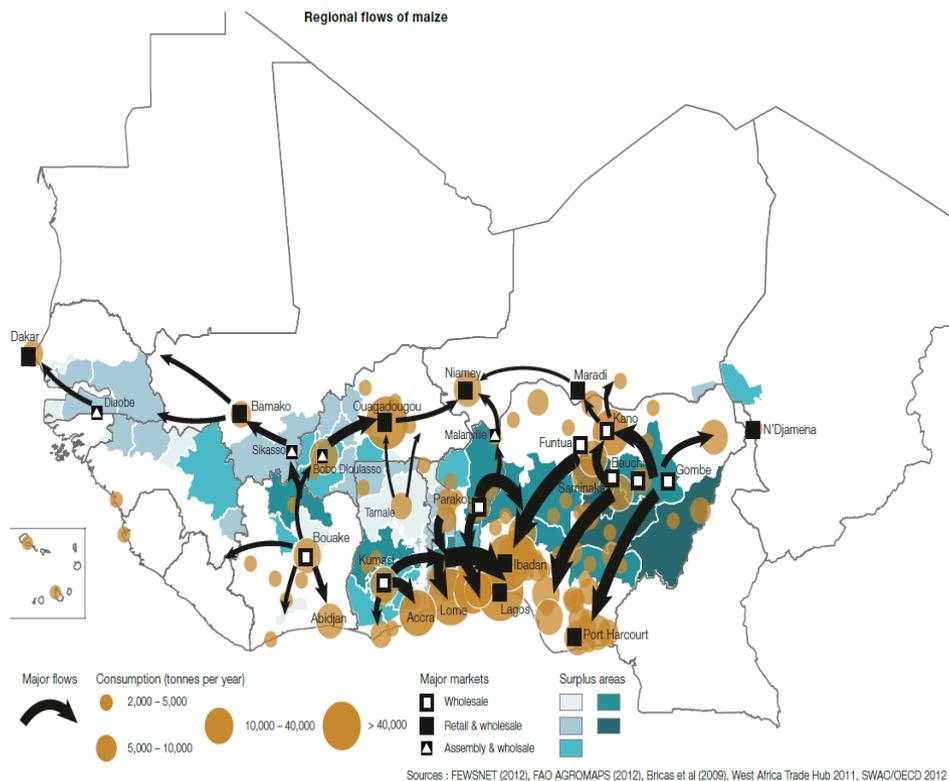


Figure 8.2. Regional maize trade flows to urban areas in West Africa Source: CILSS (2012)

Source: CILSS (2012)

land-use patterns and on-farm technologies used (Vandecasteele, Tamru, Minten, & Swinnen, 2018). While land and labor costs generally increase with proximity to major cities, the cost of purchased inputs falls. As a result, inputs that reduce labor use (such as herbicides and mechanization) become most profitable on farms operating in close proximity to Africa's major cities. For this reason, farms located nearby large urban centers in Mali and Ethiopia apply herbicides at quadruple the rate of those in outlying areas (Box 8.1). Given high land prices, and water availability, farming in urban and peri-urban areas typically focuses on high-value products such as poultry, dairy, small ruminant fattening operations, and horticultural production (FAO, 2012; Jacobi, Amend, & Kiango, 2000; Kiambi et al., 2018). Africa's secondary cities — accounting for one-third to one-half of Africa's urban population — have become key suppliers of farm inputs, pumps, farm equipment, warehousing, transport, and repair services (Chapter 2; Reardon 2007).

In post-farm segments of Africa's agri-food systems, cities shape opportunities for agricultural trade, processing and distribution. Given the growing scale of urban food markets, cities serve as powerful magnets attracting domestic, regional, and international supplies (Figure 8.2). A series of recent case studies mapping food supply sources in three secondary African cities identified vegetables from South Africa on sale at the major wholesale market in Kitwe, Zambia; eggs from Uganda being sold in the wholesale market in Kisumu, Kenya; rice from Tanzania, South Africa, and Viet Nam on sale in Epworth, Zimbabwe, and mackerel from Namibia and frozen tilapia from China available in all three cities (Battersby & Watson 2019). As Chapters 3 and 7 have emphasized, cross-border trade within Africa plays a potentially important role in feeding African cities, given that breadbasket zones often lie across national borders from the urban markets they can most easily serve. As a result, an active regional trade takes place in many regions of Africa, as Figure 8.2 illustrates in the case of regional maize trade in West Africa. Given that food imports from outside the continent exceed officially registered trade

flows within the continent by over a factor of five, the analysis in Chapters 3 and 7 suggests significant room for expansion of intra-African food trade, particularly where remaining restrictions are lifted and policies harmonized across neighboring countries. Across Africa, growing demand for processed and prepared foods attracts growing interest from agroprocessors who supply a range of food products — from cowpea-based fritters and cakes in West Africa to popped corn (*maputi*) in Zimbabwe, and samosas and brochettes across much of East Africa (Minten, Habte, Tamru, & Tesfaye, 2018; Tawodzera, Chigumira, Mbengo, & Kusangaya, 2019; Hollinger & Staatz, 2015). In Ethiopia alone, processing of the major staple, teff, into enjera employs 100,000 people in urban Ethiopia (Minten, Assefa, Abebe, Engida, & Tamru, 2016). On the opposite side of the continent, a review of consumption patterns in 9 West African countries concludes that small-scale, informal food processing enterprises account for roughly 30% of urban food sales across the region (Bricas, Tchmada, & Mouton, 2016). Despite their economic importance, small-scale informal food enterprises often remain undervalued and marginalized by government institutions and policies.

Farming itself takes place to a surprising degree in urban and peri-urban areas, particularly production of high-value perishables such as poultry, dairy and horticulture. Given the low population density of many African cities, urban farming is common, particularly in low-lying areas along waterways where peri-urban horticulture commonly takes place (FAO, 2012). Similarly, among dairy producers a recent study from Ethiopia found roughly one-third of total milk supply produced on *urban* dairy farms, in part because of consumer preference for raw milk and their corresponding mistrust of long value chains to deliver safe product (Minten et al., 2018). Area expansion of municipal boundaries frequently contributes, albeit inadvertently, to increased levels of urban farming. In an effort to better manage urban growth and city service provision, municipal administrators intermittently expand city administrative boundaries to encompass rapidly growing peri-urban population clusters on the periphery of existing large cities. The resulting area expansion frequently

leads to a heterogeneous amalgam of densely populated urban neighborhoods interspersed among pockets of low-density rural-like settings within city boundaries (Moriconi-Ebrard et al., 2020). As one example, consider the case of Kisumu, Kenya, where, following expansion of the municipality's administrative boundaries in 1971, roughly 80% of the city's land area was used for farming (Hayombe, Owino, & Awuor, 2019). Peri-urban livestock fattening operations take place throughout West Africa, particularly for small ruminants in the months leading up to major Muslim holidays (Hollinger & Staatz, 2015). In Kenya, home to the continent's largest dairy industry, peri-urban dairy farming is widely practiced (Ngigi, Ahmed, Ehui, & Assefa, 2010). Similarly, peri-urban poultry production takes place across the continent with day-old-chicks sourced locally and abroad, in some cases under out-grower or franchise schemes (Beesabathuni, Lingala, &

Kraemer, 2018; McNamer, 2010). In Zambia, over the past decade, growing urban demand for fresh vegetables and fruits have motivated over 190,000 new small and medium-scale farmers to enter into commercial horticulture production (see Chapter 4, Box 4.1). Similar dynamics are underway in Ethiopia, where growing urban demand has fueled the emergence of peri-urban horticultural farming clusters to serve expanding urban markets for fresh fruits and vegetables (Minten et al., 2020). In the post-COVID era, many agricultural professionals and urban planners believe that urban and peri-urban production of perishable high-value foods such as fruits, vegetables, dairy products, small livestock, and poultry will need to be encouraged and strengthened to expand so-called "short supply chains" which prove more resilient to the disruptions recently experienced in long-distance and international food trade (Egal & Forster, 2020; FAO, 2020).

Box 8.1. Urban influences on agricultural intensification: evidence from patterns of herbicide adoption in Ethiopia and Mali

By Amidou Assima and Seneshaw Tamru

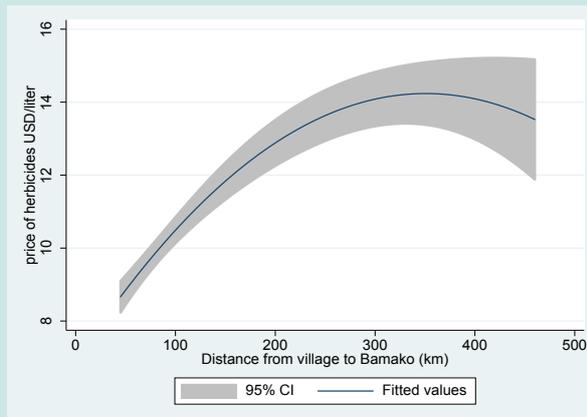
Farming in peri-urban areas responds to pronounced spatial gradients in land, labor, and agricultural input prices. While land and labor costs typically increase with proximity to major cities, the cost of purchased inputs falls. As a result, inputs such as herbicides, which dramatically reduce hand weeding labor requirements, become more profitable on farms operating in close proximity to Africa's major cities.²

Mali

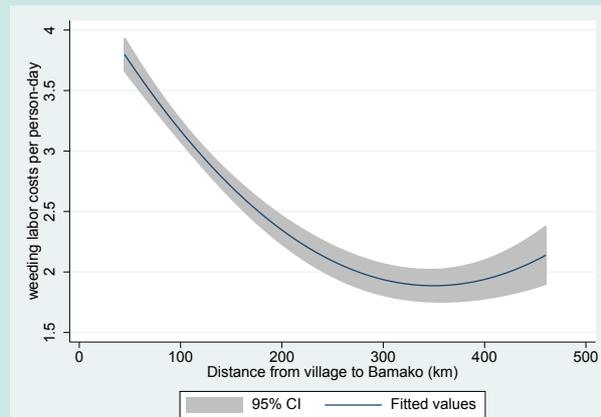
In Mali, farmers with land near the capital city of Bamako pay about US\$7 per liter for glyphosate, the most commonly used herbicide in the country. Since most herbicides enter Mali through depots in Bamako, input prices typically increase with distance from the capital city. As a result, farmers in rural communities 400 km away pay nearly US\$14 per liter, double the price paid by peri-urban farmers (Figure 1a).

² Since the early 2000s, use of chemical pesticides has grown rapidly in Africa, driven initially by a large spurt in herbicide use and more recently by increased insecticide applications following in the wake of major pest infestations such as Fall Armyworm and desert locust (Haggblade, Minten, Pray, Reardon, & Zilberman, 2017; Murray, Jepson, & Chaola, 2019). Farmers seek out chemical pesticides because they find them cost-effective tools for managing pests and protecting their harvest. Nonetheless, an inherent conflict exists between farm productivity and food pricing, on the one hand, and public health and environmental protection goals favoring biodiversity, environmental health, and consumer demand for nutritious foods with low or no chemical residues. To resolve this tension, pest management professionals are actively engaged in developing less toxic classes of chemical and biopesticides as well as improved integrated pest management (IPM) practices that provide less toxic options for farmers (Jepson, Murray, Bach, Bonilla, & Neumeister, 2020; Prasana, Huesing, Eddy, & Peschke, 2018).

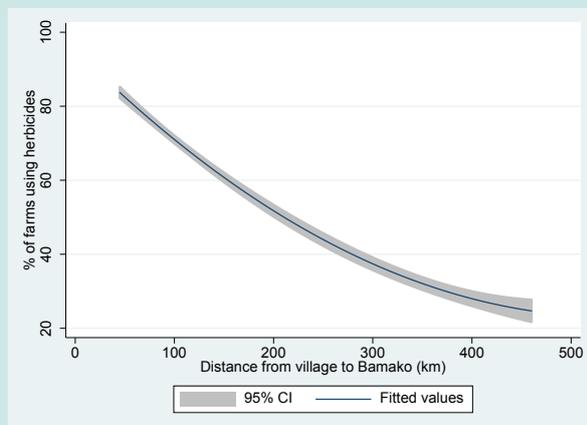
a. Herbicide price (US\$/liter)



b. Wage rate, male weeding labor (US\$/day)



c. Herbicide adoption (% of plots)



d. Herbicide application rate (liters/ha)

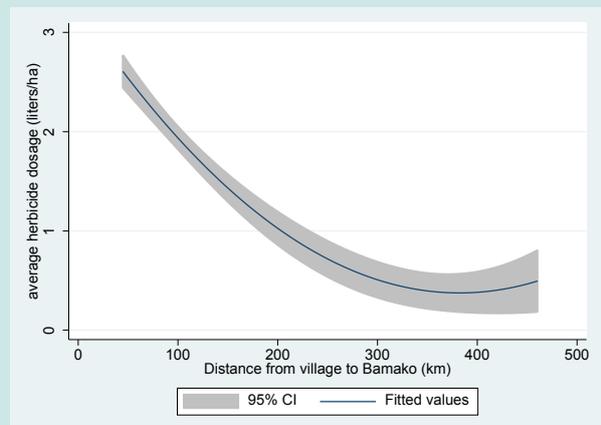


Figure 1. Spatial gradients: input prices, wage rates and herbicide use in Mali

Source: Haggblade, Smale, Kergna, Theriault, and Assima (2017)

Wage rates move in the opposite direction because of greater non-farm employment opportunities in peri-urban areas. As a result, farmers within 100 km of Bamako pay over US\$3.50 per day for adult male weeding labor, while growers in zones 400 km away pay about US\$2 per day (Figure 1b).

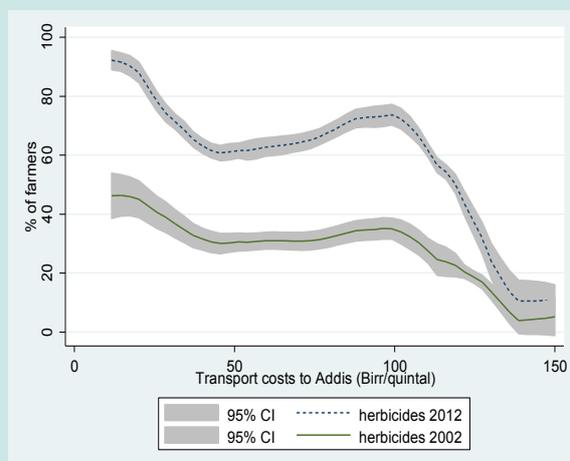
In peri-urban areas, the combined effect – of lower herbicide prices and higher farm wages – makes herbicide use highly profitable. For this reason, over 75% of peri-urban farmers apply herbicides on their sorghum and maize plots, while in more remote rural areas 400 km away, only 25% apply herbicides (Figure 1c). Application rates, likewise, increase in proximity to major urban centers. While farmers within 100 km of Bamako apply over 2 liters of herbicides per hectare, their counterparts living 400 km away apply only half a liter per hectare (Figure 1d).

Ethiopia

Similarly, in Ethiopia, recent increases in herbicide adoption are strongly related to farmer proximity to urban centers, access to all-weather roads, and levels of local rural wages. All these factors have changed substantially over the last decade in Ethiopia, contributing to the rapid take-off in herbicide use.

Figure 2a illustrates how adoption patterns have varied over time and space. In general, adoption rates are considerably higher in areas that are better connected to the capital city of Addis Ababa. In 2012, for example, over 90% of teff farmers with land near Addis used herbicides, while in more remote areas herbicide use fell below 20%. Over time, adoption patterns have increased as well. For the farmers closest to Addis Ababa, adoption rates of the popular herbicide 2, 4-D doubled from nearly half to over 90% of farmers. For the most remote farmers, however, little change occurred. Figure 2b shows the strong link between herbicide use and wage levels in the villages surveyed. Overall, these figures illustrate the important influence of proximity to urban centers in shaping incentives for agricultural intensification.

a. Distance to Addis



b. Impact of daily farm wage rates

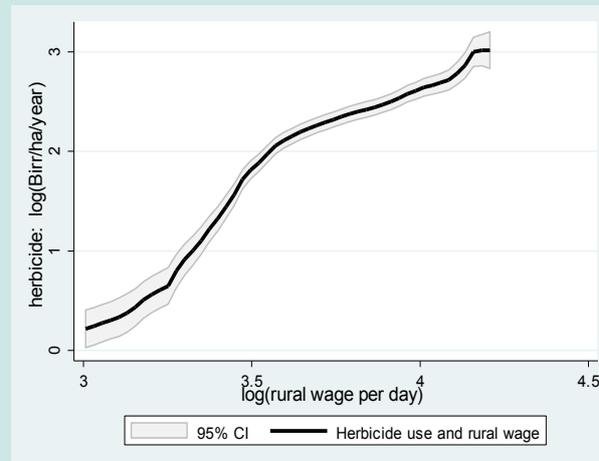


Figure 2. Herbicides adoption and its link with distance to cities and wage levels in Ethiopia

Source: Tamru, Minten, Alemu, and Bachewe (2017)

8.2. Challenges

Growing urban food markets also pose challenges — for consumers, agribusinesses, farmers, city managers, and agricultural policy makers.

8.2.1 Consumers

- **Food safety.** Food safety has emerged as a growing concern for Africa's urban consumers (see Chapters 5 and 6). Already, Africa suffers from the highest per capita rate of food-borne illnesses in the world — 91 million acute illnesses

in Africa every year, mostly affecting children under the age of 5 (WHO, 2015). The riskiest foods from a health perspective are animal-source foods, fruits, and fresh vegetables, consumption of which has grown rapidly in African cities, particularly for animal-based proteins (see Chapters 2 and 5). Inadequate controls in animal husbandry and butchering raise risks of transferring animal-borne diseases such as tapeworm and cysticercosis to urban consumers. Aflatoxins and other fungal diseases on groundnuts and maize pose serious human

health risks. Other hazards enter the food chain from the environment or from infected humans: these include diseases such as listeriosis (South Africa recently suffered the world's largest outbreak), cholera, and norovirus diarrhea, which often contaminate fresh produce grown with contaminated peri-urban water supplies. Growing pesticide use in Africa compounds food safety risks from residues in fish, water, milk, vegetables and fruits (Donkor et al., 2016; Kouadio et al.,

2014). Although not currently spread by food, other diseases such as HIV/AIDS and COVID-19 may have originated when people butchered and ate bush meat in unsuitable conditions. Today, more than ever, the global COVID-19 pandemic reminds us that food safety assurance will form a key component of successful African efforts to supply good quality, safe food to its rapidly growing cities (Box 8.2).

Box 8.2: COVID-19 pressures on urban food systems

“The COVID-19 pandemic is disrupting urban food systems worldwide, affecting the food security and nutrition of urban populations. With up to 70 percent of the global food supply destined for urban consumption, the disruption of urban food systems has particularly affected the food distribution and the food retail sectors. The management of the crisis by city and local governments can therefore play a major role in preventing the spread of the virus and, at the same time, in mitigating the disruptions in their food systems and any negative effects on vulnerable populations.” (FAO, 2020, p. 2)

In the short run, COVID-19 has placed demand-side pressure on the purchasing power of vulnerable groups while, at the same time, disrupting long-distance food supply systems. Low-income, unskilled, informal sector laborers have suffered disproportionately in the face of lockdowns, business closures, job losses, and restrictions on labor mobility. Resulting constrictions in the purchasing power of the urban poor have placed severe additional pressure on often precarious populations already suffering from high rates of undernutrition. Supply disruptions have exacerbated these pressures. With half of the world's population under lockdown, travel and trade restrictions have constricted global food supply systems and placed temporary upward pressure on food prices. Closures of meat processing plants and other businesses, restaurants, and school canteens have all restricted urban food supplies.

Among the early lessons emerging from the COVID pandemic, several in particular stand out:

- *Short supply chains.* Food systems in villages and small towns have generally proven more resilient to COVID-19 shocks than those serving large urban areas due to the closer proximity between producers and consumers in what are typically shorter supply chains feeding small towns. As a result, efforts to promote urban and peri-urban agriculture as well as the associated short supply chains linking them to urban consumers have received growing impetus from the pandemic.
- *Local governance.* Cities and local governments have tried to respond to the COVID-19 pandemic; over 90% of those surveyed by the Food and Agriculture Organization of the United Nations (FAO) in April and May 2020 have implemented some form of mitigation response to ensure food access for the most vulnerable (FAO, 2020). Yet most local authorities face acute resource constraints, particularly on own-source revenues. Municipal and local governments will therefore require increased resources and authority in order to more effectively, and proactively plan and manage urban food systems, including mitigation efforts in food emergencies.

Sources: Egal and Forster (2020); FAO (2020)

- *Nutrition and public health.* Nutrition and public health problems, likewise, emerge with increasing frequency in Africa's cities as a result of urban poverty, diet change, and sedentary lifestyles. The diet changes outlined in Chapter 2 include increased urban demand for processed convenience foods, prepared foods, and soft drinks — amounting to 35% to 50% of total urban food purchases. Among prepared foods, consumption of fast food has increased, most notably burgers, pizza, and fried chicken. The most popular street food among urban adolescents in Soweto, South Africa, is called a “quarter” (or *kota*), which comprises one-quarter of a loaf of white bread, chips (French fries), a slice of cheese, reconstituted ham-like cooked meat, plus sauces. On average, the quarter provides 5,970 kJ, equivalent to 57% of an adolescent's energy requirements (Feeley et al., 2009). Diet changes on this scale, coupled with reductions in physical activity associated with urban lifestyles, translate into growing rates of overweight, obesity, and non-communicable diseases (Haggblade et al., 2016; Popkin, 2014; Vorster, Kruger, & Margetts, 2011). Alongside growing overweight and obesity, undernutrition remains a critical problem in urban areas as well (Satterthwaite, 2011). In Ethiopia, pre-COVID-19, 25% of urban children were stunted (Baye & Hirvonen, 2020). The COVID-19 pandemic, which strikes the urban poor hardest, poses serious risks of aggravating urban hunger in Africa (FAO, 2020).

8.2.2 Agribusinesses

- *Urban wholesale markets.* As ever-increasing volumes of food converge on African cities, urban wholesale markets face growing strains. Chapters 4, 5, and 6 have all documented evidence of what are frequently inadequate urban wholesale market infrastructure and associated management systems. In places where municipal managers are unable to upgrade market systems quickly enough, the resulting costs in terms of poor sanitation, waste removal, and traffic congestion collectively threaten food safety and raise marketing costs

via increases in trader time and food losses, thereby inflating marketing margins, consumer food prices, and potentially lowering farm-gate prices (Tollens, 2000).

- *Trading constraints.* Traders and retailers complain frequently about harassment in both domestic and cross-border food trade as well as problems of poor transport infrastructure, and high energy prices. Chapters 4, 6, and 7 highlight these issues and the resulting increase in marketing margins that reduce the competitiveness of national and regional farmers in feeding Africa's growing cities.
- *The “hidden middle” in agroprocessing, distribution and trade.* As urban food markets grow, African farmers increasingly depend on an expanding network of intermediaries — assembly traders, wholesale markets, agroprocessors, and food retailers — who purchase from farmers and supply food products to urban consumers. The AGRA 2019 AASR report focused on this middle layer in African agri-food systems specifically and at length, concluding as follows: “There has been rapid growth and proliferation of SMEs in the midstream of the output value chains, constituting a Quiet Revolution in the Hidden Middle. Wholesale, logistics, processing SMEs in the aggregate are the biggest investors (and the lion's share of the private sector's volume) in creating markets for farmers in Africa today. SMEs will continue playing a key role over the next 10–20 years. It is a Hidden Middle because it is typically ignored in prevailing policy debates related to food and agriculture. However, it exists and is dynamic, hence, not missing.” (Reardon et al., 2019, p.1). Related empirical research suggests that micro, small, and medium enterprises (MSMEs) dominate the midstream and downstream of African food systems and that roughly 90% of all food retailing on the continent takes place through such firms (see Chapter 2; Reardon et. al., 2019; Tschirley et al., 2018).

- *Import competitiveness.* Annual food imports into Africa have averaged US\$74 billion per year over the past 10 years. The breakdowns provided in Chapter 3 identify the largest food imports, including cereal products (US\$23 billion), meat and dairy (US\$14 billion), vegetable oils (US\$9 billion), and sugar (US\$6 billion). Within cereals, wheat (US\$11 billion), rice (US\$5.6 billion), and maize (US\$4.2 billion) are the top three imports. Within meat and dairy, the largest import items are dairy products (US\$5 billion), fish (US\$4.3 billion), poultry (US\$1.8 billion), and beef (US\$1.6 billion). The competitiveness of African farmers and its obverse, national import dependence, vary by subregion, with North Africa running the largest net food deficits on the continent, particularly for wheat (Chapter 3, Figure 3.10). Problems of quality, pricing, and cost of production limit the competitiveness of African food suppliers in their own domestic food markets. In addition to these product-specific impediments, Chapter 3 highlights several cross-cutting cost disadvantages faced by African farmers and agribusinesses, including high finance and energy costs, low productivity growth, and high internal transport and transaction costs.
- *Accessing supermarket supply channels.* Small-scale farmers face difficulties in accessing supermarket supply chains. Supermarkets require minimum volumes, stringent quality standards, and regular deliveries, all of which individual small-scale farmers have difficulty meeting. Though they currently supply only a small share of urban retail food sales — under 20% in most locations — modern format supermarkets and chain stores are growing rapidly in many urban markets (Chapter 4). The small but growing scale of supermarkets food sales, outlined in Chapter 4, has led to development of new procurement systems that bypass traditional wholesale markets often via the development of preferred supplier programs and dedicated wholesale arms. These new procurement channels typically favor medium and large-scale farmers. Hence, the growing interest in providing targeted support (such as training, financing, and digitalization) for smallholders to help expand the cohort of successful commercial smallholders (see Box 8.3).
- *Input quality.* Agricultural intensification — triggered by growing population pressure, rising land costs, and labor prices — requires that farmers have access to reliable, high-quality farm inputs. Yet the quality of seeds, fertilizer, and pesticides available in African markets remains highly variable (Ashour, Gilligan, Hoel, Karachiwalla, 2018; Bold, Kaizzi, Svensson, & Yanagizawa-Drott, 2017). Although clear legal standards exist governing input quality, rapid market growth and limited resources for regulatory monitoring and enforcement have led to widespread availability of unregistered and counterfeit farm inputs as well as a substantial cohort of unlicensed suppliers in some locations (see Chapters 5 and 6). Recent studies from West Africa, for example, estimate that fraudulent pesticides account for roughly one-third of all pesticides sold, while fraudulent samples of glyphosate, the most widely sold pesticide in the region, were under-dosed by 10% on average (Haggblade et al., 2019).

8.2.3 Farmers

- *Urban wholesale markets: the farmer's gateway to urban food markets.* Roughly 80% of the food retailed in African cities passes through traditional wholesale channels (Chapter 4). As a result, farmers — especially small-scale farmers — depend on well-managed, efficiently run wholesale markets (Box 8.3). These urban wet markets provide the primary gateway through which small and medium farms access urban food markets in Africa. Local markets in small and intermediary cities form an important part of this gateway to urban food consumers by serving as catalysts for local agricultural development in their catchment areas. Hence the importance of addressing the operational and infrastructural deficiencies reported in Chapters 4, 5, and 6 that affect farmer prices, food losses, profits, and market access.

Box 8.3. Prospects for small farm commercialization

Although small farms of 2 hectares or less account for about 80% of Africa's 60 million farms, only a minority of them — ranging between 10% and 40% — produce the bulk of their production for sale (Hazell, 2017; Lowder, Scoet, & Raney, 2015).

Emerging empirical evidence suggests that most smallholders have neither the management skills nor the capital to successfully make the transition to primarily commercial agricultural production targeting growing urban food markets (Chapoto et al., 2013). Early research on supermarkets, for example, has highlighted the difficulties smallholders face in accessing modern-format supermarkets and urban food retailers, especially when the large retailers bypass urban wholesale markets and turn instead to in-house procurement systems targeting a handful of selected high-volume producers (Minten, Randrianarison, & Swinnen, 2009; Neven, Odera, Reardon, & Wang, 2009; Neven, Reardon, Chege, & Wang, 2006; Reardon et al., 2003, 2009). Parallel work on land markets in Africa suggests clearly an emerging large cohort of commercialized medium-scale farms (Jayne et al., 2016). Marketing studies of fast-growing urban markets in Ethiopia paint a similar picture of medium-scale farms capturing a rapidly growing share of these urban food markets (Minten et al., 2020; Vandercasteelen et al., 2018).

Yet some smallholders have successfully made the transition to commercial production. Using a typology developed for the AGRA 2017 AASR, national farm household survey data indicate that in Ghana and Tanzania 30% to 40% of farms smaller than 4 hectares can be classified as commercial, though that share falls to only 12% in Ethiopia (Hazell, 2017). Given high growth in urban demand for high-value agricultural products — such as poultry, dairy, meat, and horticultural products — the future will offer broader pathways for smallholders than the past. Well-managed, a hectare of hybrid tomatoes, poultry production, or pisciculture can easily enable a modern smallholder farm family to prosper, invest in both farming and diversify into non-farm businesses, and send their children to school to chart viable pathways in the non-farm economy. Life histories of successful smallholder cotton, maize, and horticulture farmers in Zambia reveal that smallholders who successfully transition to commercial farming share several common traits: a) geographic proximity of their farms to key urban centers; major transport corridors and reliable water supplies; b) highly disciplined management of crop agronomics and hired labor; c) the financial discipline to manage input costs while accumulating sufficient savings to absorb periodic losses of highly perishable produce; and d) a willingness to start small and raise scale and complexity over time (Chapoto et al. 2013).

From a policy perspective, strategic public investments can shape food system trajectories in more inclusive directions, enabling larger numbers of smallholders to transition to successful commercial productions. The AGRA 2017 AASR, which focused on this issue, identified three key priorities for promoting inclusive agricultural growth: a focus on small towns, investment in urban wholesale markets, and programs of direct assistance targeted at selected “pre-commercial” smallholders (Hazell, 2017). Small towns, which house a majority of Africa's urban population, are closely linked to surrounding agricultural zones, providing input supplies as well as nearby markets for small farms (Tacoli & Agergaard 2017). Public investments in small towns therefore typically generate equitable agricultural growth and high levels of poverty reduction

(Christiaensen & Todo, 2014). To facilitate smallholder access to food markets in large cities, a focus on wholesale markets also becomes necessary. Currently, supermarkets and other modern marketing channels still account for less than 20% of urban food retailing. In contrast, over 80% of urban food sales pass through traditional urban wholesale markets, many of them dilapidated and stretched beyond their capacity by rampant urban population growth. Urban wholesale food markets therefore form the key gateway through which smallholders reach urban consumers. The efficiency, cleanliness, and safety of urban wholesale markets therefore become central to smallholder prospects for competing in growing urban food markets. Finally, programs of direct assistance to selected groups of smallholders aim to help broaden the cohort of pre-commercial farms capable of making the transition to commercial production, if only part-time and as part of a diversified livelihood strategy. Smallholder support initiatives include public sector programs targeting packages of support (technology, training, financing, and digitalization) to selected categories of “pre-commercial” smallholders as well as private sector programs that provide structured support, via contract farming systems (including input financing, agronomic advisory services and guaranteed markets) such as those provided by some private sector cotton ginning companies and export horticulture firms (Chapoto et al., 2013; Hazell, 2017; IFAD, 2020; Minot & Ngigi, 2010; Tschirley, Minde, & Boughton, 2009).

In East Africa, pesticide quality assessments reveal similar concerns (Ashour et al., 2018). A similar study from Uganda found only 50% of the seeds advertised as hybrid actually were, while fertilizer samples collected from various market places contained only 70% of the advertised active ingredient (Bold et al., 2017).

- *Urban farming policies.* Expanding urban food markets, expanding city administrative borders and growing demand for high-value perishables lead to increasing agricultural activity in and around Africa’s major cities. Yet peri-urban high-value farming activities frequently take place within uncertain or even hostile policy environments. Urban farmers face parallel problems associated with over-stretched urban transport infrastructure, electricity grids, water supply, and waste disposal. To date, few African cities have adopted clear urban agricultural policies. Noteworthy exceptions include the cities of Nairobi and Antananarivo, both Milan Pact cities which have won global awards for their urban agriculture policy and practice support (MUFPP, 2018). As a general rule, however, ministries of agriculture do not

work in urban areas. Nor does agriculture fall within the mandate of most municipalities. The resulting institutional void limits the availability of training, extension support, and monitoring of urban farmers, in particular on the correct use of agriculture inputs. As Chapter 6 has emphasized, the spatial flows along food value chains — from farm inputs, farming, processing, trading, and retailing — frequently transit multiple administrative jurisdictions. As a result, some sort of territorial policy harmonization is required in order for these supply chains to operate efficiently.

8.2.4 City managers

Many of the growing pains resulting from rapid urbanization and over-stretched urban food systems fall at the feet of city managers, town councils, and district governments to resolve.

- *Town planning.* The core functions of city planning — zoning, infrastructure siting, traffic control, and sanitation, drainage and water supply systems — affect urban food markets in critical ways. They influence the location of urban food retailers, agroprocessors, and

wholesale markets as well as their cleanliness, sanitary standards, and efficiency. As a result, town planners and the operational units of urban government that administer municipal services become central players in responding to the challenges identified by food system stakeholders (Chapter 6). Given the limited financial and human resources available to most African local governments, city planners have only recently begun to embrace integration of food system planning into overall urban planning exercises. Since the beginning of the 2010s, urban planners globally have demonstrated growing interest in urban food systems planning (Cabannes & Marocchino, 2018).

- *Food safety and waste management.* Food safety inspections and control of food-borne illnesses typically fall on the shoulders of municipal health and related departments (see Chapters 5 and 6). Management of urban water supplies and monitoring of water quality become increasingly important as growing urban populations strain fresh water supplies, and as high-input peri-urban farming raises risks of fertilizer and manure infiltration into local water sources as well as intermittent pesticide residues in horticultural products, dairy, and fish (Chapter 5). Growing consumption of animal proteins and horticultural products exacerbate consumer risks of contracting food-borne illnesses such as parasites, aflatoxins, and diarrheal diseases. Solid waste management of organic residues, plastics, and food packaging, likewise, poses chronic problems for many city governments in Africa (Battersby & Watson, 2019).
- *Managing urban food markets.* Throughout this review, a stream of successive chapters has highlighted the importance of urban wholesale food markets as well as the frequent operational stresses they face under the pressure of relentlessly growing volumes of food required to feed Africa's growing cities (see Chapters 4, 5, and 6). Here again, municipal governments

typically hold responsibility for building, maintaining, and managing urban wholesale markets, usually in some sort of agreed-upon partnership with various trader associations. The market management and reform efforts reported in Chapter 4 (Box 4.2) and Chapter 6 (Box 6.5) illustrate the growing pressure on urban wholesale markets and the variety of reform efforts under way.

- *Resource constraints.* Despite growing responsibilities and increasing risks of food-borne illness, the resources required to address these challenges remain painfully limited in many municipalities. As Chapter 6 has emphasized, per capita budget resources remain low in many locations with own-source revenues accounting for only 15% to 30% of available municipal resources (Table 6.3). For the most part, city governments in Africa rely on transfers from central governments or other entities for the majority of their funding. The growing mismatch between increasing responsibilities, rising food system risks and stagnant municipal resources seriously constrains the ability of the municipal governments charged with managing these growing challenges to respond effectively.

8.2.5 Agricultural policy makers

- *New actors.* The center of gravity in Africa's food system has shifted to urban areas. Cities now provide Africa's largest food markets. Urban areas likewise house the bulk of food processing businesses, input supply depots, import warehouses, and distribution centers as well as most private sector trade groups and government agencies. While the central government's ministry of agriculture has historically served as de facto architect of national food and agricultural policy, they now live in a world in which many other agencies, actors, and trade groups play significant and growing policy roles. At the central government level, ministries of environment and health play key roles in setting and enforcing standards for food safety and agricultural inputs that affect farm input

suppliers, food processors, and food retailers. Local governments at the district and municipal levels make zoning decisions that affect the siting of abattoirs, access roads, wholesale markets, and food retailers. Local authorities control traffic flows, monitor food safety, wholesale markets, and waste management. Private sector actors such as farmer organizations, trader associations, and professional industry groups play sometimes very active roles in policy formulation and even implementation, as in the cases of wholesale market management and enforcement of various regulatory requirements. The private sector, for example, has proven highly motivated and proactive in combatting fraudulent pesticides in West Africa (see Box 5.2). Formal and informal traders similarly advocate for improved market facilities, services, and management reforms (see Boxes 4.2, 6.5; Smit, 2016).

- *Governance challenges.* Africa’s urban food systems transit wide geographic and institutional space. Geographically, urban food supply chains connect rural farmers, international producers and markets, regional suppliers, and peri-urban farmers with the

network of agroprocessors and traders that ultimately supply the multiple retail formats selling food to urban consumers. Institutionally, a wide range of central and local government agencies and private sector trade associations take decisions that influence farm productivity as well as the quality, pricing, and availability of farm technologies, inputs, and final food products. The important role played by informal traders, agroprocessors and food vendors pose particular challenges for the development of responsive, inclusive platforms for stakeholder engagement (see Box 6.5). Governance of these complex urban agri-food systems thus requires inclusive, territorial models of governance that coordinate, harmonize and integrate actions of multiple jurisdictions and stakeholders in ways that promote the competitiveness, inclusiveness and safety of African food supply systems. Chapter 6, and the discussion in Section 8.4 below, outline a variety of models being developed to meet these complex governance requirements. Before exploring the emerging governance models, the following section summarizes the key collective goods required for improving urban food systems.

Table 8.1. Collective goods required for efficient urban food systems

Value chain stages	Public goods required
Urban consumption	<ul style="list-style-type: none"> • Food safety and quality: regulation, standards, monitoring, testing, enforcement
Food processing and trading	<ul style="list-style-type: none"> • Urban wholesale markets: zoning, infrastructure, management, regulation • Trade infrastructure (roads, communications, finance, energy) and associated policies
Farming	<ul style="list-style-type: none"> • Agricultural research and development for expanding high-value commodities
Input supply	<ul style="list-style-type: none"> • Agricultural input quality and safety: regulation, monitoring, enforcement
Natural resources	<ul style="list-style-type: none"> • Land use planning, allocation and management • Urban and peri-urban water management, allocation and safety

8.3 Collective responses

8.3.1 *Collective goods required for urban food systems*

Efficient, effective urban food systems require a set of public goods that provide the infrastructure and incentives enabling farmers, traders, agroprocessors, input suppliers, and food retailers to sustainably supply Africa's cities (Table 8.1). For urban consumers, food safety, quality, and affordability become critical to nourishing healthy urban families. As Chapters 5 and 6 have emphasized, the establishment, monitoring, and enforcement of food standards will require improved regulatory systems as well as enhanced awareness of all stakeholders about the important public health and nutritional benefits associated with improvements in food quality and reduction in food-borne diseases. Solid waste disposal, likewise, requires public action, given the public health externalities posed by decomposing organic litter and the high volume of organic waste in public landfills — over 60%, for example, in the case of Kisumu, Kenya (Hayombe et al., 2019).

For traders and farmers, efficient urban wholesale markets provide key transit points connecting farmers with the traders and agroprocessors who, in turn, supply urban retailers and consumers. Short supply chains — common in the production and delivery of high-value perishables such as dairy, poultry, meat, and horticultural products — depend critically on the efficiency of these urban wet markets. Chapters 4, 5, and 6 have identified the current strains experienced by urban wholesale markets and underlined the importance of town planning, zoning, siting, drainage, infrastructure supply, and improved management of urban wholesale markets in response to rapidly expanding urban footprints. Trade infrastructure — such as roads, communications, energy, and finance — and associated policies are likewise central to reducing marketing costs in domestic and regional supply chains. As Chapters 3 and 7 point out, lower transaction costs, in turn, make African-sourced food supplies more competitive with imports and more affordable for urban consumers.

African farmers increasingly compete in regional and international supply chains to supply Africa's cities. Agricultural research, which has historically focused on staple foods, especially cereals, has begun to broaden to include growing high-value perishable commodities such as poultry, dairy, meat, fish, and horticultural products. Given the consumption diversification outlined in Chapter 2 and the growing international imports of many of these high value food products identified in Chapter 3, African farmers will need to improve productivity in order to become more competitive in supplying domestic urban markets.

Agricultural input quality, likewise, becomes increasingly important to improved productivity and competitiveness of African farmers. Yet the uneven quality of key farm inputs (fertilizer, seeds, and pesticides) observed in many parts of Africa, coupled with high levels of fraudulent brands and consequently uneven input quality in some markets, make improved regulation, monitoring, and enforcement critical to competitiveness of African farmers (see Chapters 4 and 5). At the foundation level of agri-food systems, growing population pressure on agricultural land and water supplies make natural resource management an equally important part of any coordinated efforts to ensure sustained agricultural productivity required to feed Africa's expanding cities and towns.

8.3.2 *Private sector responses*

Private sector stakeholder groups have emerged, in various locations, to address some of these specific needs for collective action and public goods. To defend urban consumers, various civil society advocacy groups have emerged to monitor urban food prices, poverty, public health, and nutritional status of vulnerable groups (Battersby & Watson, 2019; Smit, 2016). Chapter 6 cites the example of various youth associations, ethnic and religious networks, home-town associations that can play constructive roles in monitoring food quality and consumption levels of vulnerable groups.

Urban wholesale markets have likewise attracted private sector stakeholder responses to dilapidated, over-stretched and poorly managed urban market

systems. Chapter 6 describes Nigerian food trader responses to official harassment and poor service delivery (see Box 6.5), while Chapter 4 summarizes trader efforts to initiate management reforms in Zambia's major urban food markets (see Box 4.2).

The infrastructure required for efficient food transport, storage, and transformation includes a blend of public and private investment. Chapter 4 emphasizes the significant ongoing investments made by individual private traders in transportation, warehousing, cold storage, and distribution hubs as well as the underlying public roads, electricity grids, and financial infrastructure required to catalyze these private sector investments.

To ensure agricultural input quality and safety, some private sector groups have become active in combatting counterfeiting and rampant competition from unregistered products. Chapter 5 describes the case of fraudulent pesticides in West Africa where major importers and distributors, who duly register their products and comply with safety regulations, have mobilized joint private–public anti-fraud campaigns and promoted legislation to improve monitoring of pesticide markets by local committees representing regulators, local governments, farmers, and traders (see Box 5.2).

8.3.3 Public sector

A variety of public programs have emerged to promote improved food quality, nutritional awareness, and food safety. Chapters 5 and 6 describe the generally over-stretched public health regulatory systems that seek to monitor and enforce food safety standards, often with blended implementation systems involving a mix of municipal health officers, national ministries of health, and local or regional testing laboratories. Regional harmonization of legal and regulatory frameworks has proven an important part of these ongoing reform efforts.

Urban wholesale markets remain largely the responsibility of municipal governments, sometimes with technical assistance from national veterinary, agricultural, and public health agencies. Chapters 4 and 6 illustrate some of the issues and reform

efforts that have emerged to improve conditions and operation of urban wholesale markets by coalitions of stakeholders coordinated by municipal authorities, but including trader associations, various technical groups, and donor agencies (Boxes 4.2 and 6.5).

Trade infrastructure remains a centerpiece of public investment programs. As Chapters 3 and 7 emphasize, these increasingly involve regional efforts to promote intra-African road, communication, energy and even water infrastructure through a variety of corridor development programs, regional trade agreements enacted through the regional economic commissions (RECs) and most recently the African Union's African Continental Free Trade Agreement (AfCFTA).

Improving farm-level productivity and sustainability requires publicly funded research and development, both because of the small scale of most African farms but also because of non-excludability of access by all farmers to new technologies that raise productivity of closed-pollinating and vegetatively propagated crops, cross-bred livestock and fishery programs stocking common waterways by government-run hatcheries. Box 8.4 provides an example of a pair of country and Africa-level breeding programs aimed at improving the competitiveness of African farmers in rapidly growing urban poultry markets by breeding improved genetic stock to reduce dependence on imported day-old chicks with genotypes optimized for temperate agricultural zones.

Public agencies, likewise, hold primary responsibility for ensuring the safety and quality of farm inputs — such as seeds, fertilizer, pesticides, and veterinary supplies — sold to African farmers. Often underfunded, responsible national agencies face difficulties monitoring growing inputs markets in many African locations. In order to better coordinate regional input markets and economize on scarce technical resources, several regions in Africa, including the Economic Community of West African States (ECOWAS) and the East African Community (EAC), have initiated regional quality

Box 8.4. Improving poultry genetics and competitiveness of African farmers

Poultry markets are growing rapidly in African cities in response to growing demand by urban consumers for cheap sources of protein. Yet poultry imports have grown rapidly as well. On average, Africa imports US\$1.8 billion in poultry products annually (Chapter 3). Large-scale poultry imports from Brazil, Europe, and elsewhere suggest that African farmers have been unable to fully satisfy this growing urban demand.

In part, African producers face a significant cost disadvantage when competing against imports of exotic genotypes developed abroad. Given the low feed-conversion rates of domestic African breeds, many growers depend on exotic strains of imported day-old chicks. This dependence on imported day-old chicks optimized for feeds and growing conditions prevalent in temperate climates places African producers at a cost disadvantage when importing breeding stock and feed.

African breeders have responded to this challenge to help improve the competitiveness of African poultry farmers. In 2009, Ghana's Animal Research Institute (ARI) introduced a new breed of chicken, the "Aribro", that offers rapid weight gain as well as adaptation to local environmental conditions in order to reduce the country's dependence on imported breeding stock. According to Dr. Abdulai Baaba Salifu, "With this development, it is now possible to produce 'parent lines' which hitherto would have been imported at a minimum of €3 per parent chick." (5M Editor, 2009).

At a broader scale, the International Livestock Research Institute (ILRI) began a collaboration in 2014 to improve poultry genetics in Africa in order to increase smallholder productivity. The African Chicken Genetic Gains (ACGG) collaboration, supported by the Bill & Melinda Gates Foundation, aims to work with national breeders to improve domestic poultry genetics by breeding local and exotic species to produce new high-productivity, disease-resistant genotypes. According to ACGG, "The immediate goal is to increase the access of poor smallholder farmers in sub-Saharan Africa to high-producing but agro-ecologically appropriate chickens." (African Poultry Genetics, 2020).

Similar, though less systematic, breeding efforts across Africa aim to improve the genetic potential of livestock such as goats, sheep, and dairy cattle as well as high-value crops. Although past research and development (R&D) efforts have focused on staple foods, future agricultural research efforts will need to devote more resources to the fast-growing, high-value agricultural commodities increasingly demanded by urban consumers across Africa.

standards for key farm inputs (such as seeds and pesticides), common testing and data sharing protocols, and even joint regional registration in the case of Sahelian West Africa's Comité Sahélien des Pesticides (CSP) (Abiola, Diarra, Biaou, & Cisse, 2004; Diarra & Hagblade, 2017). Chapter 7 describes in fuller detail the various ongoing efforts to harmonize agricultural trade and input regulations and thereby expand intra-African trade in food commodities and farm inputs.

8.4 Emerging governance models

Historically, ministries of agriculture have dominated as Africa's primary food and agricultural policy makers. Now and in coming years, as the center of gravity in Africa's food system shifts increasingly to urban areas, a welter of new, non-traditional actors will play increasingly important roles in

ensuring the effective functioning of agricultural markets, input delivery systems, agricultural production and support initiatives, transport and market infrastructure, agroprocessing industries, food retailing, food safety, and waste disposal. Institutionally, these new actors include national agencies involved in public health, food safety, trade policy, energy, and commerce; district and municipal governments responsible for allocating land, managing wholesale markets, abattoirs, waste disposal, traffic, and commercial activity; and a constellation of private sector trade organizations representing farmer, trader, and agribusiness interests. Spatially, these urban agri-food system interest groups span the horizon from downtown market centers to assembly markets in secondary cities, agricultural research stations in rural areas, farmers in rural and peri-urban zones, border control posts, and cross-border regional reference laboratories. The institutional and spatial diversity of these new actors requires new models for coordinating policies and actions across stakeholder groups and across geographic space.

Governance of urban agri-food systems has elicited broad and expanding interest over the past decade as the growing complexity and scale of urban food systems have stimulated increased interest in improved performance and management of urban food systems (Smit, 2016, 2019). A variety of newcomers and longstanding food system stakeholders have launched a series of related initiatives that have often intersected, fused, bifurcated, and cross-fertilized one another. Amid continuing considerable ferment, an illustrative listing of these ongoing efforts includes the following closely related initiatives: guiding principles for urban-rural linkages (GP-URL), city-region food systems, the Framework for an Urban Food Agenda (FUFA), territorial perspectives for development (TP4D), the Milan Urban Food Policy Pact (MUFPP), the New Urban Agenda (NUA), transforming urban food system governance (T-FORM), and a variety of urban food planning initiatives (Battersby & Watson, 2019; Blay-Palmer et al., 2018; Cabannes & Marocchino, 2018; CFS, 2017; FAO, 2018b, Carucci et al. 2019; FAO, 2019; Suttie & Hussein, 2015; Tefft et

al. 2019; World Bank, 2020b). As growing empirical and operational evidence emerges, the key actors in this space have worked — often together — to refine key concepts and principles, standardize terminology, document emerging best-practices in urban agri-food system governance, and develop common metrics for future learning and refinement (TP4D, 2019; UN-Habitat, 2019).

Ongoing experimentation, coupled with prior longstanding initiatives, has resulted in a range of approaches for assessing and improving the increasingly complex spatial, and institutional landscapes governing urban agri-food systems. Listed in descending order of institutional and sectoral complexity, the resulting agri-food system governance models fall roughly into the following four broad categories: a) spatial and territorial development initiatives; b) regional harmonization; c) strengthening municipal governments; and d) value chain approaches.

8.4.1 Territorial development initiatives

The most ambitious of these spatial coordinating efforts involve the creation of new, umbrella administrative authorities or territorial associations to integrate spatial planning, public investments and policy implementation across a geographic space spanning multiple existing administrative jurisdictions. Stakeholders refer to these initiatives under a variety of different names, including development corridors, spatial development initiatives, territorial development programs, cluster development programs, and city region food systems. Planning, financing and governance structures vary across initiatives to accommodate location-specific historical and institutional particularities (Galvez Nogalez, 2014). Governance sometimes involves the creation of special new development authorities, with boards, executive committees, secretariats, and associated technical agencies. Administratively softer versions coordinate stakeholder consultation, decision making and implementation through newly established task forces, food councils, working groups, or territorial associations. Financing comes from a range of public, donor, and private entities.

Many programs specifically aim to stimulate private sector business investment in areas and in value chains that will enhance economic returns to strategic public infrastructure investments. The following African examples provide a sense of the range of spatial development initiatives under way in Africa.

- *Territorial development.* Over the past decade, a new generation of territorial development initiatives has emerged to coordinate planning, decision making and implementation activities across a geographic space encompassing multiple administrative jurisdictions, economic sectors, and stakeholder groups (TP4D, 2019). Core principles of territorial development initiatives include a broad spatial orientation encompassing a network of economically linked cities, towns, and rural areas, inclusion of multiple value chains and economic sectors, multiple levels of government administration (national, district, and municipal), and multiple stakeholder groups representing private, public, and civil society groups. In recent iterations, the territorial development initiatives have increasingly targeted resources and decision-making authority at local and municipal administrations in order to enhance the authority and responsiveness of city managers, large and small, charged with managing food supply systems for their cities. Implementation typically involves spatial mapping, territorial diagnostic studies, multi-stakeholder consultation processes, identification of key challenges and potential drivers of change, specification of priority investments, actions and policies, and implementation of territorial programs and projects. Recent territorial development initiatives in Kenya, Madagascar, and Niger reveal considerable flexibility in focus and design together with a common core of activities centered on strengthening decentralized local government entities, improving productivity and sustainability of peri-urban farming, and enhancement of production and marketing for specific short value chains supplying high-value perishables such as poultry, dairy and horticultural products to their cities (GIZ, 2020; Niger, 2020).
- *City region food systems.* A close relative of the territorial development initiatives, the city region food systems approach similarly involves an expanded space encompassing related networks of large cities, small towns, and rural farming areas through which reciprocal labor, commodity, financial, and business service flows generate employment, on-farm production, processing, and urban retailing deliver prepared, processed and bulk foods to urban consumers. (Blay-Palmer et al., 2018). Like territorial development initiatives, the city-region food systems approach begins with detailed, empirical spatial diagnostics, stakeholder consultations, and joint priority setting exercises. Recent examples from Lusaka and Kitwe in Zambia, provide granular detail on the initial diagnostic and priority setting stages of this work (FAO, 2018a; FAO & RUAFA, 2019).
- *SAGCOT.* The Southern Agricultural Growth Corridor of Tanzania (SAGCOT), launched in 2010, spans nearly 1,000 kilometers from Tanzania's western border with Malawi, Zambia, and Democratic Republic of Congo (DRC) to the port city of Dar es Salaam. The corridor aims to improve urban food supplies and stimulate private investment in agribusiness activities by providing strategic public trunk line infrastructure and a favorable policy environment. Partners include the Government of Tanzania and major private sector agribusinesses, donors, and civil society. Two new institutions, the SAGCOT Centre and SAGCOT Catalytic Trust Fund serve as vehicles for coordinating activities and monitoring investment activity. The Centre has convened a series of special task forces to address policy issues of particular concern to investors, including land leasing, export regulations, taxation, and agricultural input policy (Galvez Nogalez, 2014).

8.4.2 Regional harmonization

Regional harmonization involves the adoption of common policy actions across existing, contiguous administrative units. Compared to many of the territorial development programs, the regional model offers an administratively less complex alternative in the sense that it focuses largely on policy harmonization and does not require the establishment of new administrative entities. The regional model does, however, require a formal agreement through which existing administrations agree to common policy positions.

In the case of regional harmonization across countries in various sub-regions of Africa, implementation requires either a formal treaty agreement or national promulgation of agreed-upon standard legal instruments and regulations. The most common application of the regional model involves agricultural policy harmonization across contiguous countries in various sub-regions of Africa. Regional policies affecting agri-food systems include various sub-regional trade agreements, regional establishment of food safety standards, regional input registration and safety standards, and regional testing laboratories. These regional agreements aim to integrate and expand agricultural input and output markets by establishing common regulatory standards and reducing transaction costs to stimulate cross-border trade and facilitate the free movement of people and goods. For private businesses, regional agreements offer access to larger markets than a collection of individual small countries, enabling agribusinesses to benefit from scale economies as well as reduced regulatory transaction costs. For national authorities, regional harmonization offers prospects for overall cost savings through the pooling of scarce scientific personnel, technical expertise, and laboratory facilities. Common regulatory rules likewise reduce smuggling, facilitate enforcement, and lower regulatory transaction costs for businesses.

At the subnational level, neighboring municipal governments sometimes harmonize service and infrastructure services to help integrate and

standardize cross-boundary municipal services such as road corridors, greenbelt designations and landfill sites within localized regions networked together through common value chains, commodity, and labor flows. The ensuing examples provide a feel for the range of regional harmonization efforts under way across Africa.

- *Free trade zones.* African cities rely on domestic and regional supply networks that frequently span country boundaries (see Chapter 7). To facilitate these trade flows, African governments have launched multiple regional trade agreements within Africa, including the Common Market for Eastern and Southern Africa (COMESA) with 21 member states, ECOWAS with 15 member states, and EAC and the Southern Africa Customs Union (SACU) with 5 member states each. These agreements allow for the free flow of goods within member states. The EAC allows for the free flow of people and services as well. Modeled on existing sub-regional agreements, in 2018 the African Union launched AfCFTA with the aim of tripling the value of intra-African trade in agricultural commodities and services by 2025 (Tralac, 2019).
- *Harmonized agricultural input regulations.* The longest-functioning regional harmonization of agricultural input regulations comes from West Africa where, since 1994, the nine founding members states of the Club Inter-Etats de Lutte Contre la Sécheresse au Sahel (CILSS) have jointly registered pesticides at a one-stop-shop through the regional technical agency called the CSP. Both regulators and suppliers benefit from cost savings at testing and review stages, while farmers benefit from increased competition in regional input markets (Haggblade et al., 2019). EAC members are currently emulating the CSP model beginning with development of common pesticide regulatory review and testing requirements coupled with data sharing agreements to reduce transaction costs for agribusinesses wishing to sell throughout the EAC region.

Seed policy harmonization, likewise, offers many potential benefits to African farmers. Mutual recognition of varietal registration and easier movement of seeds between countries significantly reduces R&D costs and expands regional markets for seed companies. Four of Africa's RECs — including ECOWAS, COMESA, EAC, and the Southern African Development Community (SADC) — have initiated seed policy harmonization initiatives, though they remain at varying stages of implementation and harmonization of testing, variety release, and certification systems (Kuhlman, 2015).

- *Municipal service coordination.* Given growing rural population densities, Africa's large share of small towns in total urban population, and increasing scale of urban food markets, mini-catchment areas across the continent are witnessing growing rural-to-urban agricultural commodity flows as well as reciprocal flows of inputs, labor, financial payments, and services along connected networks that cross multiple district and municipal government boundaries. As a result, networks of linked cities and local governments in many locations have begun formal dialogue involving multiple administrative entities to create common mechanisms for cross-jurisdictional service delivery. A recent review of lessons learned from MUFPP notes that, "Many cities already have regional or territorial arrangements between local governments, for example, associations of territorial municipalities related to services such as water, energy, transport, information and communication technologies, and health care systems, among others" (FAO, 2018b, p. 12). These agreements rely on a range of governance models, from government-sponsored regional planning exercises to less formal consultative mechanisms, including local working groups, task forces, and coordinating committees.

8.4.3 Strengthening municipal governments

The least complex administrative models focus on strengthening existing municipal authorities by expanding financial and human resources,

improving planning, and developing governance structures that enhance the convening power of existing municipal authorities to help coordinate policy positions, infrastructure investments and regulatory enforcement by municipal, district, and national government agencies. Given the generally limited resources available to Africa's municipal governments, their ability to manage the opportunities and the risks that accompany rapid urban food system growth require significant adjustments in planning, resource levels, and governance (see Chapter 6, Table 6.3). A series of cases studies of urban food system governance conducted by the African Centre for Cities (Battersby & Watson, 2019) and the following two examples offer a flavor for the range of municipal reforms emerging from African local government authorities.

- *Lagos.* Metropolitan Lagos, with an estimated population of 17 million in 2020, has experienced rapid urban expansion over many decades, driven by in-migration, population growth, urban sprawl, and unplanned absorption of nearby peri-urban settlements. Governance responsibility rests principally with the Lagos State Government, 16 urban local government authorities (LGAs) and 37 local council development areas (LCDAs) that operate under the state's direct supervision. Within this constellation of urban administrations, LGAs and LCDAs maintain responsibility for delivering some public services such as drainage control, market management and provision of education and healthcare services. However, control of financial resources and responsibility for major infrastructure investments, urban planning, and management remain under state government control. With the intention of making Lagos a model city for the rest of Africa, the Lagos State Ministry of Physical Planning and Urban Development (MPPUD) in 2001 began preparation of a new master plan for metropolitan Lagos and in 2010 created a handful of new state-level departments to implement it, including the Urban Renewal Authority, Physical Planning Permit Authority

and Building Control Agency. Using the state's constitutional authority to raise revenues, Lagos State has levied a series of taxes and fees on land, property, personal and business income, a value added tax, market, and vehicles taxes. Rather than relying on uncertain federal transfers, Lagos State now generates most of its budget resources internally. By 2015, Lagos State generated about US\$170 million per year from internally generated sources. Although political tensions and coordination issues remain, Lagos State has initiated a series of major urban planning initiatives that will continue to shape the metropolitan area's urban landscape in the coming decades (Olokesusi & Wapwera, 2017).

- *eThekwini*. In 2000, as part of major municipal reform efforts across South Africa, the government redrew local administrative boundaries to establish the eThekwini municipality knitting together the city of Durban with a large (2,300 square kilometer) swath of nearby peri-urban and rural settlements. The expanded boundaries encompass a diverse mix of ethnicities, economic activities and settlement patterns. Roughly 35% of the population is urban, 29% peri-urban, and 36% rural. In part, the expanded configuration aims to combat the many structural inequities embedded in the prior apartheid system by integrating white city centers with surrounding black townships and intervening rural areas into a single administrative authority with a common tax base. As an additional benefit, the expanded municipal boundaries now governed by the eThekwini City Council enable — and indeed require — the type of spatial development planning advocated by many urban planning professionals. In 2003, the eThekwini City Council formally adopted an Area-Based Management and Development Programme. The new municipal authorities have made progress in expanding service delivery to formerly underserved areas, via new one-stop municipal service centers. However, the aggregate level of municipal resources

remains insufficient to permit full funding of expanded transportation networks and basic urban infrastructure investments that will permit full integration of the expanded municipal area. As a result, eThekwini's municipal governance reform remains a work in progress (Reddy, 2017).

8.4.4 Value chain approaches

Over the past two decades, thousands of development practitioners and projects have adopted value chain approaches to improve the coordination and efficiency of urban food systems and the smallholder networks that supply them (Donovan, Franzel, Cunha, Byau, & Mithöfer, 2015; Gerefi & Kaplinsky, 2001; Jaffee et al., 2003; Kaplinsky & Morris, 2000; Orr, 2018). Like both the territorial and regional approaches, value chains provide an analytical framework for assessing and intervening to improve performance in economic networks operating across significant geographic expanses, from farms to processors to final markets. Like the broader territorial development initiatives, value chain initiatives involve standard empirical diagnostics, stakeholder consultative processes, collective identification of key intervention points and a context-specific combination of private, priority public investments, and policy interventions. Yet value chains generally focus more narrowly, on specific commodity systems, rather on the multiple commodities and sectors addressed in territorial and regional models. This simplifies analysis, limits the range of stakeholders involved and serves to focus interventions more narrowly.

Several generations of value chain projects have resulted in a wide array of location-specific food system interventions in Africa and elsewhere (Devaux, Torero, Donovan, & Horton, 2016; Donovan et al., 2015). Among many thousands of such initiatives, several common themes emerge, focused primarily on identification and implementation of leveraged interventions that can expand opportunities for large numbers of smallholders in a single stroke. The following list provides an illustrative indication of common agricultural value chain interventions that emerge from this work:

- Improved smallholder technologies, input packages, and extension support, linked to collective marketing of final output.
- Contract farming arrangements or bulk purchasing systems that enable smallholders to participate in high-volume, high-value markets.
- Infrastructure upgrading in key assembly markets, ports, or cold storage facilities.
- Governance reforms in urban wet markets, usually involving informal sector traders, farmer representatives and municipal authorities collaborating to identify operational reforms that reduce costs, food losses, and graft while simultaneously raising levels of service delivery and market efficiency (see Boxes 4.2, 6.5).
- Export promotion schemes focused on market creation for smallholders and small enterprises.
- Value-chain-specific policy reforms.

Governance systems emerging from the value chain interventions include a broad range of multi-stakeholder platforms including food industry roundtables, value chain task forces, market management committees and value chain participant councils (Chitundu, Droppelmann, & Haggblade, 2009; Staatz & Ricks, 2010).

8.4.5 Converging responses

The four broad models outlined above are not mutually exclusive. On the contrary, they are highly complementary. Municipal and local government strengthening programs, for example, aim to expand local government resources and technical capacity, empowering and enabling them to rebalance vertical power relationships and accelerate the decentralization of authority required by new generations of territorial development programs. Similarly, municipal reforms in eThekweni and elsewhere have adopted many elements of the territorial development model by creating new, more expansive administrative structures that span multiple prior administrative entities. Regional harmonization efforts, likewise, share many features of the territorial development programs,

particularly their common efforts to facilitate cross-border trade and ensure lower-cost, more fluid cross-jurisdictional supply lines feeding major urban cities. Value chain interventions similarly feature prominently in the implementation priorities of many spatial and territorial development programs. While specific circumstances in each location determine the most appropriate course of action, in most instances action to improve coordination and effectiveness of urban food systems involves efforts at multiple levels to strengthen urban agri-food system governance in Africa.

Given the weight of the task, multiple groups have emerged to support municipal authorities and help them respond to the pressures arising from rapidly expanding urban food systems. International institutions such as UN-Habitat, FAO, the World Bank, the Organisation for Economic Co-operation and Development (OECD), German Corporation for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit — GIZ) the Centre de coopération internationale en recherche agronomique pour le développement (CIRAD), and the Resource Centre on Urban Agriculture and Food Security (RUAF) have developed major programs to support urban food system governance. Researchers at the University of Cape Town have created an African Centre for Cities to provide empirical evidence to help inform these various efforts. In West and Central Africa, a Municipal Development Partnership (MDP) provides an association for local government authorities throughout 28 member countries. African mayors currently network through a series of continental and regional associations, including Mayors for Peace, the Global Covenant of Mayors for Climate and Energy and, in West and Central Africa, a Municipal Development Partnership (MDP). Internationally, a high-level coalition of mayors, led by the then Mayor of Milan, spearheaded a global alliance of cities under MUFPP to support urban food system governance reforms through direct exchange and learning among cities (FAO, 2018). Since launching MUFPP in 2015, the mayors have convened four annual learning forums in Africa involving over 20 major African cities (MUFPP, 2019; FAO, 2020).

8.5. Priority actions for facilitating farmer access to growing urban markets

The evidence presented in this report points to five core priority actions for improving the competitiveness of African food systems and their ability to feed Africa's growing cities and towns.

1. **Urban food system governance.** Spatially, the supply chains serving Africa's cities and towns cover broad geographic space encompassing a constellation of farming communities, rural settlements, small towns and large cities. Institutionally, relevant food and agricultural policies emanate from a wide range of stakeholder groups and administrative entities at national, district and municipal levels. Hence the importance of developing inclusive governance models for coordinating the myriad private and public stakeholders that influence the efficiency of agricultural production, marketing, processing and distribution. The experience examined in Chapter 6 suggests a locally tailored combination of the four broad strategies outlined above involving territorial development initiatives, regional harmonization, strengthening municipal governments, and value chain reforms.
2. **Improve urban wholesale food markets.** Urban wholesale food markets provide a vital gateway through which millions of small and medium-scale farmers reach the traders, processors, and retailers selling food products in growing urban markets. When urban wholesale markets work efficiently, they lower transaction costs for traders and reduce food losses for farmers, thus lowering prices for urban consumers and raising prices received by farmers. Upgrading of urban wholesale markets, thus, offer a singularly important opportunity for promoting inclusive, broad-based agricultural growth. Chapters 4, 5, and 6 offer details on the zoning, infrastructure upgrading and management reforms required to improve urban wholesale market performance.
3. **Improve food safety.** The most rapidly growing urban food markets — meat, fish, poultry, dairy, processed and prepared foods, and horticulture products — are also those most susceptible to food-borne diseases. To ensure food quality and food safety, regulatory authorities will need to work closely with food system stakeholders to ramp-up regulatory monitoring and enforcement, increase public investments in domestic market infrastructure and expand public health and nutrition education. These actions require increased resource levels and improved coordination mechanisms for engaging with private and public sector agri-food system stakeholders (see priority action 1). Chapter 5 provides details on key food safety threats, priority investments in domestic market infrastructure and options for improving awareness of the shared responsibility to provide safe food by regulators and value chain actors.
4. **Regional free trade and agricultural policy harmonization.** Inherited colonial borders and extroverted infrastructure have historically promoted resource extraction and political fragmentation across Africa. Together these centrifugal forces have hindered intra-African trade flows and led to wide-spread small country problems, include a welter of contiguous but conflicting policy spaces. Africa's RECs and new free trade agreement (AfCFTA) provide a framework for remedying these long-standing structural impediments to agricultural trade within Africa. Chapter 7 outlines how free trade agreements and corresponding infrastructure investments in regional road networks, communication infrastructure, electrification and water supply serve to lower transport and transaction costs, thus facilitating intra-African agricultural trade. Parallel harmonization of agricultural input policies and food product standards offer further inducements to agribusinesses serving regional markets.

5. Agricultural research on high-growth, high-value food commodities. In order for African farmers to improve their competitiveness in growing urban markets for poultry, fish, meat, dairy, oilseeds, rice, horticulture, and sugar, they will require local adaptive R&D focused on productive, disease-tolerant species of animals and plants adapted to local environmental conditions. While the weight of past African

agricultural research has understandably focused on staple food crops, future research priorities will need to target fast-growing, high-value food commodities which provide a growing market share and increasing value per unit of land. Chapters 2, 3, 4, and 7 provide commodity-specific guidance and suggestions which, of course, must be tailored by local researchers to the specific opportunities and needs.

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Agricultural Data

Technical Notes

The following conventions are used in the tables:

0 or 0.0 = nil or negligible ; .. or () data not available or missing

Data and Sources

Indicator

Population, Total (millions)

Source: World Development Indicators, World Bank

Urban Population (in millions)

Source: World Development Indicators, World Bank

Urban Population Growth (Annual %)

Source: World Development Indicators, World Bank

Urban Population (% of Total Population)

Source: World Development Indicators, World Bank

Rural Population (in millions)

Source: World Development Indicators, World Bank

Rural Population (% of Total Population)

Source: World Development Indicators, World Bank

Rural Population Growth (Annual %)

Source: World Development Indicators, World Bank

African Population Trends

Source: World Urbanization Prospects: The 2018 Revision

Average Annual Rate of Change of the Urban Population

Source: World Urbanization Prospects: The 2018 Revision

Urban Population at Mid-Year 1950-2050 (thousands)

Source: World Urbanization Prospects: The 2018 Revision

Total Population at Mid-Year, 1950-2050 (thousands)

Source: World Urbanization Prospects: The 2018 Revision

Trade (% of GDP)

Source: World Development Indicators, World Bank

Export Cereals (Weight 1000kg)

Source: Resource Trade Earth Data

Import Cereals (Weight 1000kg)

Source: Resource Trade Earth Data

Import Cereals (Value 1000US\$)

Source: Resource Trade Earth Data

Intra-African Agricultural Trade, Imports (Constant 2010 USD, million)

Source: ReSAKSS (Regional Strategic Analysts and Knowledge Support System) 2019

Intra-African Agricultural Trade, Exports (Constant 2010 US\$, million)

Source: ReSAKSS (Regional Strategic Analysts and Knowledge Support System). 2019

Agriculture, Value Added (Constant 2010 USD, million)

Source: ReSAKSS (Regional Strategic Analysts and Knowledge Support System). 2019

Cereals – Yield Comparison

Source: FAOSTAT

Population, Total (in millions)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	36.0	36.7	37.4	38.1	38.9	39.7	40.6	41.4	42.2	43.1
Angola	23.4	24.2	25.1	26.0	26.9	27.9	28.8	29.8	30.8	31.8
Benin	9.2	9.5	9.7	10.0	10.3	10.6	10.9	11.2	11.5	11.8
Botswana	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.3	2.3
Burkina Faso	15.6	16.1	16.6	17.1	17.6	18.1	18.6	19.2	19.8	20.3
Burundi	8.7	9.0	9.2	9.5	9.8	10.2	10.5	10.8	11.2	11.5
Cabo Verde	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Cameroon	20.3	20.9	21.5	22.1	22.7	23.3	23.9	24.6	25.2	25.9
Central African Rep.	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.6	4.7	4.7
Chad	12.0	12.4	12.8	13.2	13.7	14.1	14.6	15.0	15.5	15.9
Comoros	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9
Congo, Dem. Rep.	64.6	66.8	69.0	71.4	73.8	76.2	78.8	81.4	84.1	86.8
Congo, Rep.	4.3	4.4	4.5	4.6	4.7	4.9	5.0	5.1	5.2	5.4
Cote d'Ivoire	20.5	21.0	21.5	22.1	22.6	23.2	23.8	24.4	25.1	25.7
Djibouti	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0
Egypt, Arab Rep.	82.8	84.5	86.4	88.4	90.4	92.4	94.4	96.4	98.4	100.4
Equatorial Guinea	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4
Eritrea	3.2	3.2	..	..	..	..	..	..	..	..
Eswatini	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Ethiopia	87.6	90.1	92.7	95.4	98.1	100.8	103.6	106.4	109.2	112.1
Gabon	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.1	2.1	2.2
Gambia, The	1.8	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.3	2.3
Ghana	24.8	25.4	26.0	26.6	27.2	27.8	28.5	29.1	29.8	30.4
Guinea	10.2	10.4	10.7	10.9	11.2	11.4	11.7	12.1	12.4	12.8
Guinea-Bissau	1.5	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9
Kenya	42.0	43.2	44.3	45.5	46.7	47.9	49.1	50.2	51.4	52.6
Lesotho	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
Liberia	3.9	4.0	4.1	4.2	4.4	4.5	4.6	4.7	4.8	4.9
Libya	6.2	6.2	6.3	6.3	6.4	6.4	6.5	6.6	6.7	6.8
Madagascar	21.2	21.7	22.3	23.0	23.6	24.2	24.9	25.6	26.3	27.0
Malawi	14.5	15.0	15.4	15.8	16.3	16.7	17.2	17.7	18.1	18.6
Mali	15.0	15.5	16.0	16.4	16.9	17.4	18.0	18.5	19.1	19.7
Mauritania	3.5	3.6	3.7	3.8	3.9	4.0	4.2	4.3	4.4	4.5
Mauritius	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Morocco	32.3	32.8	33.2	33.7	34.2	34.7	35.1	35.6	36.0	36.5
Mozambique	23.5	24.2	24.9	25.6	26.3	27.0	27.8	28.6	29.5	30.4
Namibia	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5
Niger	16.5	17.1	17.8	18.5	19.2	20.0	20.8	21.6	22.4	23.3
Nigeria	158.5	162.8	167.2	171.8	176.4	181.1	186.0	190.9	195.9	201.0
Rwanda	10.0	10.3	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6

Population, Total (in millions) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sao Tome and Principe	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Senegal	12.7	13.0	13.4	13.8	14.2	14.6	15.0	15.4	15.9	16.3
Seychelles	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sierra Leone	6.4	6.6	6.7	6.9	7.0	7.2	7.3	7.5	7.7	7.8
Somalia	12.0	12.4	12.7	13.1	13.4	13.8	14.2	14.6	15.0	15.4
South Africa	51.2	52.0	52.8	53.7	54.5	55.4	56.2	57.0	57.8	58.6
South Sudan	9.5	9.8	10.1	10.4	10.6	10.7	10.8	10.9	11.0	11.1
Sudan	34.5	35.3	36.2	37.1	38.0	38.9	39.8	40.8	41.8	42.8
Tanzania	44.3	45.7	47.1	48.5	50.0	51.5	53.1	54.7	56.3	58.0
Togo	6.4	6.6	6.8	7.0	7.1	7.3	7.5	7.7	7.9	8.1
Tunisia	10.6	10.7	10.8	11.0	11.1	11.2	11.3	11.4	11.6	11.7
Uganda	32.4	33.5	34.6	35.7	36.9	38.2	39.6	41.2	42.7	44.3
Zambia	13.6	14.0	14.5	14.9	15.4	15.9	16.4	16.9	17.4	17.9
Zimbabwe	12.7	12.9	13.1	13.4	13.6	13.8	14.0	14.2	14.4	14.6
Sub-Saharan Africa	869.0	893.0	917.7	943.0	969.0	995.5	1022.5	1050.2	1078.3	1107.0

Source: World Development Indicators

Urban Population (in millions)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	24.3	25.0	25.8	26.5	27.3	28.1	29.0	29.8	30.7	31.5
Angola	14.0	14.7	15.4	16.1	16.9	17.7	18.5	19.3	20.2	21.1
Benin	4.0	4.1	4.3	4.5	4.6	4.8	5.0	5.2	5.4	5.6
Botswana	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6
Burkina Faso	3.8	4.1	4.3	4.5	4.7	5.0	5.2	5.5	5.8	6.1
Burundi	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.5
Cabo Verde	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Cameroon	10.5	10.9	11.3	11.8	12.2	12.7	13.2	13.7	14.2	14.7
Central African Rep.	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	2.0
Chad	2.6	2.7	2.8	2.9	3.1	3.2	3.3	3.4	3.6	3.7
Comoros	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Congo, Dem. Rep.	25.8	27.1	28.4	29.7	31.1	32.6	34.1	35.7	37.4	39.1
Congo, Rep.	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6
Cote d'Ivoire	9.7	10.0	10.4	10.7	11.1	11.5	11.9	12.3	12.7	13.2
Djibouti	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8
Equatorial Guinea	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0
Eritrea	1.1	1.1	..	..	..	..	..	..	..	..
Eswatini	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Ethiopia	15.2	16.0	16.8	17.7	18.6	19.6	20.6	21.6	22.7	23.8
Gabon	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.8	1.9	1.9
Gambia, The	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.5
Ghana	12.6	13.0	13.5	14.0	14.5	15.1	15.6	16.1	16.7	17.2
Guinea	3.4	3.5	3.6	3.8	3.9	4.0	4.2	4.3	4.5	4.7
Guinea-Bissau	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Kenya	9.9	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.9	14.5
Lesotho	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Liberia	1.9	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.5	2.5
Libya	4.8	4.9	4.9	5.0	5.0	5.1	5.2	5.3	5.3	5.4
Madagascar	6.8	7.1	7.4	7.8	8.1	8.5	8.9	9.3	9.8	10.2
Malawi	2.3	2.3	2.4	2.5	2.6	2.7	2.8	3.0	3.1	3.2
Mali	5.4	5.7	6.0	6.3	6.6	7.0	7.3	7.7	8.1	8.5
Mauritania	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5
Mauritius	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Morocco	18.8	19.2	19.7	20.1	20.6	21.1	21.6	22.0	22.5	23.0
Mozambique	7.5	7.8	8.2	8.5	8.9	9.3	9.7	10.2	10.6	11.1
Namibia	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.3
Niger	2.7	2.8	2.9	3.0	3.1	3.2	3.4	3.5	3.7	3.9
Nigeria	68.9	72.2	75.7	79.2	82.9	86.7	90.5	94.5	98.6	102.8
Rwanda	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.2
Sao Tome and Principe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
Senegal	5.5	5.8	6.0	6.2	6.4	6.7	6.9	7.2	7.5	7.8
Seychelles	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Sierra Leone	2.5	2.6	2.7	2.7	2.8	2.9	3.0	3.1	3.2	3.3

Urban Population (in millions) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Somalia	4.7	5.1	5.3	5.5	5.7	6.0	6.2	6.5	6.7	7.0
South Africa	31.9	32.6	33.4	34.2	35.1	35.9	36.7	37.5	38.3	39.1
South Sudan	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.2
Sudan	11.4	11.7	12.1	12.4	12.8	13.2	13.6	14.0	14.5	15.0
Tanzania	12.5	13.2	13.9	14.6	15.4	16.3	17.2	18.1	19.0	20.0
Togo	2.4	2.5	2.6	2.7	2.8	2.9	3.1	3.2	3.3	3.4
Tunisia	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	8.0	8.1
Uganda	6.3	6.7	7.1	7.5	7.9	8.4	9.0	9.5	10.2	10.8
Zambia	5.4	5.6	5.8	6.1	6.4	6.7	6.9	7.2	7.6	7.9
Zimbabwe	4.2	4.3	4.3	4.4	4.4	4.5	4.5	4.6	4.7	4.7
Sub-Saharan Africa	312.8	326.2	339.9	354.1	368.9	384.2	400.0	416.3	433.2	450.7

Source: World Development Indicators

Urban Population Growth (Annual %)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	2.9	2.9	2.9	3.0	3.0	2.9	2.9	2.9	2.8	2.7
Angola	4.9	4.9	4.8	4.7	4.7	4.6	4.5	4.4	4.3	4.2
Benin	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.9	3.9
Botswana	4.1	3.7	2.6	2.4	2.5	2.7	3.0	3.2	3.3	3.2
Burkina Faso	5.3	5.3	5.2	5.2	5.2	5.1	5.1	5.0	5.0	4.9
Burundi	5.8	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Cabo Verde	2.5	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.8
Cameroon	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.7	3.7	3.6
Central African Rep.	1.7	1.3	1.0	1.0	1.1	1.4	1.8	2.2	2.5	2.7
Chad	3.6	3.7	3.8	3.8	3.9	3.9	3.9	3.9	3.9	3.9
Comoros	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.9	2.9
Congo, Dem. Rep.	4.6	4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.5	4.5
Congo, Rep.	3.8	3.5	3.3	3.2	3.1	3.2	3.2	3.3	3.3	3.2
Cote d'Ivoire	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5
Djibouti	1.6	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7
Egypt, Arab Rep.	1.9	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
Equatorial Guinea	7.0	6.8	6.6	5.1	4.9	4.8	4.6	4.5	4.3	4.2
Eritrea	3.3	3.0	..	..	..	..	..	..	..	..
Eswatini	1.7	1.6	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8
Ethiopia	5.2	5.2	5.2	5.1	5.1	5.0	4.9	4.9	4.8	4.8
Gabon	4.1	4.3	4.4	4.4	4.2	3.9	3.5	3.3	3.0	2.9
Gambia, The	4.3	4.3	4.3	4.3	4.2	4.2	4.1	4.1	4.0	4.0
Ghana	3.8	3.8	3.7	3.6	3.6	3.5	3.5	3.4	3.4	3.3
Guinea	3.1	3.1	3.0	3.1	3.2	3.4	3.5	3.7	3.8	3.8
Guinea-Bissau	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.4
Kenya	4.4	4.4	4.3	4.3	4.3	4.2	4.1	4.1	4.1	4.0
Lesotho	2.3	2.5	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3
Liberia	4.4	4.0	3.7	3.5	3.4	3.4	3.4	3.4	3.3	3.3
Libya	1.3	1.1	0.9	0.9	1.0	1.2	1.5	1.7	1.8	1.8
Madagascar	4.8	4.8	4.7	4.7	4.6	4.6	4.6	4.5	4.5	4.4
Malawi	3.6	3.7	3.7	3.8	3.8	3.9	3.9	3.9	4.0	4.0
Mali	5.4	5.2	5.1	5.0	5.0	4.9	4.9	4.9	4.9	4.8
Mauritania	4.9	4.9	4.8	4.8	4.7	4.6	4.6	4.5	4.4	4.3
Mauritius	-0.0	-0.1	0.0	-0.0	-0.1	-0.1	-0.2	-0.1	-0.1	-0.0
Morocco	2.3	2.3	2.3	2.4	2.3	2.3	2.2	2.2	2.1	2.1
Mozambique	4.3	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.4	4.4
Namibia	4.3	4.2	4.2	4.2	4.1	4.1	4.1	4.0	4.0	3.9
Niger	3.8	3.8	3.9	3.9	4.0	4.1	4.1	4.2	4.3	4.4
Nigeria	4.7	4.7	4.6	4.6	4.5	4.5	4.4	4.3	4.2	4.2
Rwanda	2.6	2.5	2.5	2.5	2.6	2.8	2.9	3.0	3.1	3.2

Urban Population Growth (Annual %) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sao Tome and Principe	4.3	4.0	3.7	3.5	3.3	3.3	3.2	3.1	3.0	3.0
Senegal	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.7	3.7
Seychelles	3.5	-1.9	1.7	2.6	2.3	3.0	2.1	2.0	1.7	1.6
Sierra Leone	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
Somalia	7.1	6.9	4.1	4.0	4.0	4.1	4.1	4.1	4.1	4.1
South Africa	2.3	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.1
South Sudan	4.8	4.3	3.9	3.4	3.1	2.7	2.3	2.0	2.0	2.2
Sudan	2.5	2.7	2.8	2.9	3.0	3.0	3.1	3.1	3.2	3.2
Tanzania	5.3	5.4	5.4	5.3	5.3	5.3	5.2	5.2	5.1	5.1
Togo	4.0	4.0	4.0	4.0	3.9	3.9	3.8	3.8	3.7	3.7
Tunisia	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.6
Uganda	5.8	5.8	5.8	5.8	5.9	6.0	6.2	6.2	6.2	6.0
Zambia	4.2	4.3	4.4	4.4	4.4	4.3	4.3	4.2	4.2	4.2
Zimbabwe	0.8	1.0	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.4
Sub-Saharan Africa	4.3	4.3	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.0

Source: World Development Indicators

Urban Population (% of Total Population)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	67.5	68.2	68.9	69.6	70.2	70.8	71.5	72.1	72.6	73.2
Angola	59.8	60.5	61.3	62.0	62.7	63.4	64.1	64.8	65.5	66.2
Benin	43.1	43.6	44.1	44.6	45.2	45.7	46.2	46.8	47.3	47.9
Botswana	62.4	63.9	64.8	65.6	66.4	67.2	67.9	68.7	69.4	70.2
Burkina Faso	24.6	25.2	25.8	26.3	26.9	27.5	28.1	28.7	29.4	30.0
Burundi	10.6	10.9	11.2	11.5	11.8	12.1	12.4	12.7	13.0	13.4
Cabo Verde	61.8	62.3	62.8	63.3	63.8	64.3	64.8	65.3	65.7	66.2
Cameroon	51.6	52.2	52.8	53.4	54.0	54.6	55.2	55.8	56.4	57.0
Central African Rep.	38.9	39.1	39.4	39.7	40.0	40.3	40.6	41.0	41.4	41.8
Chad	22.0	22.1	22.1	22.2	22.4	22.5	22.7	22.9	23.1	23.3
Comoros	28.0	28.0	28.1	28.2	28.3	28.5	28.6	28.8	29.0	29.2
Congo, Dem. Rep.	40.0	40.5	41.1	41.6	42.2	42.7	43.3	43.9	44.5	45.0
Congo, Rep.	63.3	63.7	64.2	64.6	65.1	65.5	66.0	66.5	66.9	67.4
Cote d'Ivoire	47.3	47.8	48.2	48.6	49.0	49.4	49.9	50.3	50.8	51.2
Djibouti	77.0	77.1	77.1	77.2	77.3	77.4	77.5	77.6	77.8	77.9
Egypt, Arab Rep.	43.0	43.0	42.9	42.9	42.8	42.8	42.7	42.7	42.7	42.7
Equatorial Guinea	65.9	67.5	69.0	69.5	70.1	70.6	71.1	71.6	72.1	72.6
Eritrea	35.2	35.8	..	..	..	..	..	..	..	..
Eswatini	22.5	22.7	22.8	23.0	23.1	23.3	23.5	23.6	23.8	24.0
Ethiopia	17.3	17.7	18.2	18.6	19.0	19.4	19.9	20.3	20.8	21.2
Gabon	85.5	86.1	86.6	87.2	87.7	88.1	88.6	89.0	89.4	89.7
Gambia, The	55.7	56.4	57.1	57.8	58.5	59.2	59.9	60.6	61.3	61.9
Ghana	50.7	51.4	52.1	52.7	53.4	54.1	54.7	55.4	56.1	56.7
Guinea	33.7	34.0	34.3	34.5	34.8	35.1	35.5	35.8	36.1	36.5
Guinea-Bissau	40.1	40.5	40.9	41.3	41.7	42.1	42.5	42.9	43.4	43.8
Kenya	23.6	24.0	24.4	24.8	25.2	25.7	26.1	26.6	27.0	27.5
Lesotho	24.8	25.3	25.7	26.1	26.5	26.9	27.3	27.7	28.2	28.6
Liberia	47.8	48.2	48.6	49.0	49.4	49.8	50.3	50.7	51.2	51.6
Libya	78.1	78.3	78.5	78.8	79.0	79.3	79.5	79.8	80.1	80.4
Madagascar	31.9	32.6	33.2	33.9	34.5	35.2	35.9	36.5	37.2	37.9
Malawi	15.5	15.7	15.8	16.0	16.1	16.3	16.5	16.7	16.9	17.2
Mali	36.0	36.8	37.6	38.4	39.2	40.0	40.8	41.6	42.4	43.1
Mauritania	46.6	47.5	48.4	49.3	50.2	51.1	52.0	52.8	53.7	54.5
Mauritius	41.6	41.4	41.3	41.2	41.1	41.0	40.9	40.8	40.8	40.8
Morocco	58.0	58.6	59.1	59.7	60.3	60.8	61.4	61.9	62.5	63.0
Mozambique	31.8	32.3	32.8	33.4	33.9	34.4	34.9	35.5	36.0	36.5
Namibia	41.6	42.6	43.7	44.8	45.8	46.9	48.0	49.0	50.0	51.0
Niger	16.2	16.2	16.2	16.2	16.2	16.2	16.3	16.4	16.4	16.5
Nigeria	43.5	44.4	45.2	46.1	47.0	47.8	48.7	49.5	50.3	51.2
Rwanda	16.9	16.9	16.9	16.9	17.0	17.0	17.1	17.1	17.2	17.3

Urban Population (% of Total Population) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sao Tome and Principe	65.0	66.1	67.2	68.2	69.2	70.2	71.1	72.0	72.8	73.6
Senegal	43.8	44.2	44.6	45.0	45.4	45.9	46.3	46.7	47.2	47.7
Seychelles	53.3	53.7	54.1	54.5	55.0	55.4	55.8	56.3	56.7	57.1
Sierra Leone	38.9	39.2	39.6	40.0	40.4	40.8	41.2	41.6	42.1	42.5
Somalia	39.3	41.0	41.6	42.1	42.7	43.2	43.8	44.4	45.0	45.6
South Africa	62.2	62.7	63.3	63.8	64.3	64.8	65.3	65.9	66.4	66.9
South Sudan	17.9	18.0	18.2	18.4	18.6	18.9	19.1	19.3	19.6	19.9
Sudan	33.1	33.2	33.3	33.5	33.7	33.9	34.1	34.4	34.6	34.9
Tanzania	28.1	28.8	29.5	30.2	30.9	31.6	32.3	33.1	33.8	34.5
Togo	37.5	38.0	38.5	39.1	39.6	40.1	40.6	41.2	41.7	42.2
Tunisia	66.7	66.9	67.2	67.5	67.8	68.1	68.3	68.6	68.9	69.3
Uganda	19.4	19.9	20.4	21.0	21.5	22.1	22.6	23.2	23.8	24.4
Zambia	39.4	39.9	40.4	40.9	41.4	41.9	42.4	43.0	43.5	44.1
Zimbabwe	33.2	33.0	32.8	32.7	32.5	32.4	32.3	32.2	32.2	32.2
Sub-Saharan Africa	36.0	36.5	37.0	37.6	38.1	38.6	39.1	39.6	40.2	40.7

Source: World Development Indicators

Rural Population (in millions)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	11.7	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.6	11.5
Angola	9.4	9.6	9.7	9.9	10.0	10.2	10.3	10.5	10.6	10.8
Benin	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9	6.1	6.2
Botswana	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Burkina Faso	11.8	12.0	12.3	12.6	12.8	13.1	13.4	13.7	14.0	14.2
Burundi	7.8	8.0	8.2	8.4	8.7	8.9	9.2	9.5	9.7	10.0
Cabo Verde	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cameroon	9.9	10.0	10.1	10.3	10.4	10.6	10.7	10.9	11.0	11.1
Central African Republic	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8
Chad	9.3	9.6	10.0	10.3	10.6	10.9	11.3	11.6	11.9	12.2
Comoros	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6
Congo, Dem. Rep.	38.7	39.7	40.7	41.7	42.7	43.7	44.7	45.7	46.7	47.7
Congo, Rep.	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.8
Cote d'Ivoire	10.8	11.0	11.2	11.4	11.5	11.7	11.9	12.1	12.3	12.5
Djibouti	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Egypt, Arab Rep.	47.2	48.2	49.3	50.5	51.7	52.9	54.1	55.3	56.4	57.5
Equatorial Guinea	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
Eritrea	2.1	2.1	..	..	..	..	..	..	..	..
Eswatini	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9
Ethiopia	72.5	74.2	75.9	77.7	79.5	81.2	83.0	84.8	86.5	88.3
Gabon	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Gambia, The	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9
Ghana	12.2	12.3	12.5	12.6	12.7	12.8	12.9	13.0	13.1	13.2
Guinea	6.8	6.9	7.0	7.1	7.3	7.4	7.6	7.7	7.9	8.1
Guinea-Bissau	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Kenya	32.1	32.8	33.5	34.2	34.9	35.6	36.2	36.9	37.5	38.1
Lesotho	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Liberia	2.0	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4
Libya	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Madagascar	14.4	14.7	14.9	15.2	15.4	15.7	16.0	16.2	16.5	16.8
Malawi	12.3	12.6	13.0	13.3	13.7	14.0	14.4	14.7	15.1	15.4
Mali	9.6	9.8	10.0	10.1	10.3	10.5	10.6	10.8	11.0	11.2
Mauritania	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1
Mauritius	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Morocco	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.5	13.5
Mozambique	16.0	16.4	16.7	17.0	17.4	17.7	18.1	18.5	18.9	19.3
Namibia	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Niger	13.8	14.3	14.9	15.5	16.1	16.8	17.4	18.1	18.8	19.5
Nigeria	89.6	90.6	91.6	92.6	93.5	94.5	95.4	96.4	97.3	98.2
Rwanda	8.3	8.5	8.8	9.0	9.2	9.4	9.7	9.9	10.2	10.4

Rural Population (in millions) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sao Tome and Principe	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Senegal	7.1	7.3	7.4	7.6	7.7	7.9	8.1	8.2	8.4	8.5
Seychelles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sierra Leone	3.9	4.0	4.1	4.1	4.2	4.2	4.3	4.4	4.4	4.5
Somalia	7.3	7.3	7.4	7.6	7.7	7.8	8.0	8.1	8.3	8.4
South Africa	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.4	19.4
South Sudan	7.8	8.1	8.3	8.4	8.6	8.7	8.8	8.8	8.8	8.9
Sudan	23.1	23.6	24.1	24.7	25.2	25.7	26.3	26.8	27.3	27.9
Tanzania	31.9	32.5	33.2	33.8	34.5	35.2	35.9	36.6	37.3	38.0
Togo	4.0	4.1	4.2	4.2	4.3	4.4	4.5	4.5	4.6	4.7
Tunisia	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Uganda	26.1	26.8	27.5	28.2	29.0	29.8	30.7	31.6	32.6	33.5
Zambia	8.3	8.4	8.6	8.8	9.0	9.2	9.4	9.6	9.8	10.0
Zimbabwe	8.5	8.6	8.8	9.0	9.2	9.3	9.5	9.6	9.8	9.9
Sub-Saharan Africa	556.2	566.9	577.8	588.9	600.1	611.3	622.6	633.8	645.1	656.3

Source: World Development Indicators

Rural Population (% of Total Population)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	32.5	31.8	31.1	30.4	29.8	29.2	28.5	27.9	27.4	26.8
Angola	40.2	39.5	38.7	38.0	37.3	36.6	35.9	35.2	34.5	33.8
Benin	56.9	56.4	55.9	55.4	54.8	54.3	53.8	53.2	52.7	52.1
Botswana	37.6	36.1	35.2	34.4	33.6	32.8	32.1	31.3	30.6	29.8
Burkina Faso	75.4	74.8	74.2	73.7	73.1	72.5	71.9	71.3	70.6	70.0
Burundi	89.4	89.1	88.8	88.5	88.2	87.9	87.6	87.3	87.0	86.6
Cabo Verde	38.2	37.7	37.2	36.7	36.2	35.7	35.2	34.7	34.3	33.8
Cameroon	48.4	47.8	47.2	46.6	46.0	45.4	44.8	44.2	43.6	43.0
Central African Republic	61.1	60.9	60.6	60.3	60.0	59.7	59.4	59.0	58.6	58.2
Chad	78.0	77.9	77.9	77.8	77.6	77.5	77.3	77.1	76.9	76.7
Comoros	72.0	72.0	71.9	71.8	71.7	71.5	71.4	71.2	71.0	70.8
Congo, Dem. Rep.	60.0	59.5	58.9	58.4	57.8	57.3	56.7	56.1	55.5	55.0
Congo, Rep.	36.7	36.3	35.8	35.4	34.9	34.5	34.0	33.5	33.1	32.6
Cote d'Ivoire	52.7	52.2	51.8	51.4	51.0	50.6	50.1	49.7	49.2	48.8
Djibouti	23.0	22.9	22.9	22.8	22.7	22.6	22.5	22.4	22.2	22.1
Egypt, Arab Rep.	57.0	57.0	57.1	57.1	57.2	57.2	57.3	57.3	57.3	57.3
Equatorial Guinea	34.1	32.5	31.0	30.5	29.9	29.4	28.9	28.4	27.9	27.4
Eritrea	64.8	64.2	..	..	..	..	..	..	..	..
Eswatini	77.5	77.3	77.2	77.0	76.9	76.7	76.5	76.4	76.2	76.0
Ethiopia	82.7	82.3	81.8	81.4	81.0	80.6	80.1	79.7	79.2	78.8
Gabon	14.5	13.9	13.4	12.8	12.3	11.9	11.4	11.0	10.6	10.3
Gambia, The	44.3	43.6	42.9	42.2	41.5	40.8	40.1	39.4	38.7	38.1
Ghana	49.3	48.6	47.9	47.3	46.6	45.9	45.3	44.6	43.9	43.3
Guinea	66.3	66.0	65.7	65.5	65.2	64.9	64.5	64.2	63.9	63.5
Guinea-Bissau	59.9	59.5	59.1	58.7	58.3	57.9	57.5	57.1	56.6	56.2
Kenya	76.4	76.0	75.6	75.2	74.8	74.3	73.9	73.4	73.0	72.5
Lesotho	75.2	74.7	74.3	73.9	73.5	73.1	72.7	72.3	71.8	71.4
Liberia	52.2	51.8	51.4	51.0	50.6	50.2	49.7	49.3	48.8	48.4
Libya	21.9	21.7	21.5	21.2	21.0	20.7	20.5	20.2	19.9	19.6
Madagascar	68.1	67.4	66.8	66.1	65.5	64.8	64.1	63.5	62.8	62.1
Malawi	84.5	84.3	84.2	84.0	83.9	83.7	83.5	83.3	83.1	82.8
Mali	64.0	63.2	62.4	61.6	60.8	60.0	59.2	58.4	57.6	56.9
Mauritania	53.4	52.5	51.6	50.7	49.8	48.9	48.0	47.2	46.3	45.5
Mauritius	58.4	58.6	58.7	58.8	58.9	59.0	59.1	59.2	59.2	59.2
Morocco	42.0	41.4	40.9	40.3	39.7	39.2	38.6	38.1	37.5	37.0
Mozambique	68.2	67.7	67.2	66.6	66.1	65.6	65.1	64.5	64.0	63.5
Namibia	58.4	57.4	56.3	55.2	54.2	53.1	52.0	51.0	50.0	49.0
Niger	83.8	83.8	83.8	83.8	83.8	83.8	83.7	83.7	83.6	83.5
Nigeria	56.5	55.6	54.8	53.9	53.0	52.2	51.3	50.5	49.7	48.8
Rwanda	83.1	83.1	83.1	83.1	83.0	83.0	82.9	82.9	82.8	82.7

Rural Population (% of Total Population) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sao Tome and Principe	35.0	33.9	32.8	31.8	30.8	29.8	28.9	28.0	27.2	26.4
Saudi Arabia	17.9	17.7	17.5	17.3	17.0	16.8	16.6	16.4	16.2	15.9
Senegal	56.2	55.8	55.4	55.0	54.6	54.1	53.7	53.3	52.8	52.3
Seychelles	46.7	46.3	45.9	45.5	45.0	44.6	44.2	43.7	43.3	42.9
Sierra Leone	61.1	60.8	60.4	60.0	59.6	59.2	58.8	58.4	57.9	57.5
Somalia	60.7	59.0	58.4	57.9	57.3	56.8	56.2	55.6	55.0	54.4
South Africa	37.8	37.3	36.7	36.2	35.7	35.2	34.7	34.2	33.6	33.1
South Sudan	82.1	82.0	81.8	81.6	81.4	81.1	80.9	80.7	80.4	80.1
Sudan	66.9	66.8	66.7	66.5	66.3	66.1	65.9	65.6	65.4	65.1
Tanzania	71.9	71.2	70.5	69.8	69.1	68.4	67.7	66.9	66.2	65.5
Togo	62.5	62.0	61.5	60.9	60.4	59.9	59.4	58.8	58.3	57.8
Tunisia	33.3	33.1	32.8	32.5	32.2	31.9	31.7	31.4	31.1	30.7
Uganda	80.6	80.1	79.6	79.0	78.5	77.9	77.4	76.8	76.2	75.6
Zambia	60.6	60.1	59.6	59.1	58.6	58.1	57.6	57.0	56.5	55.9
Zimbabwe	66.8	67.0	67.2	67.3	67.5	67.6	67.7	67.8	67.8	67.8
Sub-Saharan Africa	64.0	63.5	63.0	62.4	61.9	61.4	60.9	60.4	59.8	59.3

Source: World Development Indicators

Rural Population Growth (Annual %)

Country Name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	-0.4	-0.3	-0.2	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Angola	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.3
Benin	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7
Botswana	-2.1	-2.5	-1.3	-1.2	-1.1	-0.8	-0.6	-0.4	-0.2	-0.2
Burkina Faso	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0
Burundi	3.0	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7
Cabo Verde	-0.9	-0.1	-0.1	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2	-0.2
Cameroon	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.2
Central African Rep.	0.8	0.3	-0.0	-0.2	-0.1	0.1	0.4	0.7	0.9	1.0
Chad	3.3	3.3	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7
Comoros	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.0	1.9
Congo, Dem. Rep.	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1
Congo, Rep.	1.8	1.5	1.3	1.2	1.1	1.2	1.2	1.2	1.2	1.2
Cote d'Ivoire	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.6	1.6
Djibouti	1.2	1.3	1.4	1.4	1.3	1.2	1.1	1.1	1.0	0.9
Egypt, Arab Rep.	2.0	2.1	2.3	2.4	2.4	2.3	2.2	2.1	2.0	1.9
Equatorial Guinea	0.0	-0.2	-0.4	2.5	2.4	2.2	2.1	2.0	1.9	1.8
Eritrea	0.7	0.4	..	..	..	..	..	..	..	..
Eswatini	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8
Ethiopia	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.1	2.0	2.0
Gabon	-0.5	-0.3	-0.2	-0.2	-0.3	-0.5	-0.7	-0.9	-1.0	-1.1
Gambia, The	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2
Ghana	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7
Guinea	1.8	1.8	1.8	1.8	1.9	2.0	2.2	2.2	2.3	2.3
Guinea-Bissau	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.8	1.8	1.7
Kenya	2.2	2.2	2.1	2.1	2.0	1.9	1.8	1.7	1.7	1.6
Lesotho	-0.4	-0.3	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2
Liberia	2.9	2.5	2.1	1.9	1.8	1.7	1.7	1.6	1.5	1.5
Libya	0.1	-0.2	-0.5	-0.6	-0.5	-0.4	-0.2	-0.0	0.1	-0.0
Madagascar	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6
Malawi	2.7	2.7	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.4
Mali	1.9	1.8	1.7	1.6	1.6	1.6	1.6	1.7	1.7	1.6
Mauritania	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9
Mauritius	0.4	0.3	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1
Morocco	-0.0	-0.0	0.0	0.0	0.0	-0.0	-0.1	-0.1	-0.2	-0.2
Mozambique	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1
Namibia	0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2	-0.2
Niger	3.8	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.7	3.7
Nigeria	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9
Rwanda	2.6	2.5	2.5	2.4	2.5	2.5	2.5	2.6	2.5	2.5

Rural Population Growth (Annual %) (continued)

Country Name	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Sao Tome and Principe	-0.6	-0.9	-1.2	-1.3	-1.3	-1.3	-1.2	-1.2	-1.1	-1.1
Saudi Arabia	1.7	1.8	1.9	1.8	1.6	1.3	0.9	0.7	0.4	0.3
Senegal	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9
Seychelles	2.0	-3.5	0.1	0.9	0.6	1.3	0.4	0.2	-0.0	-0.1
Sierra Leone	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4
Somalia	0.0	-0.1	1.8	1.7	1.7	1.8	1.8	1.8	1.8	1.8
South Africa	0.1	0.1	0.2	0.2	0.1	0.1	-0.0	-0.1	-0.1	-0.2
South Sudan	3.7	3.1	2.6	2.1	1.7	1.2	0.8	0.4	0.3	0.4
Sudan	2.1	2.1	2.2	2.2	2.1	2.1	2.1	2.0	2.0	1.9
Tanzania	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9
Togo	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5
Tunisia	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1
Uganda	2.6	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.0	2.8
Zambia	2.1	2.2	2.3	2.3	2.2	2.2	2.1	2.0	2.0	1.9
Zimbabwe	1.6	1.8	2.0	2.0	2.0	1.8	1.7	1.5	1.5	1.4
Sub-Saharan Africa	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7

Data from database: World Development Indicators

Average Annual Rate of Change of the Urban Population, 1950-2050 (per cent)

Region, subregion, country or area	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000
AFRICA	4.8	4.9	4.5	4.4	4.4	4.4	4.5	4.4	3.8	3.4
Algeria	5.3	5.6	6.7	3.8	3.2	4.5	5.0	4.4	3.6	2.9
Angola	5.6	5.1	5.5	5.3	7.4	7.8	7.9	6.8	6.6	5.3
Benin	6.8	7.3	7.6	7.8	7.7	7.0	5.2	5.3	4.7	3.9
Botswana	3.8	3.4	7.1	17.3	11.8	10.4	13.1	12.0	5.7	3.6
Burkina Faso	3.1	3.4	3.4	3.7	3.8	8.6	9.2	4.9	4.5	6.1
Burundi	3.7	3.7	4.0	6.6	5.5	6.4	6.4	6.5	4.7	4.1
Cabo Verde	3.7	2.1	4.3	4.7	2.0	2.9	7.7	8.4	4.6	4.1
Cameroon	5.8	5.9	6.0	6.1	8.6	6.0	5.6	4.9	4.2	3.9
Central African Rep.	4.4	4.7	5.0	5.2	5.0	3.6	3.8	2.9	2.8	2.5
Chad	5.8	5.8	6.5	8.3	8.2	5.7	3.4	4.2	3.9	3.7
Congo	4.6	4.7	4.9	4.9	5.1	4.9	4.7	3.5	3.5	3.6
Côte d'Ivoire	8.3	9.2	10.4	6.6	7.3	7.2	4.8	4.4	4.3	3.7
Congo, Dem. Rep.	3.6	3.9	3.6	3.8	3.7	3.8	3.5	4.4	5.1	3.8
Djibouti	4.8	5.9	8.5	8.5	8.5	10.8	4.2	6.8	1.4	2.7
Eastern Africa	5.2	5.4	5.8	6.0	6.0	6.1	5.1	5.1	4.4	4.2
Egypt	4.3	4.4	3.6	3.4	3.1	2.6	2.6	2.5	1.8	1.8
Equatorial Guinea	6.7	5.8	2.4	2.3	-3.0	-0.0	8.2	6.4	6.4	7.8
Eritrea	5.0	5.4	5.7	4.6	4.0	4.0	4.7	6.1	3.3	5.2
Ethiopia	5.3	5.4	5.7	5.0	4.7	3.5	4.8	5.2	5.3	4.3
Gabon	4.7	4.8	7.5	8.0	7.8	7.1	5.2	4.8	4.2	3.6
Gambia	4.0	5.5	5.3	8.1	7.6	6.0	6.8	7.5	5.5	4.9
Ghana	6.9	7.1	5.2	4.3	3.4	2.6	4.3	4.8	4.7	4.2
Guinea	5.9	5.9	5.9	5.8	4.7	4.5	4.8	4.5	6.3	3.2
Guinea-Bissau	4.5	4.4	2.2	2.8	2.8	2.8	8.0	7.6	4.5	2.8
Kenya	5.5	5.7	6.3	7.0	8.2	7.5	4.4	4.3	4.8	4.5
Lesotho	4.6	12.3	13.7	8.1	6.7	3.7	2.9	5.2	5.8	4.0
Liberia	5.3	5.6	5.7	5.7	5.8	5.9	6.7	4.5	-4.0	5.9
Libya	5.5	6.3	7.8	11.9	9.0	6.1	5.2	2.8	2.3	1.7
Madagascar	5.3	5.4	5.5	5.2	5.7	5.4	5.3	5.2	4.8	4.1
Malawi	4.2	4.4	4.5	6.7	7.5	6.4	5.5	8.0	3.7	4.7
Mali	3.8	3.8	3.7	3.9	4.2	4.4	4.6	3.6	4.3	4.8
Mauritania	10.5	10.7	10.6	10.3	9.8	8.6	7.8	5.1	2.4	2.7
Mauritius	4.4	5.0	4.6	3.7	1.9	1.1	1.0	1.5	1.1	0.7
Mayotte	11.2	11.1	10.8	6.5	6.0	5.6	7.2	7.2	8.0	6.8
Morocco	4.3	4.3	4.5	3.9	3.9	4.1	4.0	3.5	3.0	1.9
Mozambique	4.0	4.2	4.8	4.9	6.2	6.5	8.5	6.6	5.4	3.9

Average Annual Rate of Change of the Urban Population, 1950-2050 (per cent)

Region, subregion, country or area	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050
AFRICA	3.5	3.6	3.7	3.6	3.4	3.3	3.2	3.0	2.9	2.7
Algeria	2.6	2.8	2.9	2.5	2.0	1.6	1.3	1.2	1.2	1.0
Angola	5.7	4.9	4.7	4.3	4.0	3.8	3.5	3.3	3.0	2.8
Benin	4.1	4.1	4.0	3.9	3.7	3.6	3.4	3.2	3.0	2.8
Botswana	2.4	3.8	3.3	2.9	2.5	2.1	1.8	1.5	1.3	1.1
Burkina Faso	6.7	5.7	5.2	5.0	4.8	4.5	4.2	3.9	3.6	3.4
Burundi	5.5	5.9	5.6	5.7	5.4	5.2	5.0	4.9	4.7	4.5
Cabo Verde	3.3	2.5	2.0	2.0	1.8	1.7	1.5	1.2	1.1	0.9
Cameroon	3.9	3.9	3.8	3.6	3.4	3.2	3.0	2.9	2.7	2.5
Central African Rep.	2.1	1.9	1.1	2.5	3.3	3.5	3.4	3.1	2.9	2.7
Chad	3.9	3.5	3.8	3.9	4.1	4.3	4.4	4.3	4.0	3.8
Congo	3.6	4.0	3.3	3.3	3.2	3.1	3.0	2.9	2.7	2.5
Côte d'Ivoire	2.8	3.0	3.4	3.4	3.4	3.3	3.2	3.1	3.0	2.8
Congo, Dem. Rep.	4.3	4.6	4.6	4.5	4.3	4.1	3.9	3.7	3.4	3.1
Djibouti	1.8	1.7	1.8	1.7	1.6	1.4	1.3	1.1	0.9	0.7
Eastern Africa	4.2	4.4	4.6	4.4	4.3	4.2	4.0	3.7	3.5	3.3
Egypt	2.0	1.8	2.1	1.9	1.9	2.0	2.2	2.4	2.4	2.2
Equatorial Guinea	7.4	7.2	5.6	4.3	3.6	3.2	2.8	2.6	2.3	2.1
Eritrea	6.3	4.5	3.6	3.9	3.7	3.5	3.3	3.1	2.8	2.6
Ethiopia	4.1	4.6	4.9	4.6	4.4	4.1	3.9	3.6	3.3	3.0
Gabon	3.5	3.9	3.9	2.6	2.3	2.0	1.9	1.7	1.6	1.4
Gambia	4.8	4.5	4.4	4.1	3.7	3.4	3.1	2.8	2.5	2.3
Ghana	4.1	4.0	3.6	3.3	3.1	2.8	2.6	2.4	2.2	2.0
Guinea	2.8	3.0	3.1	3.5	3.6	3.6	3.6	3.5	3.3	3.1
Guinea-Bissau	3.1	3.4	3.6	3.4	3.2	3.0	2.9	2.8	2.6	2.4
Kenya	4.4	4.4	4.4	4.2	4.1	3.9	3.8	3.5	3.3	3.0
Lesotho	3.4	3.1	2.9	2.8	2.8	2.7	2.7	2.7	2.6	2.4
Liberia	3.2	4.6	3.4	3.4	3.4	3.3	3.2	3.0	2.8	2.6
Libya	1.7	1.5	0.5	1.7	1.5	1.2	1.0	0.9	0.7	0.5
Madagascar	4.2	4.9	4.7	4.5	4.3	4.0	3.7	3.4	3.2	3.0
Malawi	3.3	3.7	3.9	4.2	4.4	4.6	4.7	4.5	4.3	4.0
Mali	5.5	5.6	5.0	4.9	4.6	4.3	3.9	3.6	3.3	3.1
Mauritania	4.9	4.9	4.8	4.3	3.8	3.4	3.1	2.8	2.6	2.4
Mauritius	0.3	0.2	-0.1	0.1	0.3	0.4	0.6	0.6	0.6	0.5
Mayotte	4.4	2.7	2.0	2.0	2.2	2.4	2.6	2.8	2.6	2.4
Morocco	1.8	2.2	2.4	2.1	1.9	1.6	1.4	1.2	1.0	0.9
Mozambique	3.5	4.1	4.5	4.4	4.2	4.1	4.0	3.7	3.5	3.3

Average Annual Rate of Change of the Urban Population, 1950-2050 (per cent)

Region, subregion, country or area	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000
Namibia	5.0	5.1	4.7	4.8	4.1	3.4	3.5	5.1	4.6	4.4
Niger	4.6	4.5	6.1	8.0	8.0	6.1	4.4	4.1	3.9	4.1
Nigeria	6.7	6.8	3.5	3.6	4.6	5.1	5.7	5.5	4.1	4.1
Rwanda	5.0	5.1	4.0	5.0	7.5	6.6	4.9	4.7	7.9	14.4
Sao Tome and Principe	1.4	3.5	6.3	8.8	3.5	3.9	4.3	4.6	4.3	3.7
Senegal	5.4	5.5	5.5	5.5	5.3	3.7	3.9	3.8	3.3	2.8
Seychelles	1.4	1.5	6.0	5.6	6.0	3.4	1.0	0.2	1.8	1.4
Sierra Leone	4.4	4.4	4.7	4.9	5.0	3.8	3.8	3.3	0.5	2.0
Somalia	5.0	5.1	5.0	4.9	4.7	10.8	2.3	2.8	2.0	4.3
South Africa	3.4	3.5	2.9	2.9	2.9	2.7	2.9	3.2	3.2	2.5
South Sudan	0.9	1.5	1.9	2.1	2.3	2.5	5.8	7.1	2.5	4.9
Southern Africa	3.4	3.6	3.0	3.1	3.0	2.8	3.1	3.5	3.3	2.6
Sub-Saharan Africa	4.9	5.2	4.5	4.6	4.9	4.8	4.8	4.8	4.2	3.9
Sudan	7.2	7.3	7.4	7.4	6.1	4.6	6.2	7.6	6.0	2.6
Swaziland	5.1	11.3	12.4	10.6	10.3	6.3	5.2	6.0	4.1	2.3
Togo	9.6	9.6	9.4	11.3	4.1	3.9	5.1	4.5	3.8	4.4
Tunisia	3.5	2.4	2.8	4.0	4.0	3.6	4.0	3.8	3.2	1.9
Uganda	7.2	7.3	7.7	7.1	3.8	4.3	7.0	7.3	6.2	5.9
United Rep. of Tanzania	7.3	6.3	5.7	8.3	10.2	8.5	6.0	5.4	4.9	4.3
Western Africa	6.3	6.5	4.7	4.6	4.9	5.0	5.3	5.0	4.0	4.0
Western Sahara	8.7	8.8	11.8	11.2	6.4	18.8	5.5	3.9	3.6	4.2
Zambia	7.3	7.4	8.2	8.4	6.3	6.0	3.2	2.7	1.4	1.6
Zimbabwe	4.8	4.8	6.2	6.6	6.0	5.5	6.3	5.9	3.9	2.8

Average Annual Rate of Change of the Urban Population, 1950-2050 (per cent)

Region, subregion, country or area	2000-2005	2005-2010	2010-2015	2015-2020	2020-2025	2025-2030	2030-2035	2035-2040	2040-2045	2045-2050
Namibia	3.8	3.9	4.6	4.2	3.6	3.2	2.7	2.4	2.1	1.9
Niger	3.7	3.7	3.9	4.3	4.7	5.1	5.4	5.6	5.5	5.2
Nigeria	4.8	4.8	4.6	4.2	3.9	3.6	3.4	3.1	2.9	2.7
Rwanda	4.8	2.6	2.6	2.9	3.1	3.3	3.6	3.8	3.7	3.4
Sao Tome and Principe	4.4	4.2	3.8	3.3	3.0	2.7	2.4	2.1	1.9	1.8
Senegal	3.3	3.7	3.9	3.7	3.6	3.5	3.4	3.2	3.0	2.8
Seychelles	2.3	1.2	1.3	1.3	1.0	0.8	0.7	0.6	0.5	0.3
Sierra Leone	5.0	3.7	3.3	3.1	3.0	2.9	2.8	2.7	2.5	2.2
Somalia	4.6	4.5	4.8	4.2	4.2	4.1	3.9	3.7	3.4	3.3
South Africa	2.2	2.0	2.2	2.0	1.7	1.5	1.3	1.2	1.0	0.9
South Sudan	4.6	5.1	4.4	4.1	4.1	4.2	4.2	4.0	3.8	3.6
Southern Africa	2.3	2.1	2.3	2.1	1.8	1.6	1.4	1.3	1.1	1.0
Sub-Saharan Africa	4.1	4.1	4.1	4.0	3.8	3.6	3.5	3.3	3.1	2.9
Sudan	2.7	2.3	2.8	3.2	3.4	3.6	3.6	3.4	3.2	3.0
Swaziland	0.2	2.1	2.6	2.5	2.4	2.4	2.4	2.4	2.3	2.2
Togo	4.0	4.0	4.0	3.8	3.6	3.5	3.3	3.1	2.9	2.7
Tunisia	1.4	1.5	1.6	1.5	1.3	1.1	1.0	0.9	0.8	0.7
Uganda	6.2	6.1	6.0	5.7	5.4	5.1	4.8	4.4	4.1	3.8
United Rep. of Tanzania	5.0	5.6	5.5	5.2	4.9	4.6	4.3	3.9	3.7	3.5
Western Africa	4.4	4.4	4.3	4.0	3.8	3.6	3.4	3.2	3.0	2.8
Western Sahara	6.7	1.9	1.9	2.6	2.3	2.1	1.9	1.7	1.5	1.3
Zambia	3.9	4.1	4.3	4.2	4.1	4.0	3.9	3.7	3.5	3.3
Zimbabwe	1.3	1.2	1.8	2.2	2.4	2.7	3.0	3.3	3.1	2.9

Source: World Urbanization Prospects: The 2018 Revision

Department of Economic and Social Affairs, United Nations, Population Division

File 3: Urban Population at Mid-Year by Region, Subregion, Country and Area, 1950-2050 (thousands)

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Urban Population at Mid-Year, 1950-2050 (thousands)

Region, subregion, country or area	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
AFRICA	32,659	41,419	53,008	66,349	82,637	103,199	128,616	160,722	200,111	241,824	285,998
Algeria	1,971	2,570	3,394	4,753	5,747	6,739	8,420	10,824	13,497	16,186	18,685
Angola	345	455	589	776	1,014	1,470	2,170	3,219	4,521	6,302	8,235
Benin	112	157	226	330	486	715	1,016	1,318	1,717	2,171	2,632
Botswana	11	14	16	23	54	98	165	318	578	769	920
Burkina Faso	164	192	227	269	323	391	601	953	1,217	1,527	2,071
Burundi	40	48	58	71	98	129	179	246	340	430	528
Cabo Verde	25	30	34	42	53	58	67	99	151	190	232
Cameroon	402	538	721	975	1,325	2,035	2,751	3,641	4,646	5,731	6,956
Central African Rep.	191	239	302	388	503	645	772	936	1,083	1,248	1,413
Chad	113	150	201	278	421	636	848	1,007	1,240	1,503	1,805
Comoros	11	16	24	35	45	55	71	91	115	135	152
Congo	206	259	328	418	534	688	881	1,111	1,326	1,579	1,893
Côte d'Ivoire	262	397	629	1,059	1,476	2,130	3,054	3,875	4,827	5,992	7,201
DR Congo	2,327	2,792	3,400	4,070	4,924	5,914	7,136	8,521	10,603	13,659	16,534
Djibouti	25	31	42	65	99	151	259	319	448	481	549
Eastern Africa	3,837	4,978	6,514	8,703	11,753	15,854	21,479	27,721	35,851	44,589	54,951
Egypt	6,613	8,195	10,222	12,253	14,536	16,965	19,341	22,059	24,962	27,279	29,917
Equatorial Guinea	35	49	65	74	83	71	71	107	148	204	302
Eritrea	81	104	137	182	230	280	343	434	589	696	902
Ethiopia	834	1,086	1,425	1,898	2,440	3,081	3,671	4,673	6,069	7,924	9,807
Gabon	54	68	87	127	189	279	399	518	658	812	971
Gambia	28	34	45	58	87	127	172	242	351	462	590
Ghana	769	1,084	1,547	2,010	2,490	2,954	3,366	4,183	5,331	6,728	8,320
Guinea	208	279	375	503	674	852	1,066	1,354	1,693	2,320	2,719
Guinea-Bissau	54	67	84	94	108	124	143	213	312	391	451
Kenya	340	448	597	818	1,158	1,742	2,535	3,160	3,919	4,994	6,256
Lesotho	13	16	30	59	89	125	150	173	224	299	365
Liberia	121	157	209	277	369	494	664	929	1,162	953	1,279
Libya	220	289	396	584	1,060	1,661	2,257	2,923	3,360	3,761	4,091
Madagascar	319	414	543	714	927	1,234	1,615	2,107	2,733	3,476	4,276
Malawi	104	128	159	199	279	405	558	733	1,091	1,314	1,662
Mali	399	482	583	702	852	1,053	1,311	1,646	1,974	2,451	3,110
Mauritania	20	35	59	100	167	273	420	619	798	901	1,032
Mauritius	145	180	232	292	352	388	409	430	464	489	506
Mayotte	1	2	4	7	9	13	17	24	34	51	72
Middle Africa	3,681	4,559	5,704	7,119	9,014	11,764	15,059	19,100	24,275	31,101	38,184
Morocco	2,353	2,913	3,619	4,534	5,516	6,714	8,250	10,092	12,039	13,996	15,387
Mozambique	337	411	507	645	824	1,124	1,559	2,380	3,312	4,333	5,257

Urban Population at Mid-Year, 1950-2050 (thousands)

Region, subregion, country or area	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
AFRICA	341,034	408,587	491,531	587,738	698,149	824,014	966,330	1,125,162	1,299,953	1,488,920
Algeria	21,248	24,394	28,248	31,951	35,292	38,232	40,882	43,467	46,053	48,531
Angola	10,949	13,971	17,676	21,937	26,848	32,437	38,691	45,556	53,037	61,132
Benin	3,236	3,964	4,833	5,869	7,076	8,461	10,024	11,755	13,638	15,661
Botswana	1,038	1,258	1,484	1,712	1,937	2,151	2,353	2,541	2,713	2,871
Burkina Faso	2,891	3,844	4,986	6,398	8,113	10,163	12,559	15,282	18,315	21,677
Burundi	696	933	1,232	1,637	2,147	2,780	3,569	4,549	5,750	7,183
Cabo Verde	274	311	343	378	414	450	484	515	543	569
Cameroon	8,456	10,297	12,463	14,942	17,740	20,857	24,291	28,049	32,106	36,415
Central African Rep.	1,571	1,731	1,831	2,077	2,452	2,918	3,455	4,039	4,665	5,329
Chad	2,195	2,613	3,154	3,830	4,701	5,819	7,246	8,968	10,958	13,220
Comoros	170	193	221	255	296	345	401	462	529	599
Congo	2,268	2,775	3,274	3,857	4,524	5,290	6,156	7,108	8,128	9,208
Côte d'Ivoire	8,294	9,656	11,426	13,532	16,022	18,912	22,231	25,979	30,128	34,646
DR Congo	20,521	25,818	32,567	40,848	50,723	62,343	75,773	90,961	107,741	125,931
Djibouti	601	655	718	781	844	906	965	1,019	1,067	1,107
Eastern Africa	67,684	84,504	106,096	132,520	164,482	202,579	247,131	298,003	355,030	418,217
Egypt	33,035	36,183	40,123	44,041	48,427	53,613	59,988	67,731	76,439	85,321
Equatorial Guinea	437	627	830	1,028	1,232	1,445	1,660	1,886	2,119	2,356
Eritrea	1,234	1,544	1,852	2,246	2,699	3,210	3,782	4,407	5,077	5,776
Ethiopia	12,046	15,189	19,403	24,463	30,487	37,496	45,488	54,394	64,087	74,537
Gabon	1,157	1,403	1,701	1,938	2,171	2,403	2,636	2,871	3,107	3,339
Gambia	751	942	1,171	1,435	1,731	2,055	2,403	2,766	3,141	3,523
Ghana	10,191	12,431	14,918	17,626	20,539	23,641	26,912	30,319	33,878	37,518
Guinea	3,122	3,635	4,249	5,071	6,083	7,300	8,744	10,426	12,321	14,400
Guinea-Bissau	527	624	746	884	1,038	1,209	1,397	1,603	1,826	2,062
Kenya	7,813	9,747	12,120	14,975	18,372	22,383	27,026	32,242	37,975	44,185
Lesotho	434	506	585	674	774	887	1,014	1,158	1,316	1,485
Liberia	1,502	1,888	2,242	2,659	3,150	3,722	4,372	5,088	5,863	6,689
Libya	4,465	4,815	4,942	5,376	5,780	6,140	6,460	6,746	6,992	7,184
Madagascar	5,284	6,755	8,529	10,670	13,200	16,102	19,328	22,905	26,853	31,158
Malawi	1,963	2,358	2,867	3,535	4,407	5,551	7,022	8,809	10,917	13,360
Mali	4,103	5,427	6,986	8,907	11,191	13,850	16,846	20,182	23,856	27,825
Mauritania	1,318	1,682	2,137	2,647	3,207	3,808	4,444	5,106	5,802	6,532
Mauritius	515	519	516	519	527	539	554	572	590	604
Mayotte	89	102	113	125	139	157	179	206	235	264
Middle Africa	47,647	59,348	73,632	90,619	110,579	133,728	160,150	189,708	222,156	257,254
Morocco	16,840	18,803	21,164	23,552	25,869	28,069	30,127	32,018	33,726	35,258
Mozambique	6,277	7,710	9,636	11,978	14,811	18,195	22,168	26,726	31,832	37,473

Urban Population at Mid-Year, 1950-2050 (thousands)

Region, subregion, country or area	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
Namibia	65	83	108	137	174	214	254	303	391	494	615
Niger	124	157	196	266	397	592	805	1,005	1,231	1,495	1,838
Nigeria	3,540	4,953	6,956	8,297	9,942	12,536	16,139	21,434	28,276	34,786	42,627
Northern Africa	12,717	15,926	20,019	25,121	30,791	37,113	44,498	53,938	64,574	74,811	83,357
Rwanda	46	59	76	93	120	174	243	309	392	583	1,198
Sao Tome and Principe	8	9	10	14	22	26	32	39	50	61	74
Senegal	428	560	738	970	1,277	1,663	2,000	2,435	2,939	3,464	3,985
Seychelles	10	11	11	15	20	28	33	34	35	38	41
Sierra Leone	256	319	399	504	645	830	1,004	1,216	1,434	1,472	1,626
Somalia	288	371	477	613	781	989	1,702	1,906	2,194	2,421	2,996
South Africa	5,755	6,829	8,138	9,422	10,919	12,611	14,412	16,653	19,545	22,932	26,015
South Sudan	229	240	259	284	315	353	401	537	766	867	1,106
Southern Africa	5,850	6,950	8,306	9,667	11,280	13,120	15,080	17,576	20,912	24,707	28,156
Sub-Saharan Africa	19,942	25,493	32,990	41,228	51,847	66,086	84,118	106,784	135,537	167,013	202,641
Sudan	391	562	811	1,173	1,699	2,300	2,895	3,947	5,764	7,769	8,855
Swaziland	6	8	14	25	43	72	99	129	174	214	241
Togo	61	99	160	255	450	553	671	864	1,083	1,312	1,636
Tunisia	1,164	1,390	1,567	1,806	2,200	2,690	3,220	3,942	4,771	5,603	6,152
Uganda	145	208	300	442	629	762	945	1,340	1,932	2,640	3,554
United Rep. of Tanzania	267	385	528	704	1,068	1,781	2,719	3,661	4,808	6,155	7,625
Western Africa	6,575	9,005	12,466	15,739	19,800	25,347	32,501	42,388	54,499	66,616	81,350
Western Sahara	4	7	10	18	32	45	114	150	183	219	269
Zambia	266	382	552	833	1,267	1,734	2,345	2,758	3,163	3,390	3,665
Zimbabwe	292	371	472	645	899	1,215	1,603	2,201	2,952	3,592	4,126

Urban Population at Mid-Year, 1950-2050 (thousands)

Region, subregion, country or area	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Namibia	744	904	1,138	1,403	1,684	1,972	2,261	2,546	2,829	3,116
Niger	2,212	2,664	3,233	4,003	5,068	6,542	8,581	11,378	14,981	19,464
Nigeria	54,289	68,950	86,673	107,113	130,312	156,300	184,888	216,084	250,285	287,130
Northern Africa	92,682	103,079	115,705	129,068	143,026	157,849	174,104	192,032	211,179	230,584
Rwanda	1,521	1,735	1,977	2,281	2,660	3,144	3,769	4,563	5,477	6,483
Sao Tome and Principe	92	114	137	162	188	215	242	269	296	324
Senegal	4,693	5,654	6,869	8,277	9,904	11,778	13,929	16,362	19,047	21,943
Seychelles	46	49	52	55	58	61	63	65	66	67
Sierra Leone	2,089	2,510	2,955	3,454	4,017	4,651	5,351	6,111	6,909	7,725
Somalia	3,780	4,738	6,015	7,431	9,169	11,229	13,626	16,358	19,436	22,865
South Africa	29,066	32,095	35,844	39,551	43,113	46,457	49,631	52,625	55,447	58,057
South Sudan	1,391	1,798	2,240	2,749	3,378	4,164	5,137	6,290	7,620	9,132
Southern Africa	31,526	35,033	39,358	43,688	47,900	51,909	55,758	59,432	62,936	66,231
Sub-Saharan Africa	248,352	305,508	375,827	458,670	555,123	666,165	792,225	933,130	1,088,774	1,258,336
Sudan	10,127	11,378	13,099	15,349	18,220	21,775	26,089	30,994	36,394	42,261
Swaziland	244	270	307	348	393	442	498	561	631	703
Togo	2,000	2,441	2,974	3,588	4,296	5,106	6,021	7,030	8,116	9,267
Tunisia	6,591	7,092	7,672	8,281	8,854	9,372	9,848	10,305	10,742	11,139
Uganda	4,841	6,574	8,856	11,775	15,431	19,914	25,273	31,490	38,580	46,664
United Rep. of Tanzania	9,792	12,960	17,035	22,113	28,245	35,529	44,001	53,579	64,407	76,542
Western Africa	101,495	126,623	156,740	191,842	232,162	277,949	329,187	385,988	448,652	516,635
Western Sahara	376	414	455	519	583	647	710	772	832	890
Zambia	4,449	5,451	6,747	8,336	10,257	12,549	15,220	18,272	21,722	25,577
Zimbabwe	4,414	4,676	5,109	5,700	6,430	7,370	8,581	10,097	11,803	13,627

Source: World Urbanization Prospects: The 2018 Revision

Department of Economic and Social Affairs, United Nations, Population Division

File 3: Urban Population at Mid-Year by Region, Subregion, Country and Area, 1950-2050 (thousands)

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Total Population at Mid-Year, 1950-2050 (thousands)

Region, subregion, country or area	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995
AFRICA	179,621	198,380	221,490	249,639	283,310	323,681	372,310	428,900	493,329	564,807
Algeria	228,670	253,995	285,142	322,471	366,459	417,898	480,012	552,796	634,567	722,922
Angola	66,758	74,586	84,182	95,997	110,292	127,204	147,519	171,123	198,646	226,021
Benin	2,309	2,531	2,786	3,078	3,456	3,671	4,117	4,702	5,415	5,962
Botswana	62	70	84	115	160	224	359	426	590	630
Burkina Faso	1,142	1,249	1,397	1,589	1,812	2,076	2,386	2,753	3,113	3,090
Burundi	18,128	19,947	22,151	25,014	28,415	32,567	35,265	40,800	48,087	57,310
Cabo Verde	6,077	6,980	8,105	9,505	11,252	13,487	16,269	19,651	23,403	27,346
Cameroon	4,084	4,544	5,099	5,769	6,576	7,556	8,717	10,063	11,599	13,475
Cent. African Rep.	2,954	3,252	3,619	4,059	4,604	5,293	6,163	7,211	9,438	9,909
Chad	493	571	660	753	826	892	966	1,016	1,056	1,129
Congo	6,152	6,702	7,389	8,203	9,162	10,344	11,848	12,984	13,248	15,759
Côte d'Ivoire	248	292	336	391	462	485	509	559	611	674
DR Congo	2,186	2,526	2,933	3,233	3,755	4,359	5,141	6,120	7,236	5,928
Djibouti	36	39	42	47	52	60	66	70	71	77
Eastern Africa	2,264	2,492	2,756	3,068	3,445	3,880	6,359	6,792	7,397	7,705
Egypt	2,583	2,722	2,955	3,264	3,648	4,119	4,705	5,450	5,768	5,460
Equatorial Guinea	5,158	5,899	6,788	8,014	9,446	10,827	12,550	14,647	17,439	20,550
Eritrea	7,650	8,741	10,075	11,684	13,606	15,980	18,683	21,837	25,460	29,961
Ethiopia	2,310	2,634	3,045	3,563	4,174	4,965	5,889	6,955	8,027	9,137
Gabon	2,747	3,202	3,747	4,410	5,176	6,115	7,164	8,659	10,183	11,320
Gambia	26,454	29,173	32,429	36,368	41,122	46,730	53,617	61,689	71,331	84,196
Ghana	4,548	5,116	5,643	6,203	6,776	7,682	8,930	10,609	12,171	14,269
Guinea	4,307	4,704	5,176	5,778	6,528	7,457	8,618	10,050	11,715	13,461
Guinea-Bissau	1,327	1,399	1,504	1,649	1,829	2,017	2,280	2,634	2,940	3,353
Kenya	2,502	2,735	3,002	3,310	3,644	4,088	4,512	5,092	5,957	7,001
Lesotho	827	920	1,037	1,184	1,365	1,590	1,840	2,128	2,440	2,799
Liberia	12,184	13,518	15,248	17,370	20,010	22,902	26,357	29,883	34,615	41,596
Libya	226	239	255	277	307	260	255	359	427	505
Madagascar	473	483	499	533	590	650	729	830	952	1,086
Malawi	60	59	64	65	74	83	95	104	114	126
Mali	49,049	55,615	63,652	72,832	83,149	94,217	107,703	123,897	141,238	158,115
Mauritania	8,872	9,830	11,125	12,627	14,550	16,709	19,338	22,566	25,912	28,904
Mauritius	20,713	23,523	26,997	30,876	35,046	39,188	44,099	50,205	57,412	63,714
Morocco	8,986	10,503	12,329	14,229	16,000	17,804	20,020	22,537	24,879	27,075
Mozambique	5,734	6,549	7,544	8,770	10,282	12,144	14,507	17,210	20,148	24,103
Namibia	3,605	3,944	4,176	4,545	5,060	5,652	6,368	7,322	8,233	9,114
Niger	14	21	33	51	77	75	151	182	217	256
Nigeria	15,533	17,479	19,785	22,547	25,794	29,611	33,688	38,245	42,818	48,035
Northern Africa	413	470	525	597	696	826	1,001	1,189	1,378	1,569

Total Population at Mid-Year, 1950-2050 (thousands) (Continued)

Region, sub-region, country or area	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
AFRICA	645,007	736,925	845,136	969,234	1,106,573	1,256,240	1,418,333	1,592,399	1,776,791	1,969,331	2,167,652
Algeria	817,566	924,758	1,049,446	1,194,370	1,352,622	1,522,250	1,703,538	1,896,704	2,100,302	2,311,561	2,527,557
Angola	261,114	300,600	346,987	399,458	457,440	520,131	587,330	658,521	732,906	809,729	888,129
Benin	6,401	7,423	8,767	10,199	11,939	13,810	15,799	17,970	20,377	22,999	25,762
Botswana	718	783	851	927	1,000	1,069	1,133	1,189	1,237	1,276	1,308
Burkina Faso	3,393	3,969	4,391	4,847	5,432	6,057	6,718	7,421	8,153	8,888	9,607
Burundi	66,537	76,727	87,703	99,873	112,759	126,121	139,620	153,036	166,139	178,818	190,870
Cabo Verde	31,450	36,048	41,350	47,236	53,492	60,063	66,960	74,086	81,287	88,434	95,467
Cameroon	15,767	18,337	21,152	24,234	27,691	31,500	35,592	39,891	44,368	49,013	53,803
Cent. African Rep.	11,376	13,040	15,167	17,574	20,284	23,277	26,578	30,110	33,837	37,719	41,705
Chad	1,185	1,222	1,248	1,259	1,274	1,283	1,287	1,283	1,269	1,248	1,221
Congo	18,068	20,923	24,221	28,011	32,309	37,116	42,439	48,242	54,443	60,975	67,775
Côte d'Ivoire	737	792	831	863	897	928	957	981	999	1,009	1,014
DR Congo	8,026	8,992	10,247	11,630	13,087	14,544	16,024	17,543	19,066	20,529	21,886
Djibouti	81	89	91	94	96	97	98	98	98	98	97
Eastern Africa	9,011	10,410	12,053	13,908	16,105	18,666	21,535	24,700	28,146	31,869	35,852
Egypt	6,701	8,109	10,067	11,882	13,610	15,395	17,254	19,183	21,189	23,257	25,366
Equatorial Guinea	24,039	28,544	33,915	40,145	47,188	55,085	63,842	73,387	83,605	94,407	105,698
Eritrea	34,178	39,411	46,099	53,880	62,775	72,681	83,702	95,862	109,060	123,174	138,082
Ethiopia	10,531	12,052	13,850	16,101	18,679	21,594	24,859	28,441	32,327	36,517	41,001
Gabon	12,222	12,940	14,086	15,777	17,680	19,571	21,527	23,556	25,626	27,678	29,659
Gambia	96,099	111,954	131,351	153,743	178,959	206,961	237,771	271,315	307,221	344,941	384,005
Ghana	16,441	19,553	23,369	27,859	32,827	38,431	44,712	51,665	59,249	67,399	76,046
Guinea	15,274	17,421	19,970	22,835	25,958	29,339	32,980	36,884	41,021	45,351	49,817
Guinea-Bissau	3,755	4,128	4,449	4,546	4,921	5,489	6,124	6,798	7,481	8,166	8,851
Kenya	8,343	10,067	11,887	14,009	16,285	18,776	21,460	24,317	27,321	30,439	33,636
Lesotho	3,226	3,718	4,387	4,996	5,687	6,455	7,319	8,277	9,309	10,389	11,510
Liberia	47,076	54,751	64,523	76,197	89,505	104,221	120,443	138,153	157,114	176,961	197,404
Libya	614	757	951	1,175	1,406	1,637	1,871	2,105	2,349	2,597	2,845
Madagascar	1,231	1,403	1,640	1,930	2,151	2,371	2,594	2,821	3,053	3,287	3,516
Malawi	139	156	175	196	218	242	268	296	324	352	380
Mali	172,559	187,832	204,310	225,136	246,049	266,010	285,204	304,305	323,511	342,230	359,905
Mauritania	31,184	33,288	36,118	39,872	43,333	46,308	48,822	51,070	53,249	55,412	57,437
Mauritius	69,906	76,778	84,108	93,778	102,941	111,471	119,746	128,264	137,066	145,576	153,433
Morocco	28,850	30,521	32,410	34,803	37,071	39,101	40,874	42,407	43,714	44,798	45,660
Mozambique	27,251	30,912	34,386	38,648	43,541	49,000	54,842	60,996	67,357	73,835	80,386
Namibia	9,699	10,102	10,640	11,274	11,903	12,432	12,842	13,161	13,435	13,681	13,884
Niger	314	438	480	526	597	668	737	802	865	925	982
Nigeria	52,286	55,764	59,016	63,420	67,595	71,396	74,786	77,903	80,794	83,444	85,800

Total Population at Mid-Year, 1950-2050 (thousands) (Continued)

Region, subregion, country or area	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995
Réunion	734	788	852	934	1,033	1,151	1,310	1,472	1,604	1,761
Rwanda	485	538	603	683	780	905	1,013	1,148	1,415	1,655
Sao Tome and Principe	13,628	15,377	17,457	19,942	22,839	26,212	29,760	33,730	37,561	42,088
Senegal	273	307	349	392	446	517	603	705	861	961
Seychelles	70,876	77,142	85,094	94,727	106,102	120,136	137,486	157,843	180,533	206,555
Sierra Leone	2,255	2,304	2,432	2,632	2,912	3,265	3,717	4,279	4,978	5,906
Somalia	4,284	4,517	4,829	5,175	5,625	6,155	6,823	7,728	8,811	10,090
South Africa	178	197	202	231	270	272	287	315	342	389
South Sudan	2,630	3,029	3,559	4,322	5,242	6,609	8,294	10,223	12,268	14,541
Southern Africa	271	304	368	401	447	521	604	732	917	1,066
Sub-Saharan Africa	4,981	5,680	6,652	7,711	8,597	9,831	10,802	12,716	14,628	16,760
Sudan	3,094	3,316	3,577	3,878	4,220	4,365	4,512	5,085	6,041	7,871
Swaziland	535	575	616	653	712	778	801	900	1,012	1,137
Togo	930	1,010	1,120	1,253	1,417	1,625	1,888	2,193	2,097	2,073
Tunisia	4,708	4,975	5,264	5,568	5,949	6,482	7,090	7,832	8,465	9,604
Uganda	660	747	858	992	1,149	1,329	1,534	1,770	2,030	2,327
United Republic of Tanzania	2,560	2,956	3,389	3,914	4,510	5,185	5,989	6,916	8,013	9,477
Western Africa	37,860	41,086	45,138	50,127	55,981	63,374	73,461	83,613	95,270	108,011
Western Sahara	2,487	2,808	3,207	3,683	4,258	4,936	5,593	6,485	7,556	8,747
Zambia	2,041	2,158	2,297	2,473	2,692	2,994	3,365	3,800	4,312	4,275
Zimbabwe	1,395	1,474	1,581	1,709	2,116	2,410	2,721	3,253	3,787	4,274

Total Population at Mid-Year, 1950-2050 (thousands) (Continued)

Region, subregion, country or area	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Northern Africa	1,728	1,856	2,015	2,209	2,416	2,614	2,800	2,975	3,138	3,288	3,421
	1,869	1,950	2,041	2,175	2,322	2,466	2,608	2,753	2,902	3,055	3,203
	1,899	2,032	2,173	2,426	2,697	2,970	3,246	3,521	3,796	4,071	4,339
	45,728	48,821	51,585	55,291	58,721	61,790	64,466	66,880	69,076	71,046	72,755
	1,061	1,106	1,203	1,319	1,439	1,555	1,666	1,775	1,881	1,985	2,081
	235,508	268,608	307,781	352,614	402,579	457,752	518,446	584,660	655,870	731,217	809,719
	6,866	7,982	9,199	10,576	12,123	13,809	15,628	17,568	19,614	21,742	23,930
	11,608	13,422	15,605	18,111	20,903	23,991	27,382	31,053	34,954	39,024	43,207
	435	475	502	533	567	602	635	665	692	715	734
	16,687	18,336	20,401	23,108	26,172	29,591	33,337	37,411	41,796	46,464	51,375
	1,232	1,444	1,692	1,978	2,293	2,636	3,001	3,383	3,777	4,173	4,562
	18,939	21,542	24,512	27,583	30,734	33,970	37,294	40,719	44,222	47,767	51,270
	8,809	9,680	10,794	12,092	13,751	15,612	17,631	19,789	22,060	24,424	26,852
	1,243	1,381	1,556	1,771	2,001	2,242	2,493	2,755	3,031	3,316	3,603
	2,885	3,261	3,948	4,500	5,104	5,770	6,495	7,271	8,088	8,935	9,804
	10,968	12,799	15,075	17,468	20,284	23,476	27,057	30,983	35,174	39,542	44,020
	2,709	3,131	3,610	4,182	4,784	5,417	6,077	6,766	7,482	8,218	8,965
	11,353	13,618	16,426	19,897	24,075	29,079	34,994	41,876	49,755	58,628	68,454
	122,352	138,939	158,578	181,182	206,153	233,692	264,068	297,323	333,172	371,119	410,638
	9,884	11,251	12,916	14,977	17,200	19,577	22,123	24,861	27,785	30,859	34,031
	4,564	5,658	6,459	7,237	8,047	8,874	9,720	10,568	11,403	12,209	12,972
	4,970	5,683	6,503	7,417	8,384	9,411	10,507	11,663	12,861	14,079	15,298

Source: World Urbanization Prospects: The 2018 Revision

Department of Economic and Social Affairs, United Nations, Population Division

File 3: Urban Population at Mid-Year by Region, Subregion, Country and Area, 1950-2050 (thousands)

POP/DB/WUP/Rev.2018/1/F03

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World Urbanization Prospects: The 2018 Revision, Online Edition.

Trade (% of GDP)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Algeria	69.9	67.5	65.4	63.6	62.1	59.7	55.9	55.9	58.0	52.0
Angola	104.1	100.0	91.8	86.8	79.3	62.9	53.4	52.3	66.4	..
Benin	51.4	47.2	50.7	59.2	65.3	56.8	59.0	61.5	61.8	63.7
Botswana	94.9	103.5	110.7	122.6	113.9	105.9	96.8	75.6	79.5	74.1
Burkina Faso	49.1	57.5	61.2	64.0	58.8	59.1	57.9	59.0	59.7	60.2
Burundi	39.5	43.0	43.7	46.6	41.8	32.5	31.7	34.4	39.2	41.9
Cabo Verde	94.4	99.8	100.3	95.3	101.0	104.1	104.2	113.3	117.3	116.2
Cameroon	49.1	56.9	56.4	55.6	55.1	49.9	43.2	41.2	43.0	40.6
Central African Rep.	34.4	34.5	33.1	38.4	53.1	53.1	50.5	57.1	65.9	66.1
Chad	80.4	80.7	80.6	72.6	76.6	66.6	63.3	73.6	74.2	74.6
Comoros	39.6	40.0	40.8	39.2	39.2	37.8	37.1	40.2	43.1	..
Congo, Dem. Rep.	90.7	85.2	68.4	77.5	78.7	59.3	55.9	74.3	72.3	67.3
Congo, Rep.	139.8	145.1	144.1	142.6	143.2	165.6	152.1	153.7	155.3	112.3
Cote d'Ivoire	94.0	91.2	93.7	80.1	73.6	52.7	47.5	48.5	45.7	45.6
Djibouti	..	..	..	348.0	299.4	264.1	210.0	304.3	288.2	298.3
Egypt, Arab Rep.	47.9	45.3	40.7	40.4	36.9	34.8	30.2	45.1	48.3	..
Equatorial Guinea	144.7	114.4	116.7	106.9	104.4	98.9	92.6	102.4	104.5	107.4
Eritrea	37.5	47.4	..	..	..	..	..	..	..	..
Eswatini	106.7	80.8	79.7	86.8	88.4	83.8	86.1	86.9	84.4	..
Ethiopia	..	48.2	45.4	41.5	40.7	39.7	34.9	31.1	31.2	28.7
Gabon	89.2	90.5	92.3	90.6	73.5	73.9	70.1	75.1	72.0	72.9
Gambia, The	41.0	42.6	47.7	46.1	52.7	48.9	48.1	61.5	63.4	65.5
Ghana	75.4	86.3	93.2	61.7	65.2	75.6	69.4	73.6	71.7	71.4
Guinea	73.5	86.0	86.7	80.4	76.8	72.4	110.1	112.9	121.8	108.7
Guinea-Bissau	50.1	56.6	41.2	44.1	51.6	59.8	57.8	60.8	57.8	57.0
Kenya	54.2	60.4	57.8	53.1	51.3	44.2	37.7	37.4	36.1	33.4
Lesotho	147.8	147.3	147.3	130.4	123.3	129.0	133.1	135.7	143.0	134.6
Liberia	111.8	116.3	122.2	131.0	137.0	126.0	121.7	123.0	120.3	127.5
Libya	107.7	99.6	114.4	135.3	138.9	114.2	70.2	89.7	92.8	118.3
Madagascar	57.9	56.5	52.7	56.4	62.0	61.2	60.8	65.3	62.5	59.8
Malawi	57.6	48.8	67.9	78.3	73.3	64.9	77.9	65.3	69.0	66.6
Mali	58.0	53.9	59.1	64.8	60.6	63.6	63.8	58.0	59.8	57.2
Mauritania	93.4	98.5	110.8	102.4	91.6	91.1	79.3	92.0	96.6	94.2
Mauritius	113.5	117.5	119.5	110.0	108.1	105.0	98.0	97.4	95.1	92.8
Morocco	75.2	83.4	85.1	80.0	81.8	77.2	80.9	84.0	88.0	87.5
Mozambique	70.8	80.2	101.9	103.2	111.5	93.9	105.6	99.7	132.0	112.2
Namibia	108.4	103.0	103.6	97.9	103.7	97.6	94.9	82.2	82.7	83.5
Niger	52.4	50.7	45.4	46.6	46.0	44.2	36.5	39.1	37.6	39.7
Nigeria	43.3	53.3	44.5	31.0	30.9	21.3	20.7	26.3	33.0	..
Rwanda	39.5	41.7	42.5	44.7	37.3	41.9	40.8	50.5	49.5	53.7
Senegal	51.9	57.1	61.3	60.2	58.4	58.1	54.1	57.7	60.5	60.5

Trade (% of GDP) (continued)

Country	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Seychelles	201.9	207.2	216.5	182.8	187.3	167.2	173.7	189.3	182.4	155.2
Sierra Leone	51.3	80.7	93.3	87.5	83.2	66.8	79.4	74.1	56.7	..
South Africa	56.0	60.1	60.9	64.2	64.4	61.6	60.6	58.0	59.5	59.2
South Sudan	90.9	93.2	71.6	50.8	64.6	65.6	..	..	..	..
Sudan	33.6	31.6	24.7	23.7	19.5	19.1	22.4	21.5	22.6	26.7
Tanzania	47.6	56.2	54.4	48.6	45.4	40.8	35.4	32.2	..	..
Togo	91.2	108.1	104.4	112.8	97.5	93.7	88.7	76.8	73.6	71.2
Tunisia	104.1	104.5	106.5	103.4	100.8	92.2	92.0	101.3	111.2	110.5
Uganda	38.6	40.1	43.9	43.5	36.3	38.0	31.5	36.8	36.9	46.0
Zambia	67.9	76.2	79.1	84.6	80.1	84.3	74.0	71.6	73.0	70.0
Zimbabwe	83.1	89.5	74.2	58.7	54.7	56.7	51.2	50.0	50.0	..

Source: World Development Indicators

Export Cereals (Weight 1000kg)

Country	2014	2015	2016	2017	2018
Algeria	21,461	15,501	15,339	2,741	1,492
Angola	38	45,000	8,091	2,159	4,418
Benin	56,851	34,402	17,702	2,887	4,440
Botswana	17,756	12,489	19,128	26,282	23,043
Burkina Faso	63,167	44,169	23,083	64,486	7,993
Burundi	6,705	8,009	10,203	22,584	24,944
Cameroon	7,586	9,149	20,157	28,622	4,232
Congo, Dem. Rep.	4,401	332	468	2,530	..
Congo, Rep.	488	2,996	1,722	112	4,562
Cote d'Ivoire	151,930	87,755	78,467	140,752	96,311
Egypt	157,190	187,262	210,111	291,454	394,756
Ethiopia	37,707	5,029	123	32,246	1,075
Gabon	8	1	1	54	2
Gambia	5,488	420	2,551	1	410
Ghana	61,483	74,504	74,567	97,176	115,531
Guinea	2,563	3,856	1,153	2,218	0
Kenya	14,313	14,809	13,092	70,805	130,070
Lesotho	57,479	35,356	73,232	46,897	43,762
Liberia	..	512	708	2,074	1,583
Libya	154	13	44	23	..
Madagascar	179	735	344	170	178
Malawi	44,385	46,045	35,710	33,680	34,248
Mali	15,422	2,385	21,081	23,172	5
Mauritania	808	39	5,243	2,565	4,356
Mauritius	64,713	54,611	123,769	62,133	33,395
Morocco	168,133	75,541	29,409	14,741	19,388
Mozambique	198,911	169,728	114,128	133,245	159,102
Namibia	7,768	19,980	4,430	1,656	4,506
Niger	568	952	567	169	588
Nigeria	28,184	26,442	10,882	7,320	9,008
Rwanda	74,365	89,637	82,666	4,740	520
Sao Tome and Principe	350	0	0	0	0
Senegal	122,452	130,936	85,797	68,579	133,157
Seychelles	..	75	69	..	..
Sierra Leone	1,000	3	..	..	..
South Africa	1,728,477	1,542,083	1,664,080	1,700,344	1,284,962
South Sudan	..	3	1	5	0
Sudan	501	288	1	380,408	30,045
Swaziland	28,454	981	1,497	4,786	934
Tanzania	560,538	132,700	171,943	140,286	446,944
Togo	65,212	15,257	21,521	20,978	44,417
Tunisia	25,897	39,606	26,680	42,301	24,873
Uganda	316,465	496,457	524,826	611,479	739,094
Zambia	257,555	839,921	739,509	410,341	212,941
Zimbabwe	15,478	17,449	13,205	20,364	34,894

Source: <https://resourcetrade.earth/data>

African Population Trends, 1950 2050 (millions)

	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Africa																					
Urban	33	41	53	66	83	103	129	161	200	242	286	341	409	492	588	698	824	966	1125	1300	1489
Rural	196	213	232	256	284	315	351	392	434	481	532	584	641	703	765	824	880	930	975	1012	1039
Total	229	254	285	322	366	418	480	553	635	723	818	925	1049	1194	1353	1522	1704	1897	2100	2312	2528
North Africa																					
Urban	13	16	20	25	31	37	44	54	65	75	83	93	103	116	129	143	158	174	192	211	231
Rural	36	40	44	48	52	57	63	70	77	83	89	95	101	109	117	123	127	130	131	131	129
Total	49	56	64	73	83	94	108	124	141	158	173	188	204	225	246	266	285	304	324	342	360
West Africa																					
Urban	7	9	12	16	20	25	33	42	54	67	81	101	127	157	192	232	278	329	386	449	517
Rural	64	68	73	79	86	95	105	115	126	140	154	167	181	196	211	226	240	255	270	283	293
Total	71	77	85	95	106	120	137	158	181	207	236	269	308	353	403	458	518	585	656	731	810
Central Africa																					
Urban	4	5	6	7	9	12	15	19	24	31	38	48	59	74	91	111	134	160	190	222	257
Rural	23	25	27	29	32	35	39	43	47	53	58	64	72	80	88	96	104	111	118	123	127
Total	26	29	32	36	41	47	54	62	71	84	96	112	131	154	179	207	238	271	307	345	384
Eastern Africa																					
Urban	4	5	7	9	12	16	21	28	36	45	55	68	85	106	133	164	203	247	298	355	418
Rural	63	70	78	87	99	111	126	143	163	181	206	233	262	293	325	356	385	411	435	455	470
Total	67	75	84	96	110	127	148	171	199	226	261	301	347	399	457	520	587	659	733	810	888
Southern Africa																					
Urban	6	7	8	10	11	13	15	18	21	25	28	32	35	39	44	48	52	56	59	63	66
Rural	10	11	11	13	15	16	19	21	22	23	24	24	24	24	24	23	23	22	21	21	20
Total	16	17	20	23	26	30	34	38	43	48	52	56	59	63	68	71	75	78	81	83	86
Sub-Saharan Africa																					
Urban	20	25	33	41	52	66	84	107	136	167	203	248	306	376	459	555	666	792	933	1089	1258
Rural	160	173	189	208	231	258	288	322	358	398	442	489	540	593	648	701	752	800	844	881	909
Total	180	198	221	250	283	324	372	429	493	565	645	737	845	969	1107	1256	1418	1592	1777	1969	2168

Source: World Urbanization Prospects: The 2018 Revision

Cereal - Export (Value 1000USD)

Country	2014	2015	2016	2017	2018
Algeria	10,771	6,623	6,439	1,021	490
Angola	21	27,363	5,643	1,284	1,432
Benin	15,289	6,039	3,149	914	1,367
Botswana	3,996	2,741	5,243	4,515	4,080
Burkina Faso	12,690	10,542	3,433	18,478	3,730
Burundi	4,838	5,776	5,771	8,582	9,777
Cameroon	4,905	12,497	7,674	13,078	803
Congo, Dem. Rep.	1,391	545	394	1,314	
Congo, Rep.	410	508	1,106	33	993
Cote d'Ivoire	50,564	26,334	24,683	39,790	28,218
Egypt	73,757	89,001	87,290	103,654	144,132
Ethiopia	13,404	1,855	192	12,532	407
Gabon	4	0	0	4	2
Gambia	525	142	68	1	171
Ghana	18,430	18,490	22,538	29,110	38,938
Guinea	1,031	600	268	492	1
Kenya	12,408	6,445	6,189	26,464	25,982
Lesotho	20,543	10,013	21,819	16,471	13,032
Liberia		73	86	235	1,115
Libya	59	4	23	5	
Madagascar	42	141	86	36	37
Malawi	13,541	13,068	7,436	8,281	9,929
Mali	1,197	223	1,871	3,399	1
Mauritania	527	16	2,786	2,179	2,913
Mauritius	35,039	24,835	44,828	24,381	20,152
Morocco	77,944	36,208	12,581	8,196	13,867
Mozambique	48,090	47,398	24,577	24,226	24,019
Namibia	6,177	14,497	3,052	1,344	2,178
Niger	349	483	161	28	290
Nigeria	4,136	4,448	868	3,040	4,042
Rwanda	41,096	44,227	29,251	738	110
Sao Tome and Principe	199	0	1	1	0
Senegal	47,519	47,072	30,769	25,500	52,919
Seychelles	..	18	16	..	..
Sierra Leone	329	2	..	..	..
South Africa	684,890	547,301	621,922	561,708	417,923
South Sudan	..	21	1	8	1
Sudan	190	79	1	73,383	6,546
Swaziland	9,494	448	688	2,171	282
Tanzania	208,978	57,672	67,599	84,906	175,280
Togo	23,088	4,745	3,486	5,272	15,521
Tunisia	13,778	20,874	12,418	17,585	10,319
Uganda	109,666	149,570	129,258	166,117	205,263
Zambia	148,979	257,660	224,187	124,048	67,646
Zimbabwe	5,445	9,890	6,158	9,188	5,400

Source: <https://resourcetrade.earth/data>

Cereals - Import (Weight 1000Kg)

Country	2014	2015	2016	2017	2018
Angola	1,164,475	1,048,389	1,177,610	1,416,484	1,811,146
Benin	1,855,032	1,576,168	2,372,762	2,859,545	2,163,497
Botswana	422,113	435,795	409,426	363,176	377,802
Burkina Faso	434,063	417,371	520,537	620,131	714,311
Burundi	101,979	79,664	132,411	207,363	185,696
Cabo Verde	102,560	106,393	109,141	110,283	105,007
Cameroon	1,354,129	1,409,294	1,439,337	1,695,425	1,418,499
Central African Rep.	40,842	45,069	35,479	30,580	7,888
Chad	65,987	62,257	87,566	47,486	40,887
Comoros	69,523	50,350	43,524	60,445	59,569
Congo, Dem. Rep.	620,497	667,900	498,730	425,308	606,845
Congo, Rep.	324,854	358,413	392,577	415,187	367,467
Cote d'Ivoire	1,763,756	1,948,737	2,124,066	2,411,311	2,480,388
Djibouti	675,236	1,007,274	738,508	818,381	577,805
Equatorial Guinea	45,218	40,610	45,808	45,310	48,186
Eritrea	61,976	35,233	78,169	234,211	201,893
Ethiopia	1,436,620	1,964,801	1,769,125	959,267	1,055,222
Gabon	190,560	221,499	213,737	181,692	185,498
Gambia	231,864	228,229	219,159	312,292	343,928
Ghana	1,104,226	1,250,854	1,553,853	1,997,321	2,258,873
Guinea	966,009	951,711	1,013,880	967,510	1,275,891
Guinea-Bissau	79,233	77,197	87,397	169,051	207,160
Kenya	2,754,306	2,534,275	2,609,633	4,498,407	3,406,702
Lesotho	262,172	173,876	295,011	256,537	209,128
Liberia	307,426	311,965	309,224	443,545	395,844
Madagascar	505,028	425,998	459,457	941,533	798,988
Malawi	242,847	386,333	639,731	319,824	118,400
Mali	306,340	432,118	654,231	657,544	447,798
Mauritania	915,348	673,261	794,171	1,180,472	759,495
Mauritius	340,686	357,699	302,169	388,588	340,761
Mozambique	1,909,374	1,361,806	1,419,964	1,231,895	1,075,050
Namibia	292,141	367,165	382,538	315,906	347,299
Niger	472,000	486,887	486,199	368,127	181,003
Nigeria	6,040,342	5,441,329	8,003,015	8,799,511	3,516,768
Rwanda	272,523	224,048	286,487	286,155	257,891
Sao Tome and Principe	18,380	19,619	18,545	17,950	17,795
Senegal	2,071,325	2,041,989	2,035,258	2,525,574	2,562,242
Seychelles	12,909	15,478	13,205	13,292	19,750
Sierra Leone	236,565	208,670	332,833	620,689	378,256
Somalia	481,916	560,906	720,606	876,537	767,187

Cereals - Import (Weight 1000Kg)

Country	2014	2015	2016	2017	2018
South Africa	3,375,526	4,636,871	6,469,554	4,046,455	3,407,684
South Sudan	223,770	146,466	175,246	167,444	296,548
Sudan	3,012,150	1,837,722	2,425,645	4,971,999	2,774,454
Swaziland	168,130	173,738	219,592	212,527	186,003
Tanzania	1,105,828	1,091,615	1,169,853	1,033,765	514,471
Togo	413,199	338,397	326,727	389,645	636,385
Uganda	706,417	550,837	678,731	905,484	816,607
Zambia	34,978	130,137	26,319	114,900	84,256
Zimbabwe	997,278	1,260,193	1,513,411	743,357	657,975

Source: <https://resourcetrade.earth/data>

Cereals - Import (Value 1000USD)

Country	2014	2015	2016	2017	2018
Angola	670,019	484,161	505,008	572,954	755,247
Benin	1,030,178	659,908	1,025,295	1,296,285	930,886
Botswana	145,970	130,828	129,512	104,678	106,907
Burkina Faso	145,840	121,762	143,694	174,971	204,370
Burundi	39,792	29,655	43,588	85,291	60,386
Cabo Verde	40,010	38,056	33,003	36,195	35,421
Cameroon	536,861	500,615	454,743	573,763	410,777
Central African Rep.	25,286	23,357	17,211	14,430	3,617
Chad	28,475	27,548	31,515	20,073	15,327
Comoros	26,382	17,648	14,935	23,120	27,635
Congo, Dem. Rep.	259,319	239,034	141,563	165,675	213,331
Congo, Rep.	130,758	112,577	116,962	131,732	106,192
Cote d'Ivoire	712,649	736,867	749,851	849,348	955,387
Djibouti	196,811	230,178	169,682	208,120	163,524
Equatorial Guinea	23,114	17,755	17,675	18,041	20,091
Eritrea	23,485	16,305	28,536	69,179	66,880
Ethiopia	636,927	776,132	484,016	221,897	271,374
Gabon	80,977	93,533	82,253	64,969	58,807
Gambia	83,729	64,889	62,479	99,854	89,090
Ghana	482,738	450,986	536,178	743,435	866,457
Guinea	409,479	335,510	288,921	300,280	394,614
Guinea-Bissau	28,714	26,513	28,102	57,588	64,825
Kenya	894,506	679,625	620,280	1,163,588	949,698
Lesotho	98,082	60,142	95,711	88,658	63,711
Liberia	120,839	111,474	108,314	158,394	147,652
Madagascar	207,631	156,066	159,129	348,561	293,404
Malawi	91,851	115,411	227,426	99,615	22,310
Mali	98,120	111,859	199,872	198,797	126,024
Mauritania	249,616	155,063	168,816	233,584	158,334
Mauritius	147,489	118,682	95,990	121,452	121,749
Mozambique	483,443	405,129	357,738	363,718	365,424
Namibia	113,115	115,260	120,275	98,120	100,913
Niger	171,227	173,762	152,094	121,541	60,197
Nigeria	2,419,079	1,500,092	2,174,201	2,236,141	1,463,599
Rwanda	101,570	85,812	94,290	67,249	61,043
Saint Helena	191	162	127	176	165
Sao Tome and Principe	11,442	10,539	9,401	9,559	9,169
Senegal	679,310	581,361	540,431	723,143	760,836
Seychelles	10,053	10,586	9,116	8,937	13,400
Sierra Leone	90,485	76,152	146,092	251,251	123,421
Somalia	214,135	225,864	245,641	296,716	266,814

Cereals - Import (Value 1000USD)1000Kg) (continued)

Country	2014	2015	2016	2017	2018
South Africa	1,124,640	1,204,337	1,512,002	1,117,344	1,021,938
South Sudan	95,263	62,905	42,544	73,114	98,172
Sudan	850,528	520,728	517,847	1,215,852	566,661
Swaziland	57,203	50,279	66,261	59,933	48,912
Tanzania	408,332	326,608	314,841	294,771	191,983
Togo	136,131	107,558	92,498	126,350	233,630
Uganda	244,455	163,644	165,710	243,269	229,685
Zambia	23,289	53,205	15,365	49,340	37,056
Zimbabwe	455,408	483,230	549,354	310,542	297,107

Source: <https://resourcetrade.earth/data>

Intra-African agricultural trade, imports (constant 2010 USD, million)

Country / Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Algeria	263.0	299.0	297.0	327.0	363.0	477.0	503.0	457.0	..
Angola	343.0	335.0	378.0	377.0	361.0	412.0	347.0	286.0	364.0
Benin	37.0	30.0	39.0	53.0	62.0	55.0	69.0	98.0	97.0
Botswana	652.0	704.0	667.0	756.0	704.0	786.0	716.0	633.0	737.0
Burkina Faso	173.0	176.0	233.0	265.0	293.0	278.0	346.0	305.0	336.0
Burundi	46.0	90.0	65.0	65.0	48.0	38.0	44.0	54.0	53.0
Cameroon	169.0	210.0	164.0	130.0	156.0	178.0	158.0	136.0	265.0
Cape Verde	4.0	4.0	6.0	4.0	5.0	4.0	4.0	5.0	4.0
Central African Republic	17.0	12.0	21.0	10.0	31.0	13.0	14.0	26.0	21.0
Chad	143.0	171.0	146.0	138.0	212.0	232.0	169.0	173.0	177.0
Comoros	13.0	15.0	18.0	14.0	15.0	41.0	15.0	11.0	18.0
Congo, Dem. Rep. of	531.0	454.0	499.0	517.0	608.0	459.0	260.0	458.0	488.0
Congo, Republic of	70.0	63.0	47.0	93.0	300.0	542.0	299.0	127.0	202.0
Côte d'Ivoire	281.0	287.0	299.0	307.0	319.0	347.0	417.0	458.0	466.0
Egypt	439.0	493.0	404.0	318.0	358.0	334.0	356.0	597.0	557.0
Equatorial Guinea	37.0	84.0	112.0	59.0	84.0	72.0	86.0	58.0	11.0
Eritrea	46.0	53.0	43.0	39.0	36.0	39.0	27.0	42.0	35.0
Eswatini	404.0	388.0	434.0	325.0	319.0	316.0	370.0	341.0	372.0
Ethiopia	41.0	66.0	35.0	36.0	44.0	59.0	48.0	48.0	46.0
Gabon	54.0	54.0	61.0	118.0	110.0	112.0	90.0	65.0	58.0
Gambia, The	13.0	15.0	17.0	12.0	13.0	14.0	9.0	17.0	15.0
Ghana	215.0	339.0	412.0	332.0	311.0	361.0	226.0	291.0	362.0
Guinea	45.0	67.0	67.0	66.0	85.0	51.0	137.0	107.0	112.0
Guinea-Bissau	11.0	10.0	10.0	16.0	14.0	13.0	23.0	14.0	16.0
Kenya	445.0	614.0	536.0	381.0	469.0	417.0	341.0	692.0	570.0
Lesotho	476.0	511.0	567.0	470.0	520.0	484.0	510.0	461.0	476.0
Liberia	1.0	1.0	1.0	2.0	3.0	3.0	2.0	2.0	2.0
Libya	446.0	430.0	492.0	550.0	484.0	644.0	409.0	411.0	343.0
Madagascar	89.0	83.0	97.0	82.0	83.0	86.0	94.0	116.0	127.0
Malawi	191.0	168.0	134.0	319.0	277.0	243.0	382.0	253.0	327.0
Mali	175.0	183.0	225.0	193.0	240.0	254.0	270.0	300.0	319.0
Mauritania	55.0	37.0	54.0	48.0	66.0	67.0	81.0	86.0	80.0
Mauritius	167.0	149.0	183.0	197.0	190.0	217.0	284.0	318.0	280.0
Morocco	280.0	275.0	279.0	337.0	371.0	276.0	325.0	337.0	398.0
Mozambique	302.0	293.0	384.0	415.0	421.0	505.0	574.0	480.0	485.0
Namibia	785.0	749.0	825.0	877.0	906.0	1,015.0	956.0	891.0	822.0
Niger	152.0	130.0	151.0	134.0	135.0	165.0	162.0	169.0	193.0
Nigeria	557.0	524.0	437.0	953.0	443.0	638.0	377.0	438.0	400.0
Rwanda	164.0	237.0	250.0	229.0	269.0	257.0	296.0	274.0	274.0

Intra-African agricultural trade, imports (constant 2010 USD, million) (continued)

Country / Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
São Tomé and Príncipe	1.0	1.0	1.0	1.0	..	..	..	1.0	1.0
Senegal	121.0	142.0	170.0	154.0	124.0	163.0	202.0	227.0	160.0
Seychelles	21.0	18.0	28.0	31.0	25.0	37.0	24.0	44.0	39.0
Sierra Leone	11.0	22.0	18.0	19.0	19.0	16.0	22.0	28.0	18.0
South Africa	1,042.0	1,123.0	1,261.0	1,250.0	1,216.0	1,328.0	1,357.0	1,373.0	2,164.0
Sudan	505.0	438.0	407.0	437.0	353.0	425.0	370.0	313.0	812.0
Tanzania	165.0	177.0	216.0	164.0	145.0	127.0	163.0	166.0	137.0
Togo	45.0	33.0	50.0	39.0	37.0	53.0	41.0	33.0	34.0
Tunisia	116.0	142.0	123.0	142.0	182.0	166.0	129.0	178.0	188.0
Uganda	181.0	233.0	237.0	195.0	226.0	191.0	208.0	261.0	300.0
Zambia	222.0	257.0	361.0	375.0	453.0	669.0	569.0	531.0	486.0
Zimbabwe	889.0	962.0	1,055.0	825.0	756.0	757.0	723.0	551.0	386.0
Africa wide	449.5	478.2	539.5	563.5	581.9	637.5	607.0	579.9	870.4
Western Africa	271.1	265.2	287.9	382.3	276.9	334.5	284.3	307.0	318.9
Southern Africa	669.1	711.7	809.1	803.4	820.3	887.5	862.8	813.3	1,264.8
Northern Africa	308.5	323.3	307.2	326.6	334.7	384.7	340.5	403.9	393.9
Eastern Africa	260.5	298.5	284.1	250.1	256.0	242.9	242.3	323.0	408.0
Central Africa	189.4	197.2	218.4	229.0	312.0	353.0	216.0	229.3	288.3
COMESA	409.9	431.2	451.8	414.0	429.5	482.4	424.5	445.9	444.0
CEN-SAD	305.4	314.4	309.7	361.4	304.4	344.5	288.6	357.6	384.7
EAC	253.3	322.8	301.6	238.7	274.9	249.7	240.2	371.8	333.9
ECCAS	215.3	221.5	243.4	250.2	315.0	353.6	245.2	241.9	299.9
ECOWAS	271.1	265.2	287.9	382.3	276.9	334.5	284.3	307.0	318.9
IGAD	338.1	386.6	355.3	307.6	318.5	296.5	270.4	409.3	526.5
SADC	626.2	659.0	752.5	756.6	779.3	839.4	809.4	762.8	1,190.7
UMA	276.5	274.9	283.8	327.9	331.5	393.2	337.0	325.3	336.2

Source: ReSAKSS (Regional Strategic Analysts and Knowledge Support System). 2019
Data compiled for tracking implementation of the Comprehensive Africa Agriculture Development Programme (CAADP).

Intra-African agricultural trade, exports (constant 2010 US\$, million)

Country / Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Angola	..	2	1	2	2	4	1	2	3
Burundi	7.0	8	4	5	10	7	10	19	12
Benin	226.0	191	59	494	66	188	161	175	190
Burkina Faso	87.0	80	55	61	77	105	62	77	72
Botswana	165.0	94	97	105	83	80	61	48	62
Central African Rep.	1.0	1	1	..	..	1	..	..	..
Côte d'Ivoire	546.0	609	765	627	615	666	621	642	523
Cameroon	79.0	124	72	67	84	90	88	82	72
Congo, Dem. Rep. of	29.0	24	19	13	32	12	13	9	3
Congo, Republic of	34.0	9	11	9	11	41	15	6	21
Comoros	..	1		1	1	1	2	2	2
Cape Verde	..	2	1	1	2	..	1	..	1
Algeria	134.0	77	57	97	86	73	172	142	104
Egypt	862.0	702	603	715	704	600	646	860	769
Eritrea	1.0	17	3	6	4	3	1	..	1
Ethiopia	398.0	449	416	654	577	486	289	423	375
Gabon	38.0	37	33	37	38	32	29	40	43
Ghana	156.0	236	177	131	145	158	156	213	185
Guinea	25.0	30	52	64	22	48	18	39	19
Gambia, The	5.0	12	10	5	6	2	10	3	10
Guinea-Bissau	5.0	7	4	5	5	9	9	10	10
Kenya	730.0	843	692	565	497	495	517	523	508
Liberia	..	1	3	1	1	..	1	4	2
Libya	3.0	3	6	7	4	11	12	15	13
Lesotho	64.0	87	87	95	48	55	70	28	62
Morocco	368.0	371	424	459	522	557	564	596	634
Madagascar	26.0	24	22	31	38	36	50	67	91
Mali	80.0	71	49	54	41	125	115	167	133
Mozambique	79.0	107	67	68	74	77	131	143	150
Mauritania	226.0	247	215	158	244	245	293	246	288
Mauritius	49.0	52	61	55	48	73	77	77	77
Malawi	191.0	328	280	279	298	236	321	254	266
Namibia	661.0	708	736	790	700	1021	748	709	645
Niger	176.0	94	87	106	36	32	26	29	29
Nigeria	181.0	216	256	262	227	217	194	364	414
Rwanda	47.0	57	146	150	107	108	117	149	149
Sudan	47.0	54	60	35	32	76	346	212	705
Senegal	207.0	263	303	363	383	401	432	450	518
Sierra Leone	3.0	2	6	9	2	8	59	24	46
São Tomé and Príncipe	0.3	0.07	0.06	0.21	0.27	0.16	0.02	0.21	0.11

Intra-African agricultural trade, exports (constant 2010 US\$, million) (continued)

Country / Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Eswatini	208.0	223	225	287	323	396	405	379	360
Seychelles	22.0	12	13	27	20	22	39	48	24
Chad	1.0	1	1	1	2	1	1	1	1
Togo	33.0	54	62	79	75	84	77	68	72
Tunisia	424.0	792	608	556	445	513	465	506	608
Tanzania	307.0	371	396	262	551	380	272	351	262
Uganda	395.0	558	647	693	589	665	714	1151	1178
South Africa	3,857.0	3879	4217	4811	5155	5178	5338	4875	3570
Zambia	574.0	654	906	793	744	952	686	767	649
Zimbabwe	216.0	349	496	475	540	478	477	436	342
Africa wide	1,504	1,492	1,699	2,017	2,170	2,301	2,421	2,093	1,322
Western Africa	232	263	314	338	265	318	288	363	364
Southern Africa	2,945	2,820	3,052	3,513	3,833	3,782	3,899	3,590	2,451
Northern Africa	479	498	397	412	396	397	433	508	504
Eastern Africa	454	555	504	461	459	428	416	565	585
Central Africa	34	38	29	21	34	37	31	19	17
COMESA	473	509	520	504	476	503	474	537	498
CEN-SAD	350	391	391	406	342	388	380	455	459
EAC	528	638	566	493	506	484	486	669	674
ECCAS	34	29	24	26	30	32	28	22	20
ECOWAS	232	263	314	338	265	318	288	363	364
IGAD	558	687	626	602	524	534	533	755	786
SADC	2,708	2,596	2,846	3,293	3,595	3,547	3,719	3,297	2,169
UMA	264	384	309	291	284	334	361	347	377

Source: ReSAKSS (Regional Strategic Analysts and Knowledge Support System). 2019
Data compiled for tracking implementation of the Comprehensive Africa Agriculture Development Programme (CAADP).

Agriculture, value added (constant 2010 USD, million)

Country / Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Algeria	13,649	13,452	15,039	17,359	18,813	21,973	23,941	24,443	27,051
Angola	5,179	5,069	5,713	6,428	7,814	9,535	10,010	8,687	7,018
Benin	1,585	1,639	1,678	1,721	1,841	1,969	2,115	2,217	2,331
Botswana	318	340	382	363	343	355	345	345	362
Burkina Faso	2,922	2,948	3,209	3,415	3,528	3,538	3,808	3,773	4,010
Burundi	781	776	782	889	844	712	707	830	701
Cameroon	3,678	3,670	3,905	4,169	4,519	4,957	5,107	5,226	5,395
Cape Verde	133	136	148	146	142	157	150	117	97
Central African Rep.	800	838	863	481	507	489	517	583	554
Chad	3,425	2,700	3,207	3,864	3,860	4,189	4,460	4,560	4,866
Comoros	276	289	294	314	312	316	318	330	327
Congo, Dem. Rep. of	4,621	4,821	5,045	5,172	5,441	5,757	5,969	6,558	6,727
Congo, Republic of	460	420	506	582	688	1,059	1,029	881	990
Côte d'Ivoire	6,104	6,351	5,845	6,017	6,569	7,722	8,224	8,521	8,388
Egypt	29,201	30,894	25,669	26,234	27,151	28,478	30,695	31,207	32,120
Equatorial Guinea	173	183	199	215	234	311	350	332	324
Eswatini	451	441	493	523	487	496	478	455	473
Ethiopia	12,407	13,728	16,029	16,489	16,982	17,548	18,432	19,631	19,364
Gabon	562	528	543	569	646	799	941	1,001	1,046
Gambia, The	276	172	196	255	223	249	265	256	236
Ghana	9,021	8,683	8,876	8,802	8,857	9,162	9,819	9,970	9,828
Guinea	1,198	1,163	1,290	1,398	1,448	1,585	1,672	1,922	2,085
Guinea-Bissau	383	413	423	411	387	467	492	552	553
Kenya	9,930	11,165	11,614	12,425	13,590	15,802	17,219	20,239	21,126
Lesotho	122	130	134	162	158	144	175	178	139
Liberia	895	958	906	945	914	878	937	956	977
Madagascar	2,249	2,299	2,352	2,267	2,347	2,335	2,220	2,153	2,122
Malawi	2,061	2,100	2,103	2,243	2,373	2,336	2,258	2,364	3,522
Mali	3,526	3,810	4,167	4,108	4,484	4,786	5,150	5,423	5,717
Mauritania	880	776	862	917	1,179	1,338	1,335	1,370	1,450
Mauritius	364	386	394	376	377	377	396	399	372
Morocco	12,066	12,872	12,460	14,145	12,648	14,318	13,751	14,774	14,749
Mozambique	2,777	2,860	2,942	3,008	3,054	3,283	3,358	3,274	3,406
Namibia	968	976	1,003	835	936	876	917	1,035	1,069
Niger	2,339	2,241	2,491	2,466	2,718	2,807	3,144	3,372	3,599
Nigeria	86,820	85,081	87,185	88,315	90,413	95,790	95,846	95,990	99,506
Rwanda	1,628	1,760	1,982	2,052	2,198	2,331	2,585	2,896	2,952
São Tomé and Príncipe	23	24	25	27	28	30	30	32	31
Senegal	2,568	2,120	2,416	2,434	2,534	2,880	3,091	3,683	4,061
Seychelles	22	23	22	30	28	25	26	26	28

Agriculture, value added (constant 2010 USD, million) (continued)

Country / Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Sierra Leone	1,365	1,496	1,597	1,829	2,064	1,856	1,953	2,108	2,183
South Africa	8,961	8,860	8,597	8,519	8,995	8,717	9,176	9,764	9,392
South-Sudan	785	624	785	818	931	1,022	855	918	945
Sudan	15,300	15,673	21,437	22,797	22,082	22,851	23,759	24,183	24,410
Tanzania	8,190	8,610	9,564	10,305	10,593	11,657	12,782	14,295	14,704
Togo	985	1,089	1,652	1,546	1,797	1,836	1,278	1,194	1,250
Tunisia	3,319	3,688	4,083	4,110	4,357	4,955	4,614	4,740	4,908
Uganda	5,296	5,534	5,980	6,052	6,260	6,298	6,509	7,025	7,335
Zambia	1,909	2,064	2,146	1,989	1,717	1,298	1,684	1,125	748
Zimbabwe	1,157	1,192	1,291	1,169	1,465	1,412	1,353	1,738	2,307
Africa wide	11,258	11,300	12,132	12,472	12,839	13,707	14,089	14,382	14,694
Western Africa	27,502	27,195	28,073	28,042	28,847	30,598	30,844	30,969	32,010
Southern Africa	4,490	4,459	4,536	4,620	5,032	5,264	5,529	5,443	5,068
Northern Africa	8,831	9,003	9,362	10,582	10,818	12,418	12,951	13,406	14,327
Eastern Africa	8,860	9,352	11,442	12,057	12,146	12,839	13,505	14,372	14,572
Central Africa	3,128	2,843	3,162	3,507	3,616	3,922	4,115	4,309	4,516
COMESA	8,371	8,844	10,662	11,141	11,202	11,713	12,280	12,918	13,095
CEN-SAD	17,287	17,251	18,521	18,894	19,191	20,431	20,740	21,113	21,748
EAC	6,118	6,577	7,145	7,608	8,048	8,980	9,704	11,065	11,483
ECCAS	3,824	3,606	4,036	4,508	5,062	5,858	6,151	5,819	5,371
ECOWAS	27,502	27,195	28,073	28,042	28,847	30,598	30,844	30,969	32,010
IGAD	10,664	11,272	14,126	14,891	14,934	15,718	16,468	17,412	17,614
SADC	4,605	4,644	4,822	4,952	5,312	5,602	5,907	6,023	5,799
UMA	8,214	8,350	8,865	10,102	10,320	11,918	12,407	12,857	13,776

Source: ReSAKSS (Regional Strategic Analysts and Knowledge Support System). 2019
Data compiled for tracking implementation of the Comprehensive Africa Agriculture Development Programme (CAADP).

Cereals - Yield Comparison

Region	2010	2011	2012	2013	2014	2015	2016	2017	2018
Maize - hg/ha									
Africa	20,721	19,460	20,067	19,166	20,847	19,433	18,745	20,922	20,402
Asia	46,078	48,202	49,707	50,754	50,015	51,838	51,986	53,751	53,727
Europe	60,964	66,726	53,037	63,324	68,936	58,311	67,433	63,916	75,427
Northern America	95,910	92,227	77,842	99,119	106,879	105,668	116,998	118,008	117,744
South America	47,418	44,437	48,443	52,481	52,903	57,059	49,918	59,260	52,567
World	51,925	51,791	48,670	54,355	55,952	55,208	57,616	58,967	59,237
Rice - hg/ha									
Africa	23,919	25,135	24,144	22,947	23,534	23,298	23,380	23,336	23,291
Asia	44,362	45,514	46,493	46,250	46,503	47,264	47,774	47,837	48,291
Europe	60,290	60,447	64,818	62,085	61,983	64,707	63,596	64,460	64,273
Northern America	75,375	79,209	83,651	86,232	84,919	83,722	81,121	84,147	86,211
South America	45,291	50,904	51,496	51,374	52,905	56,544	55,243	57,594	60,953
World	43,361	44,631	45,289	44,941	45,191	45,865	46,133	46,352	46,789
Wheat - hg/ha									
Africa	23,013	25,836	23,942	27,934	25,718	28,369	24,504	25,580	28,639
Asia	28,517	30,506	30,509	31,026	31,549	31,737	32,666	33,410	33,850
Europe	36,081	37,793	35,532	39,071	42,450	41,880	40,290	44,018	39,950
Northern America	30,240	29,468	30,373	33,236	29,864	29,174	35,542	31,993	32,057
South America	28,288	31,833	29,477	26,962	24,887	26,232	29,847	30,026	29,839
World	29,721	31,639	30,917	32,458	33,162	33,187	34,158	35,412	34,254

Source: FOASTAT



AFRICA AGRICULTURE STATUS REPORT 2020

