

4 THE URBANIZATION-INDUSTRIALIZATION NEXUS



Urbanization influences industrial development in multiple ways.¹ Growing middle-class consumption is largely urban based. As income grows, discretionary spending increases and consumption patterns change, generating demand for manufacturing goods and urban construction and thus opportunities for industry.

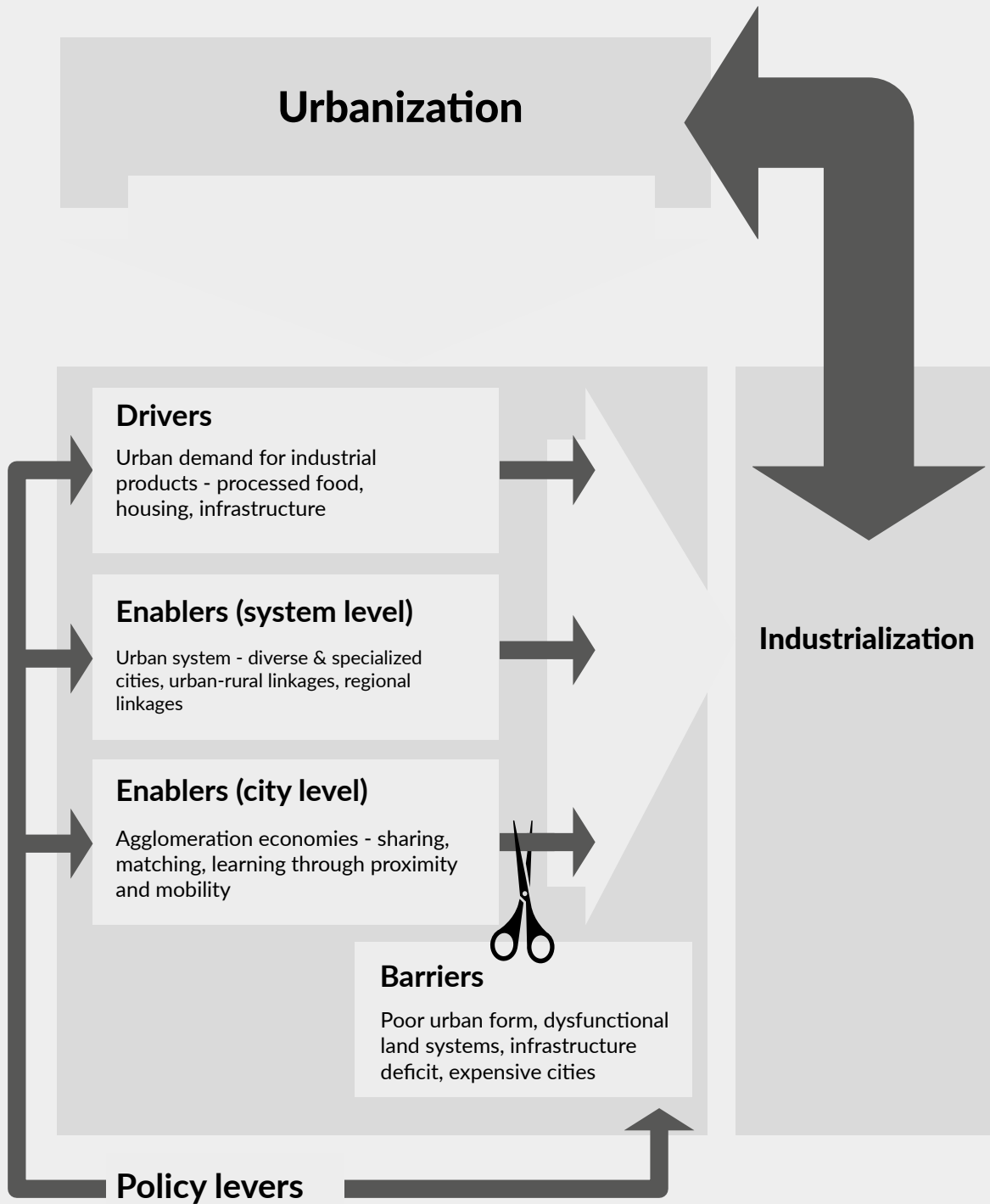
The nature of industrialization is characterized by the locations where industrial activities occur. Firms can benefit from a diverse system of cities where various industrial subsectors can match their locational preferences on access to labour, markets, inputs and knowledge.

Making cities and urban systems productive and tapping the urban advantages for industrial development require policy levers and implementation instruments at national and local levels, and investments in them.

Agglomeration's benefits rise with city size, but so do the costs of agglomeration. The net gains relate to city size in an inverted-U shape, increasing up to a point and then beginning to decline. Managing these relationships to prevent a premature decline in net benefits is essential to sustain productivity and growth, both within cities and in the wider urban system. The key is understanding and promoting the enabling forces behind agglomeration economies, and mitigating and preventing the barriers that undermine them. Among the enablers are good urban form, functional land markets, efficient transport and access to such services as electricity.

Making cities and urban systems productive and tapping the urban advantages for industrial development require policy levers and implementation instruments at national and local levels, and investments in them. As Africa will in the coming years approach the tipping point of 50 per cent urbanization, national and local governments have to make hard choices on the scale and type of investments they need to make—and on the spatial pattern and urban form they want to achieve. These are partly determined by the national development vision, industrial priorities and their spatial implications. Fostering the linkages between

FIGURE 4.1 The urbanization–industrialization nexus



Source: Authors.

urbanization and industrial development therefore require coordination at policy and implementation levels, within the framework of national development planning.

Drawing on the literature and empirical studies, this chapter introduces the key concepts and principles underlying the nexus between urbanization and

industrial development. It is organized as a framework of drivers, enablers (at the levels of the national system of cities and within cities), barriers and policy levers (figure 4.1 and box 4.1). The aim is to provide a theoretical basis and analytical framework for the examples from country case studies in chapter 5.²

Fostering the linkages between urbanization and industrial development require coordination at policy and implementation levels, within the framework of national development planning.

BOX 4.1 DRIVERS, ENABLERS, BARRIERS AND LEVERS

Drivers

- Trends in urban consumption and investment can serve as drivers of industrialization under the right policy framework.

Enablers

- Systems of cities at the national and regional level, if well-structured, can be enablers of industrial activity. Cities themselves can be enablers of industrial productivity due to agglomeration economies.

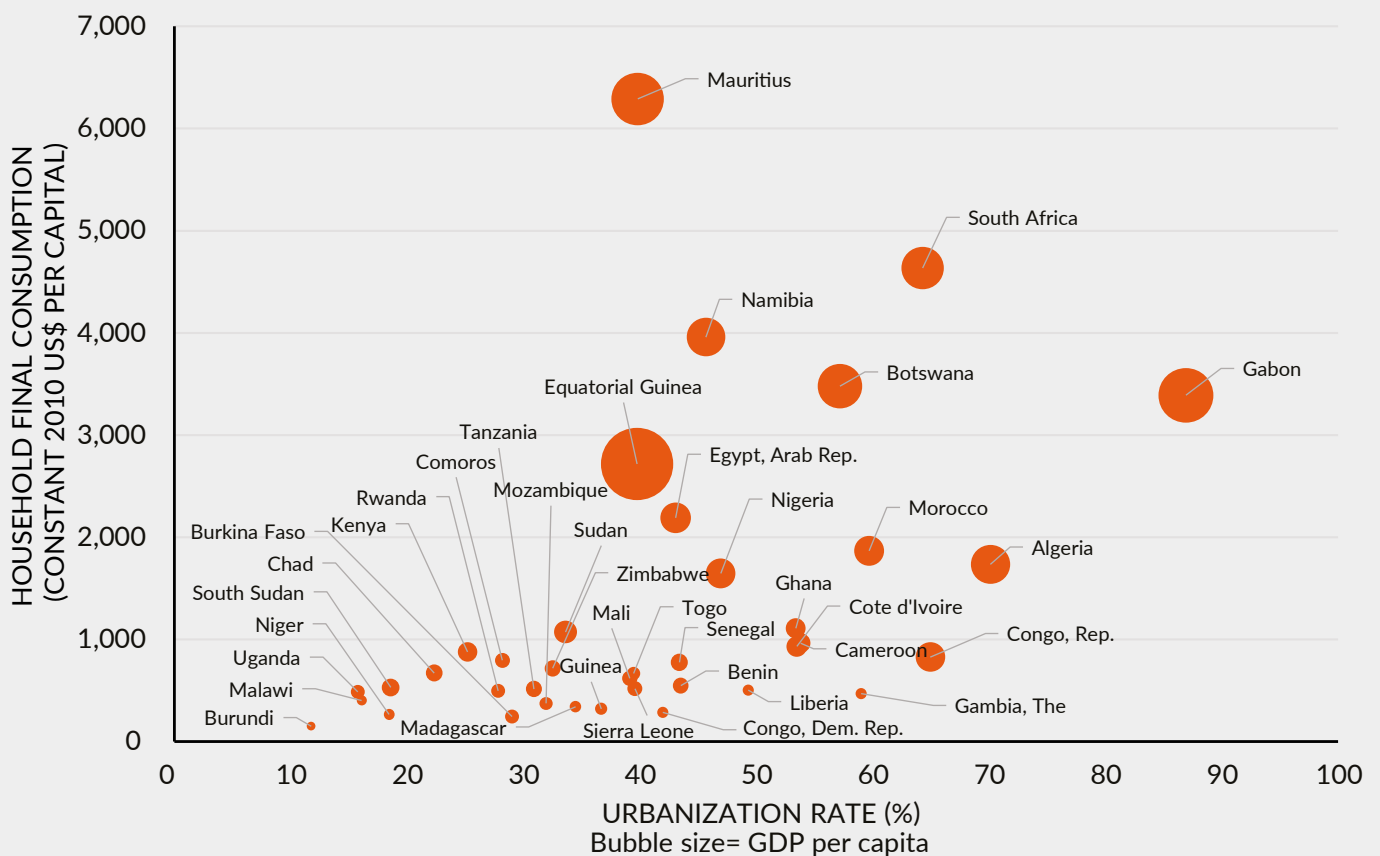
Barriers

- African cities face many barriers to industrial success.

Levers

- Policies can serve as levers to leverage the benefits of urbanization for industrial growth.

FIGURE 4.2 Urbanization, household final consumption expenditure and GDP per capita, selected African countries, 2014



Source: Analysis by authors based on World Bank Development Indicators data.

4.1 DRIVERS: URBAN DEMAND AND SHIFTING PATTERNS OF CONSUMPTION

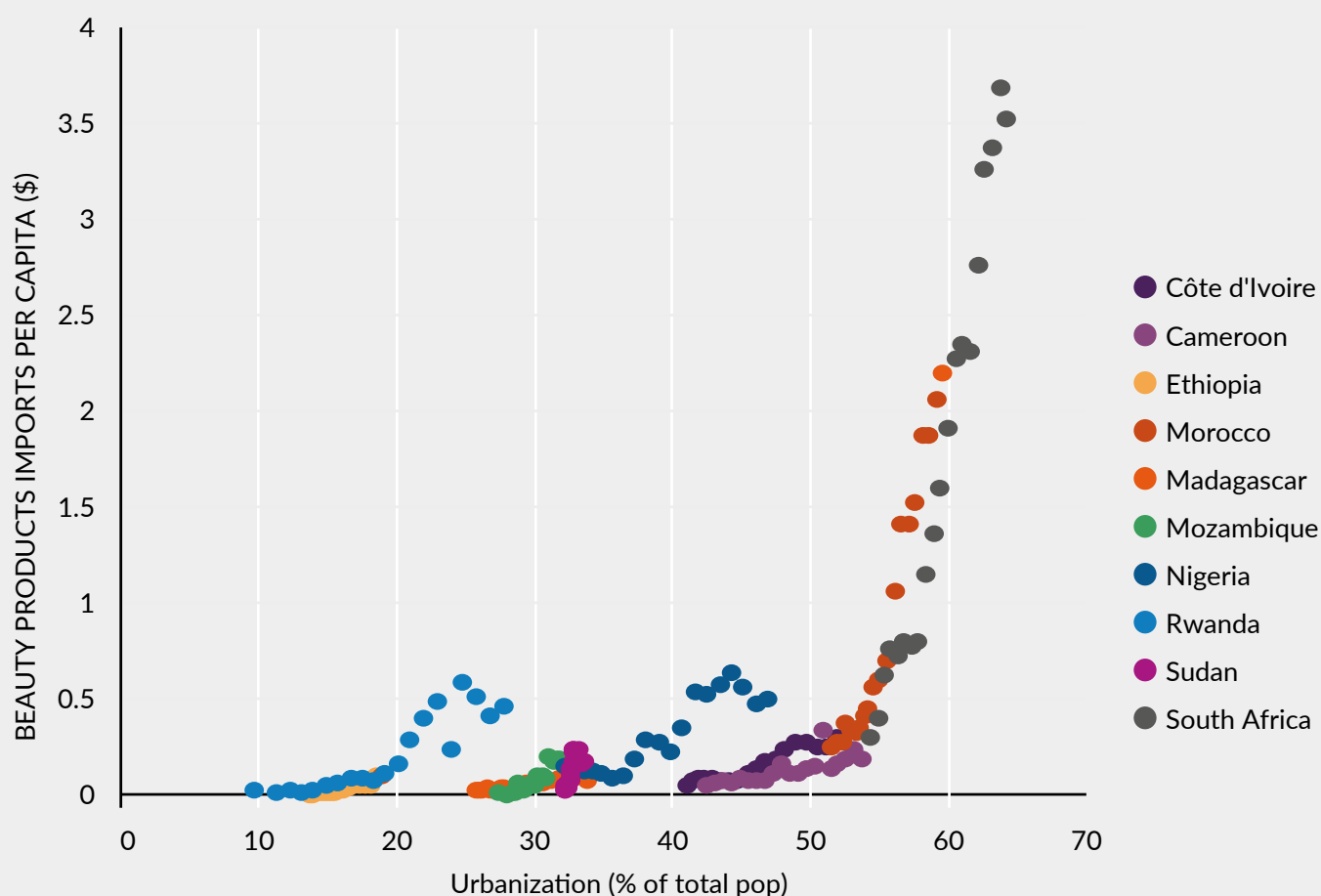
Urbanization presents a major opportunity for industrialization through rising urban demand and shifting patterns of consumption. As Africa urbanizes, the purchasing power of the middle class is growing.³ The power of Africa's growing consumer class can be leveraged to stimulate industrial development to meet rising demand domestically and regionally as a stepping stone to broader global integration.

Urban preferences are shaping the consumer market, given the strong correlation between urbanization and final household consumption expenditure (figure 4.2). While this relationship is not independent of per capita GDP growth, some categories of consumption are associated with urbanization, independent of total income. For example, urbanization is independently and strongly

associated with increased imports of beauty products (figure 4.3), infant food and artificial sweeteners. These categories are useful because fixed-effects models using panel data for African countries over 1995–2014 show that urbanization (percentage of population in urban areas) is significantly related to imports of beauty products ($p < 0.001$), infant food ($p < 0.001$) and “other” sweeteners ($p < 0.01$), after controlling for GDP per capita.⁴

Rising consumer demand presents an opening for shifting into job-rich industrial, manufacturing and tradeable services. PricewaterhouseCoopers, for example, argues that the most strategic investment opportunities in Africa can be found in long-term supply to the growing middle class,⁵ rather than natural resources (PricewaterhouseCoopers, 2015). There is broad consensus in international

FIGURE 4.3 Urbanization and imports of beauty products, selected countries, 1995–2014



Source: Author analysis based on UN Comtrade Database and World Development Indicators.

TABLE 4.1 FDI projects in Africa, top 10 sectors, 2007–2013 (% of total projects)

	PROJECTS	VALUE	JOBS CREATED
Financial services	17.5	2.1	2.7
Telecommunication media technology	16.3	8.7	7.5
Retail consumer products	13.9	4.8	16.8
Business services	9.2	1.0	1.9
Real estate, hospitality and construction	8.6	22.9	19.2
Mining and metals	6.6	14.2	21.2
Coal, oil and natural gas	5.5	31.8	5.3
Transport and logistics	4.9	2.3	2.0
Diversified industrial products	4.8	1.3	3.5
Automotive	4.1	2.7	11.9

Source: Ernst & Young (2014).

investment circles that the rise of African cities creates major opportunities for business (Boston Consulting Group, 2014; PricewaterhouseCoopers, 2015; Deloitte and Touche, 2013; Euromonitor International, 2016). These include consumables, financial services, information and communications technology (ICT), health services and property. There is already a surge in investment in retailing by foreign and domestic sources, and the growth is expected to continue. For example, in Eastern and Southern Africa supermarkets account for 10 per cent of the retail market, it is estimated they will grow to 30–50 per cent by 2040 (Tschirley et al., 2013; 2014).

The trend in foreign direct investment (FDI) also suggests the growing importance of consumption sectors in Africa. In 2007–2013 retail consumer products were the third highest by number of FDI

projects and job creation, while the real estate, hospitality and construction sector ranked the second highest (after coal, oil and natural gas) by value and job creation (table 4.1).

Opportunities abound to expand the role of domestic firms in existing industrial value chains, particularly those in commodities (see the Economic Report on Africa 2013). Better integrated value chains can create urban–rural linkages that foster balanced development, as well as tying job creation in urban-based services (including transport, finance and communications) to areas of existing comparative advantage (such as minerals and agriculture). Identifying value-added openings along the value chain has spatial implications. Clusters and locations of comparative advantage must be mapped and supported with soft and hard infrastructure specific to the sectors or activities in the value chain. Cities and locations along the chain have to be connected to ensure efficient flow of production factors, intermediate inputs and final products to the market.

Some of the opportunities arising from urban growth in the food value chain, housing and infrastructure construction, and business services are now presented.

Urbanization presents a major opportunity for industrialization through rising urban demand and shifting patterns of consumption.

FOOD VALUE CHAIN AND RURAL-URBAN LINKAGES

Urbanization is not merely associated with an increase in consumption—it is also linked to changing patterns of consumption, such as those for food. With increasing shares of the urban population graduating to middle class status, the share of food in household budgets decreases, but demand shifts to protein-rich and processed food. The entry of women into the formal and informal labour market also means increased demand for time-saving processed food, generating demand for food manufacturing and further expansion of the food retail trade. Africa's imports of processed foods are rising (figure 4.4), revealing areas that could instead be met by domestic production.

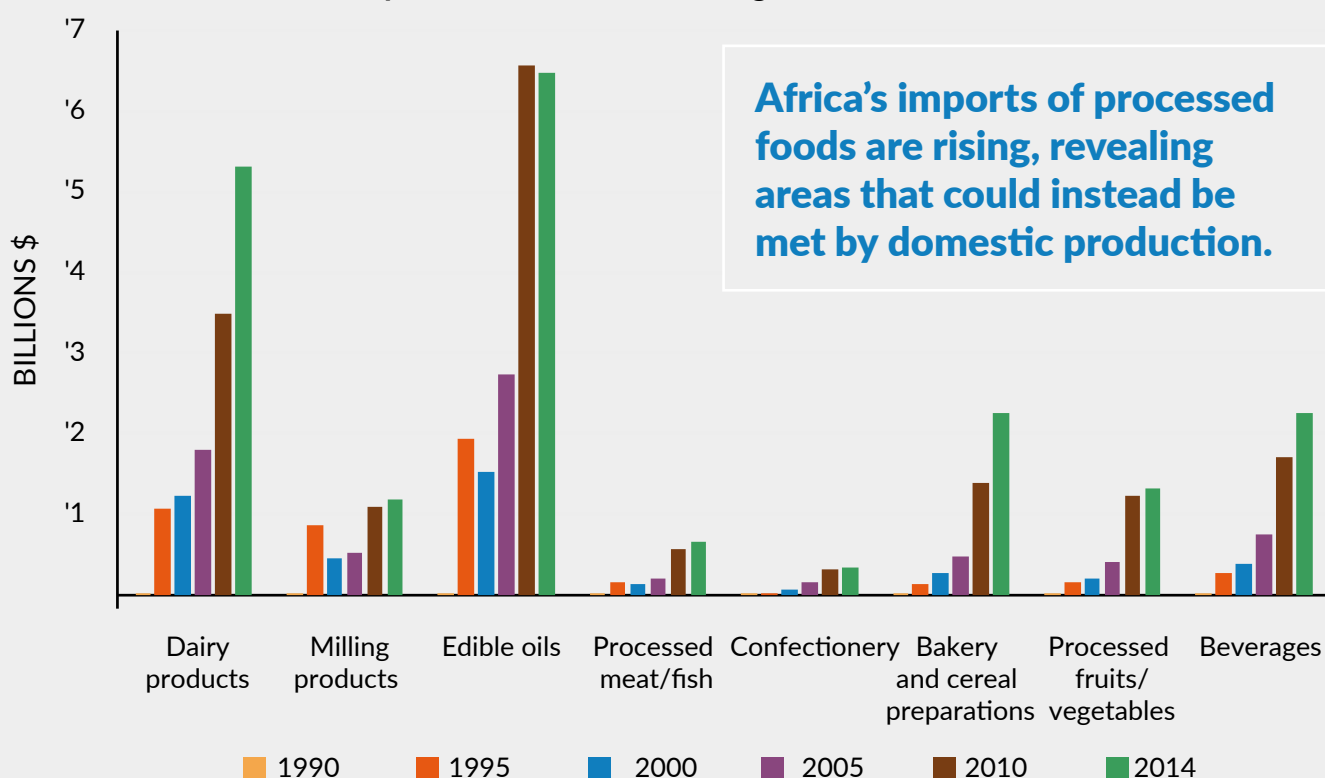
Wholesale, trucking, processing and storage—predominately carried out by small and medium-sized enterprises and the informal sector—present major opportunities, as the spread of supermarkets provides openings for greater value added. The emergence of these economic activities has gone under the radar of policy makers (the “quiet revolution”) and represent the “missing middle” of policy focus. Critical to African economic competitiveness, they underline the need to improve

infrastructure and the business climate (Reardon et al., 2013). Support for such enterprises, as well as a path to formalization for informal operators, would strengthen the entire rural-urban value chain.

Major food retailers, including global food industry leaders and emerging domestic investors, will have leading roles in vertically integrating the segment and increasing the share of local content in food supermarkets. Their power is huge. For example, around 200 supermarkets and 10 hypermarkets sell the equivalent of 90,000 small shops and account for up to 30 per cent of Kenya's food retail market (UNDP, 2012). Knowledge sharing between lead firms and suppliers will be important for upgrading Africa's food production and its ability to compete in global markets (UNECA, 2013).

Policy is also important in establishing links between farmers and retailers. Contract farming is becoming more common, but in many places small farmers face barriers to entry. Agricultural production for processed and formally marketed food is highly concentrated. A secure institutional framework is critical to keep transaction costs low, lower barriers to entry, and provide certainty on the ties between farmers and agri-businesses (Sautier et al., 2006).

FIGURE 4.4 Africa's import of selected food categories



Source: UN Comtrade database.

HOUSING AND INFRASTRUCTURE CONSTRUCTION

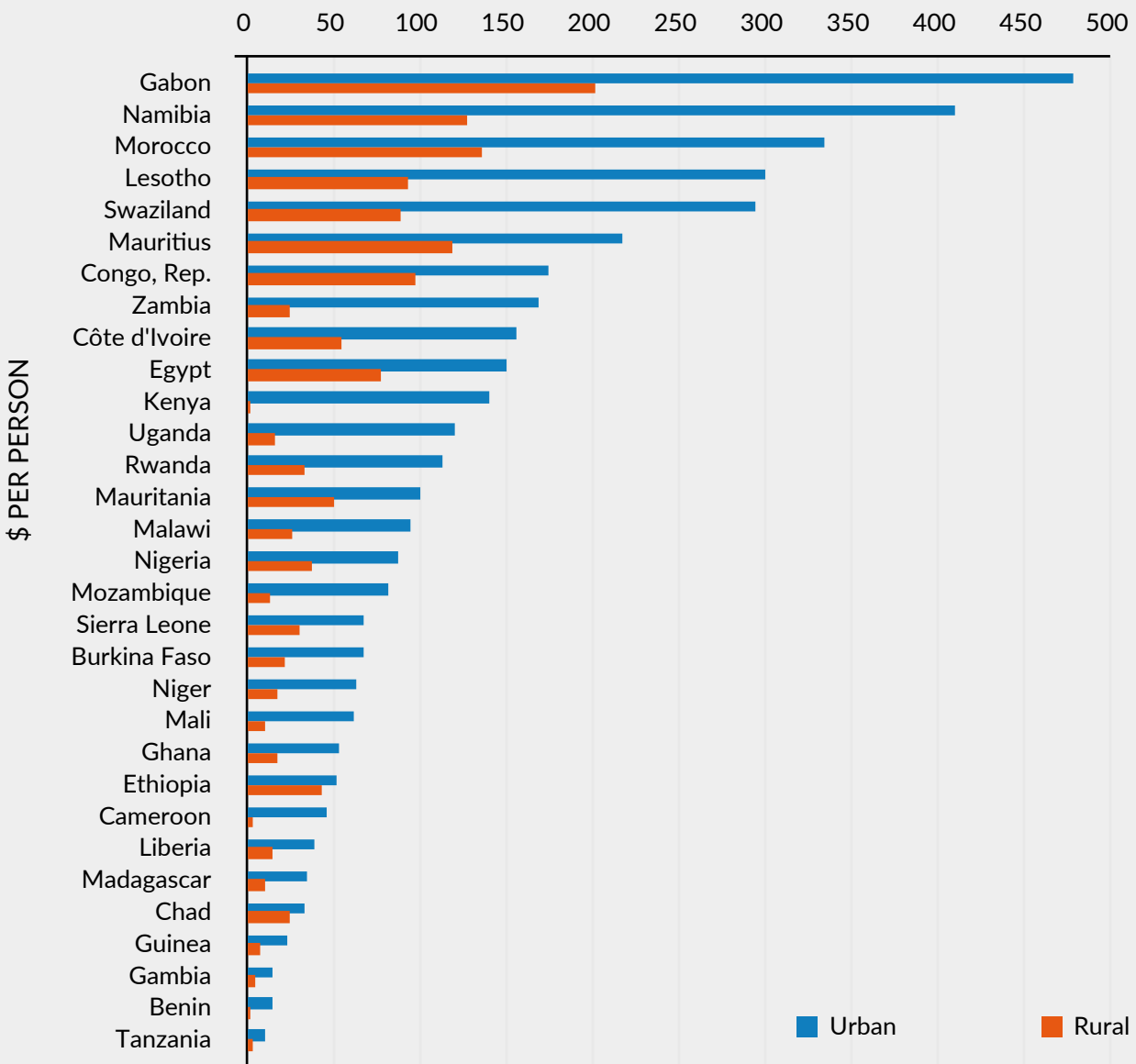
Growth in construction, particularly for housing and urban infrastructure, reflects rising urban demand. Housing is a major source of wealth creation and savings, with investments accounting for 6 per cent of GDP, and for each house built, five jobs can be created (World Bank, 2015). Housing, through backward linkages, can encourage construction industries to form, including basic industries such as cement and steel. With the expanding housing and construction sector and sophistication of the real estate market, there will be good prospects to develop industry further by upgrading skills,

Growth in construction, particularly for housing and urban infrastructure, reflects rising urban demand.

developing design, contracting and consulting capacities.

African per capita spending on housing in urban areas is consistently higher than in rural areas (figure 4.5), pointing to growing opportunities.

FIGURE 4.5 Urban and rural expenditure on housing, 2010, selected African countries



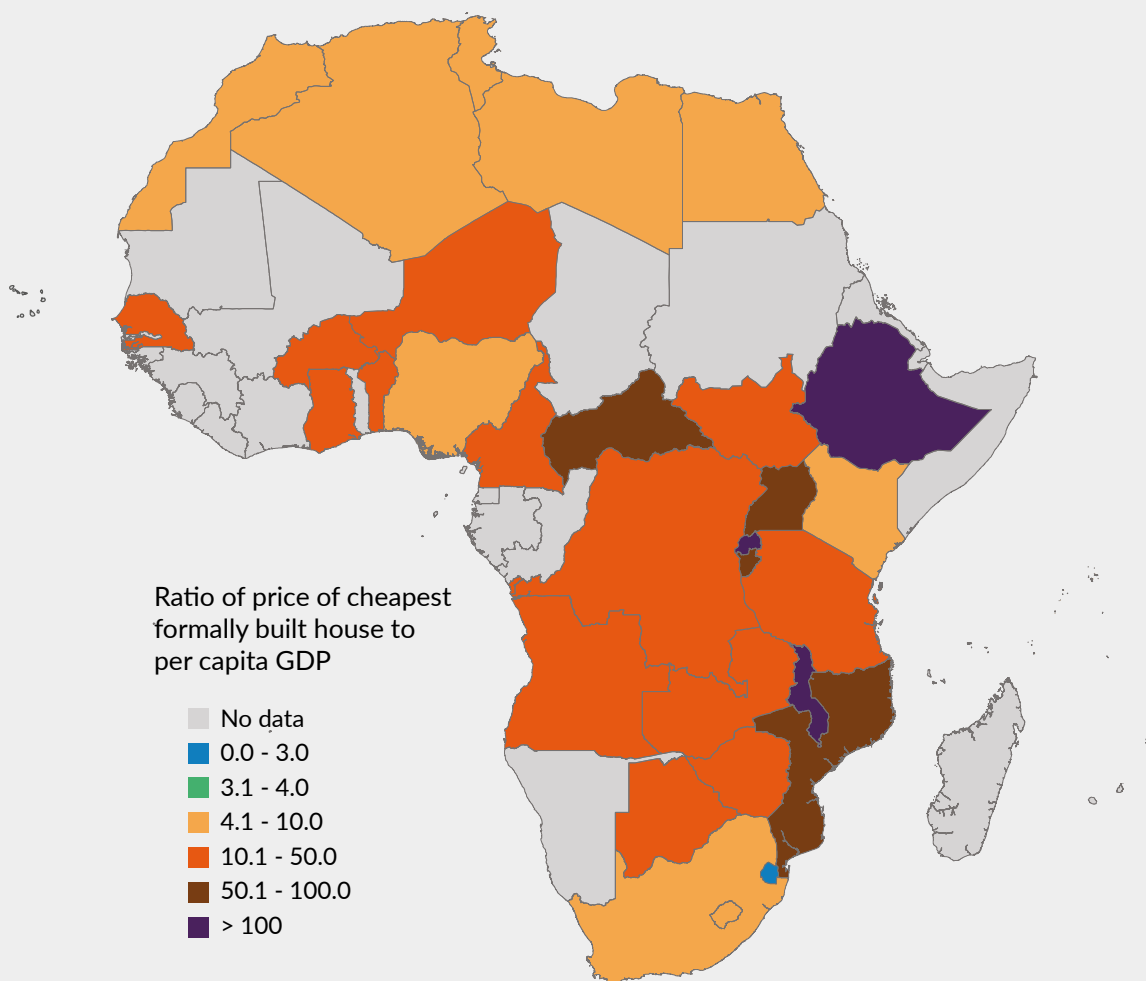
Source: Based on Centre for Affordable Housing Finance in Africa; World Development Indicators.
 Note: The ratio compares a housing price below the median and an income above the median (implying that the picture is worse than depicted).

But for the construction sector to respond to the large and growing demand for urban housing, the right institutional factors must be in place. UN-Habitat (2010a) defines seven: authorizations, land, infrastructure and municipal services, public facilities and community services, labour force, building materials and finance. Strategies to expand housing and construction employment should focus on reforming regulatory barriers and supporting education and training, particularly for women and youth.

The sector is struggling in many countries: numerous institutional problems ensure an inefficient supply chain and expensive housing units, highlighting

the need to remove regulatory barriers. Housing is 55 per cent more expensive in urban Africa than in other developing countries' urban areas (Dasgupta, Lall and Lozano-Gracia, 2014). The typical house price to income ratio globally ranges between 3:1 and 5:1, but often in Africa, even for public service employees whose average income is higher than the majority's, the ratio goes above 10:1, which is far above the 4:1 threshold that development practitioners suggest signals a serious problem with housing supply (Bertaud, 2015). The cheapest formally built housing, too, is much higher in Africa on the house price to income ratio than in other developing regions (figure 4.6).

FIGURE 4.6 Ratio of cheapest formally built house price to GDP per capita, 2013



Source: Based on Global Consumption Database.

The level and growth of per capita GDP will be major contributors to upgrading urban housing supplies. Middle-class households tend to own their own homes and reside in bigger and more permanent housing, equipped with modern durable goods. In Algeria, Morocco, South Africa and Tunisia more than 60 per cent of households own their homes, in part a reflection of the rise of the middle class (Ncube, Lufumpa and Kayizzi-Mugerwa, 2011). The quality of their housing also tends to be better, with more solidly built roofs, walls and floors, and less

Governments should actively address the persistent formal housing gap for families who will not enter the middle class in the coming decades. Such programs can be directly tied to industrialization policies.

overcrowding (Lozano-Garcia and Young, 2014). This link between GDP and formal housing expenditure, paired with trends in urbanization, suggests that

Africa is poised to see a major expansion of the urban housing market, if it puts the right enabling factors in place, and this expansion should be leveraged for industrialization through development of the construction and building materials value chains.

At the same time governments should actively address the persistent formal housing gap for families who will not enter the middle class in the coming decades. Such programs can be directly tied to industrialization policies, as in Ethiopia (chapter 5). Similarly, the investment in housing that North African countries like Morocco and Tunisia have made since the 1990s is reflected in impressive changes in housing conditions. In Morocco the share of the urban population living in slums fell from 37 per cent in 1990 to 13 per cent in 2005.

Africa's urban housing deficit is accompanied by a huge infrastructure deficit (see "Urban infrastructure" in section 4.4). Africa lags behind the rest of the world in access to electricity, Internet penetration and access to improved water, and has large road maintenance needs, all with subregional differences. West Africa has lower road density and road quality than other regions; North Africa has a

TABLE 4.2 Infrastructure: Electricity, Internet, water and roads by global regional groupings

		ACCESS TO ELECTRICITY (% OF POPULATION) 2012	SECURE INTERNET SERVERS (PER 1 MILLION PEOPLE) 2015	IMPROVED WATER SOURCE, URBAN (% OF URBAN POPULATION WITH ACCESS) 2015	CLASSIFIED PAVED ROAD NETWORK IN GOOD CONDITION (% OF CLASSIFIED PAVED NETWORK)
Africa	Central	46.9	4.7	88.7	58.7
	East	31.1	42.8	85.6	49.0
	North	79.2	4.9	88.3	Not available
	Southern	43.5	35.6	92.7	47.8
	West	41.1	6.2	92.2	43.2
Elsewhere	East Asia and Pacific	96.1	143.0	97.3	Paved roads: last available 2010–2014
	European Union	100.0	965.3	99.9	
	Latin America and Caribbean	96.4	56.6	97.4	
	North America	100.0	1,616.7	99.5	
	South Asia	78.0	5.8	95.3	
World		84.6	208.7	96.5	

Source: Based on World Development Indicators; Africa Infrastructure Country Diagnostic; International Road Federation.

The link between GDP and formal housing expenditure, paired with trends in urbanization, suggests that Africa is poised to see a major expansion of the urban housing market, if it puts the right enabling factors in place.

higher prevalence of paved roads and better access to electricity; East and Southern Africa do best on Internet servers (table 4.2).

The annual financing requirement for infrastructure investment in Africa excluding North Africa is estimated at \$93 billion (Gutman, Sy and Chattopadhyay, 2015), but this covers rural and urban areas. With rapid urbanization and growing cities, countries will need to simultaneously catch up with the backlog, invest for the growing population and spend on maintenance.

In the last two decades the region has seen significant growth in infrastructure investment, with an

increasing share of private sector finance relative to official development assistance, including growing investment by China. Still, 65 per cent of the total comes from public budgets, representing 4 per cent of GDP. This might be lower than the 5–6 per cent of GDP advocated by development practitioners, but countries such as Angola, Cabo Verde and Lesotho are investing more than 8 per cent of GDP (Gutman, Sy and Chattopadhyay, 2015).

As Africa invests in urban infrastructure to catch up with its needs, with the help of global commitments by donor countries to the Sustainable Development Goals and the New Urban Agenda,⁶ it should aim to develop the domestic construction sector and support services. Job creation, particularly for women and youth, should be a component of funded development projects. Some have questioned the dual goal of job creation via infrastructure investment, saying that domestic procurement policies may delay delivery or reduce quality (Altbeker, McKeown and Bernstein, 2012). And many emerging sectors will need government support to deliver at required standards, particularly informal and small enterprises, and such support should be paired with procurement targets.

		CLASSIFIED ROAD NETWORK DENSITY, PER LAND AREA (KM/1,000 SQ KM)	CLASSIFIED ROAD NETWORK DENSITY, PER POPULATION (KM/1,000 PERSONS)	PAVED ROADS (% OF TOTAL)
Africa	Central	36.5	2.1	23.0
	East	127.9	1.2	29.5
	North	71.2		
	Southern	99.8	5.5	35.4
	West	83.7	2.3	18.3
Elsewhere	East Asia and Pacific	Other road data: last available 2001–2008		
	European Union			
	Latin America and Caribbean			
	North America			
	South Asia			
World				

BUSINESS SERVICES

The service sector provides openings tied to cities and industrial development. Business services tend to cluster in cities, where they can tap pools of skilled labour and share knowledge. These tradeable services, including finance, insurance, real estate, accounting, ICTs and other business services, have a dual role in linking urbanization to growth. They are vital to industrial productivity, particularly manufacturing and construction, and they are a pathway to structural transformation and economic growth. With urban development that is well ordered and supported, industry and business services can thrive together, given the positive associations between employment in business

Business services are vital to industrial productivity particularly manufacturing and construction, and they are a pathway to structural transformation and economic growth.

services and in construction, and in value added between these sectors (figures 4.7 and 4.8).

Beyond supporting the productivity and growth of industry, tradeable business services have the potential for creating jobs and boosting economic growth (Puga, 2010; Rodrik, 2015).⁷ With backward linkages they can increase the job-creating potential of industry (Altbeker, McKeown and Bernstein, 2012).

IMPORTANCE OF POLICY SUPPORT

In three areas—the food value chain, business services and housing and infrastructure construction—domestic firms will probably be unable to respond to urban demand without policy support, including an enabling regulatory framework, opportunities for training and skill building, and prioritization of infrastructure that supports domestic firms and value chains. A conducive policy environment and targeted support are needed to promote these sectors and associated value chains, including direct engagement with firms to build capacity, upgrade informal activities and assist women and youth in broadening their participation in urban economic activities—creating, in theory, a virtuous circle of domestic urban employment and demand.⁸

4.2 THE POTENTIAL OF URBAN SYSTEMS TO BE ENABLERS OF INDUSTRIALIZATION

Cities do not exist in a vacuum. The economic contribution of a city and its ability to support industrial development depend on the city's role in the national urban system and its connectivity to regional and even international markets. The location choices of industries and their success in productivity and competitiveness depend on the characteristics of the city and its place in national and international systems of cities—size, diversity of economic activities and proximity and linkages to regional and international markets (box 4.2).

Policy for the urban system is critical for prioritizing investment: countries must focus their limited resources to avoid diluting the impact of investments to a point where they leverage little change. Systems

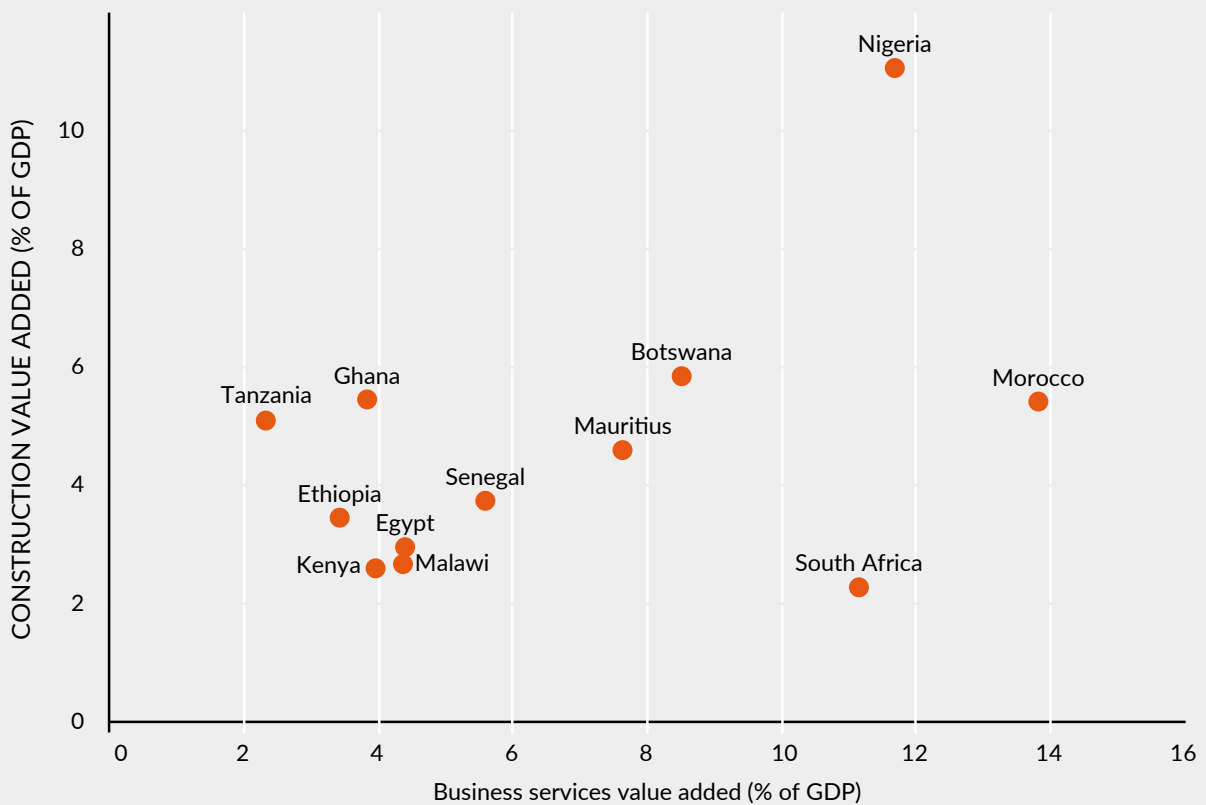
of cities should have an economic logic. While a political logic sometimes shapes the distribution of provincial, state or district administrative public spending, infrastructure and targeted investment attraction policies should focus on a few economically strategic cities and their links, including the primary city, cities along important regional trade corridors, existing industrial and port cities, and cities with links to targeted industrial sectors (including agro-industry and natural resources). Investment should target the value chains at the heart of industrial job creation, including support to skill building within cities, as well as the transport links within and between cities.

FIGURE 4.7 Employment in construction and business services, average 2006–2010, selected African countries



Source: Groningen Growth and Development Centre 10-Sector Database.

FIGURE 4.8 Value added in construction and business services, average 2006–2010, selected African countries



Source: Groningen Growth and Development Centre 10-Sector Database, population, 2006–2015

BOX 4.2 A FUNCTIONAL NATIONAL SYSTEM OF CITIES

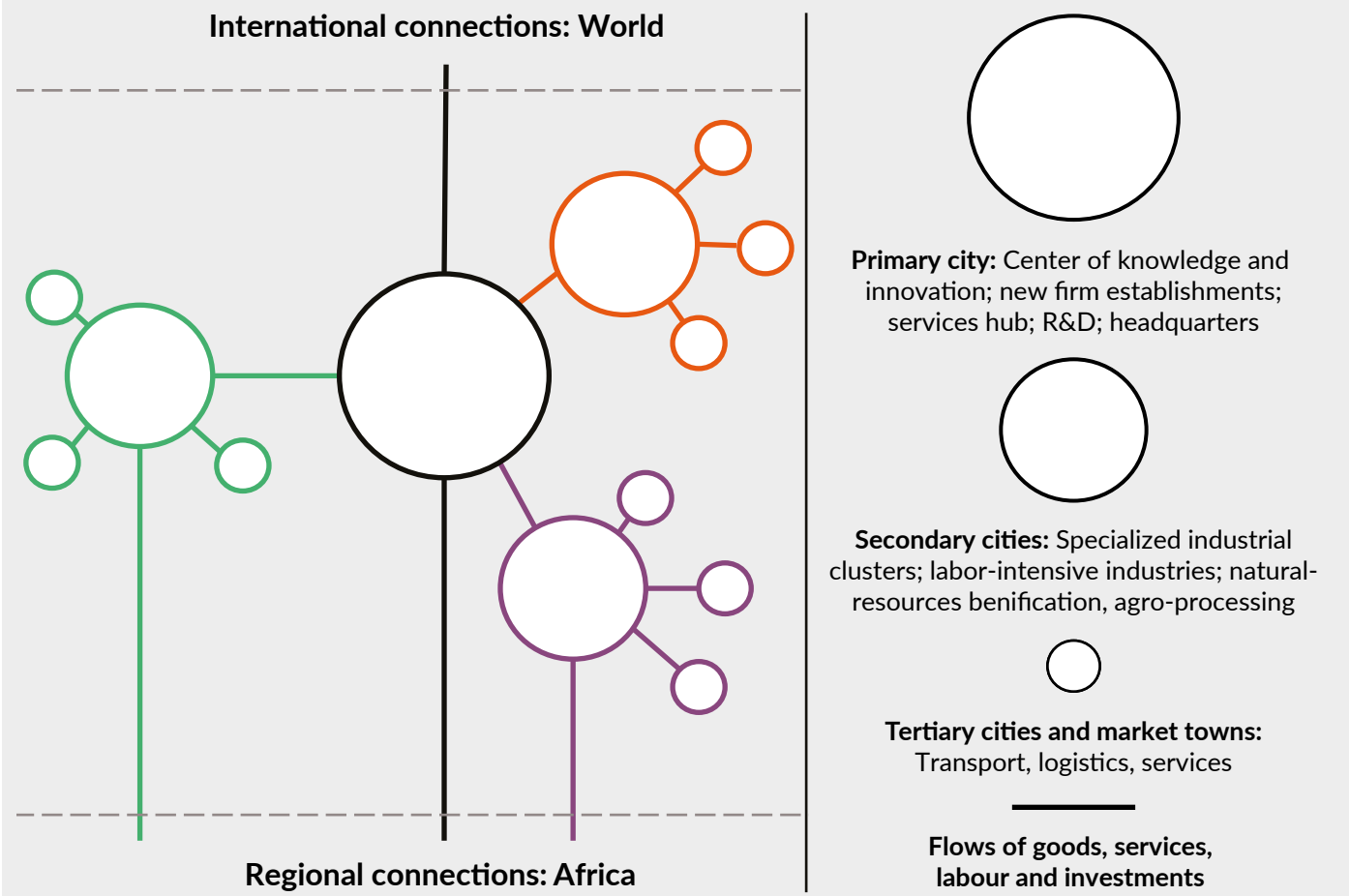
In a functional system of cities each major city (primary and secondary) has a unique and complementary role. The primary city may well have an international outlook, while secondary cities complement it by hosting activities that require the

lower costs associated with smaller size or proximity to inputs such as agriculture or natural resources.

Regional links and corridors influence the division of functions among cities and the inter-city transport networks. Links to international and

regional markets are an important component of such a system, which requires internationally coordinated policies and investments to establish the right supportive environment.

BOX FIGURE 4.1 A connected and complementary system of cities



INDUSTRY LOCATION CHOICE

Theories of industrial location have focused on “first-nature” (naturally occurring) and “second-nature” (arising from human activity) geographical characteristics, highlighting economic geography.

Older theories focused on first-nature differences such as climate, topography and resource endowment, or the abundance of a relatively immobile production factor. For example, distance to markets or to urban centres was the central element of the location model of Von Theonen (1826), of the

central place theories of Christaller (1933) and Losch (1940), and of others who followed in their footsteps (Fujita, Krugman and Venables, 1999). According to Alfred Weber (1909) industries may locate closer to the source of inputs if a product is “weight-losing” (heavier before processing) or closer to markets if the product is “weight-gaining” (heavier or more perishable after processing) (Bogetic and Sanogo, 2005). Trade theories of comparative advantage also discuss location choice: according to the Heckscher-Ohlin model (1933), industries that depend most on a less mobile factor of production may well concentrate in locations endowed with that factor.

More recent theories of industrial location focus on second-nature benefits such as knowledge spillovers, “thick”¹⁰ markets for specialized skills and the backward and forward linkages associated with large local markets. The New Economic Geography model, pioneered by Paul Krugman (1991) and the extensive work that followed, analysed the self-reinforcing nature and process of economies of scale and of spatial clustering. In this model the interaction between economies of scale, transport costs and movements of productive factors influences the spatial concentration of economic activities (Fujita, Krugman and Venables, 1999). Economies of scale in manufacturing and the mobility of labour create and perpetuate agglomeration economies.

In the early periods of global industrial development, first-nature geographical factors were critical in determining industrial location. In the United States and Western Europe industries and cities have long tended to locate around waterways to exploit transport cost advantages. Per Glaeser (2009): “Before the 20th century, the costs advantages of boats were so extreme that the location of all of America’s 20 largest cities from the oldest, like New York and Boston, to the youngest, Minneapolis, was determined by flows of water.” The same is true of the coastal megacities of Asia that came to dominate its economy after World War II, including the Republic of Korea’s Seoul and Pusan regions, Taiwan (China’s) Taipei and Kaohsiung regions, and China’s Yangtze and Pearl River Deltas (Annez and Buckley, 2009). Initial first-nature locational advantages based on transport costs have snowballed into scale-based advantages with the agglomeration of labour and firms (box 4.3).

While first-nature geographical factors remain important, firms in market economies of the globalizing world attach great value to second-nature geographical factors arising from agglomeration economies and the economic benefits of clustering.

CLUSTERING VERSUS DISPERSION, AND SECTOR-SPECIFIC DIFFERENCES

The centrifugal forces of agglomeration pull firms into urban clusters, working against the centripetal forces pushing firms from cities.¹¹ Both sets should be managed to provide high-quality location options for industries and firms. As cities

The centrifugal forces of agglomeration pull firms into urban clusters, working against the centripetal forces pushing firms from cities.

grow, crowding, congestion and demand for scarce resources increase land and labour costs. Firm surveys and econometric studies on China, India and Indonesia summarized in Deichmann et al. (2008; table 4.3) indicate that while location decisions of manufacturing firms depend on a host of factors, including infrastructure, the clustering effect is an important variable for many industries. This is especially true for technology-intensive and high-productivity sectors such as office computing and natural resource-based industries like wood or rubber and plastic. They are less important for footloose industries, such as garments and textiles, which tend to seek inexpensive labour.

Clustering effects come with cost-raising higher wages, increased land rent and higher transport costs caused by congestion, which work to push firms away. The net gains from clustering thus vary by type of industry, making relocation or expansion elsewhere a more frequent choice for sectors with low-skilled labour and standardized technologies (Deichmann et al., 2008). Differing location preferences among firms in three Asian countries are evident in the empirical results summarized in table 4.3.

Manufacturing firms with greater value added show a clear preference for market access (Fedderke and Wollnik, 2007; Rothenburg, 2011). One study of manufacturing firms in India finds that productivity was driven primarily by such access (measured by proximity to domestic population and ports, weighted by travel times) (Lall and Mengistae, 2005). India has a large domestic market, but for coastal cities, foreign market access (distance to port) was more important in determining productivity (Lall and Mengistae, 2005). In Africa FDI has shown a preference for cities and countries with good access to the continent’s domestic markets (Zhang, Wei and Liu, 2013).

Skill-intensive industries and knowledge-based sectors are more prone to clustering and to be based

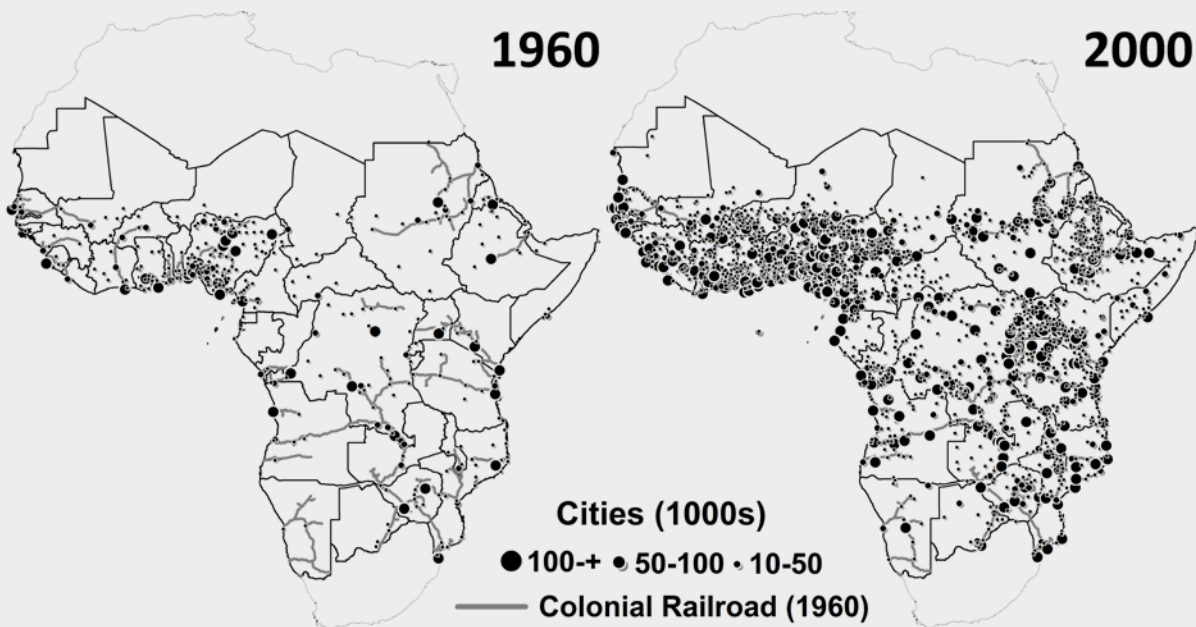
BOX 4.3 FORMATION OF AFRICAN CITIES IN A HISTORICAL CONTEXT

First-nature geographical characteristics—natural resources and transport links—were the main factors in Africa's urban agglomerations before and during the colonial period, including pre-colonial trade cities such as Mombasa, Kenya; Stone Town, Tanzania; and cities along the Nile Valley that sprang up because of these natural advantages. Sudan's pre-colonial urban system was at first based on the location of agriculturally productive areas and market towns, reinforced by emerging trade routes (Sarzin and Mehta, 2011). In Nigeria Kano became a thriving metropolis perhaps as early as the seventh century, serving as a hub of the textile industry and part of a trade route stretching across northern Nigeria, Chad, Sudan and all the way to the ports of North Africa (Bloch, R. et al., 2015).

Jedwab (2013) illustrates the more recent power of cocoa and other cash crops on the formation of urban systems in Côte d'Ivoire and Ghana, which followed the spatial pattern of crop production. Although the capital cities and the second-largest cities accounted for just less than half the urban population growth in those two countries in 1901–2000, a large proportion of the remaining growth was in areas suitable for cocoa: 66.3 per cent in Ghana and 80.0 per cent in Côte d'Ivoire.

Colonial-era investments, particularly in rail, reinforced the influence of natural resources and trade cities on Africa's urban systems. In Nigeria the construction of railways had a major impact on Nigeria's emerging urban system in the early 1900s, connecting agricultural and mineral producing regions in the north with Port Harcourt and Lagos. This led to the growing economic importance of these two coastal cities, the growth of cities along the railway line (such as Ibadan and Kano), the birth of new cities close to the railway (such as Kaduna and Enugu) and the decline of cities bypassed by the railway that had been traditionally important in pre-colonial times (such as Oyo, Ife-ife and Benin City) (Bloch, R. et al., 2015). Investments in railways during the colonial period also dramatically influenced the urban systems in Democratic Republic of Congo, Kenya and Sudan, with lasting impacts on their urban systems (box figure 4.2).

BOX FIGURE 4.2 African development and the impact of colonial railways



Source: Kerby, Moradi and Jedwab (2014).

The momentum of urban growth has in many places overcome the first-nature advantages of historically important cities over time, making them powerful economic centres and growth poles, though some cities show both first- and second-nature advantages, such as the economic inland hub of Gauteng province and the smaller centres of Cape Town, Durban and Port Elizabeth (Fedderke and Wollnik, 2007). In the extreme case the cumulative advantages of concentration in infrastructure and industrial activities, as well as administrative and government functions, have led to the creation of a “primary city” with economic influence exceeding its geographical boundaries and dominating the entire urban landscape, such as Dakar, Khartoum, Kinshasa and Monrovia.

TABLE 4.3 Results of selected econometric studies of industrial location in China, India and Indonesia

LOCATION AND STUDY	DATA	FACTOR PRICES	LABOUR AND REGULATION	ELECTRICITY QUALITY	INCENTIVES	MARKET ACCESS AND TRANSPORT INFRASTRUCTURE	FIRMS IN SUPPLIER INDUSTRY	FIRMS IN OWN INDUSTRY
China (Head and Riles, 1996)	Foreign investments in 54 cities	No effect	--	Positive	Very positive	Very positive for railways and ports	Very positive	
China (Amiti and Javorcik, 2005)	Foreign investments	--	--	--	--	Positive; interprovincial trade barriers deter investment	Very positive	Very positive
India (Lall and Mengistae, 2005)	Firm data on 40 cities in 8 manufacturing sectors	Negative for some industries	Negative	Positive	Positive	Positive	--	Positive
India (Lall and Chakravorty, 2005)	Firm investments	--	Negative	--	--	Positive	--	--
India (Mani, Pargal and Huq, 1997)	418 investment projects in 14 states	Positive for some industries	Negative	Positive	--	--	--	--
Indonesia (Deichmann et al., 2005)	Firm data from 294 districts in 15 industries	Negative for most industries	Negative for some industries			Positive for some industries	Positive for some industries	Positive for most industries
Indonesia (Henderson, Kuncoro and Nasution, 1996)	Firm data on non-food manufacturing kabupaten (regencies)	Negative	--	Positive	--	Positive (proximity to metro area)	--	Positive

Source: Deichmann et al. (2008).

in larger cities. This clustering is tied to the fact that knowledge spillovers occur over highly localized areas (Rosenthal and Strange, 2004). And because knowledge-based sectors are often engaged in innovation, search and experimentation, they tend to locate in larger and diverse cities so as to benefit from the cross-fertilization and dynamism that such cities offer (Puga, 2010). There is also an association between skill levels, city size and learning (Glaeser and Resseger, 2010). The productivity benefits of large cities have been demonstrated clearly when the labour force is more educated, particularly for cities with skill-intensive sectors such as professional services, arts and entertainment, information and finance (Abel, Dey and Gabe, 2012).

Skill-intensive industries and knowledge-based sectors are more prone to clustering and to be based in larger cities.

Some firms, particularly in established industries and labour-intensive sectors, seem to flourish best in specialized cities with higher levels of same-sector clustering and less diversity of firm types. In the Republic of Korea most heavy industries (such as metals, chemicals and transport equipment) established themselves in a few highly specialized cities (Vernon, Shalizi and Venables, 2001). Also in that country, apart from high-tech industries, such traditional industries as textiles and food processing benefit not from greater city size itself (Henderson, Lee and Lee, 2001) but from being in larger clusters (Henderson, 2010).

There is a tendency of manufacturing firms to deconcentrate once established. The overall concentration of manufacturing in the Republic of Korea went from 76 per cent clustered in the Seoul metro area in 1970 to only 30 per cent in 1993 (Henderson, 2014). Duranton and Puga (2001) show that in France 70 per cent of established firms changing locations go from a large, diverse city to a more specialized city. These findings on the importance of same-sector clustering are reinforced by case studies on industrial clusters (Overman and Venables, 2005) and clusters of exporting firms in Bangladesh, China, Dominican Republic, Honduras, Republic of Korea, Pakistan and Taiwan (China) (Hausmann and Rodrik, 2003).

PRIMARY AND SMALLER CITIES

In many African countries the concentration of industry predominantly in a single urban centre has contributed to the creation of an urban system that is dominated by a primary city (“primacy”). Systems of cities in developed economies tend to follow the “rank-size” rule, with cities decreasing in size by a common ratio (O’Sullivan, 2007). While nearly all countries globally have cities of various sizes, African countries tend to be characterized by unbalanced systems where economic activities and administrative functions are concentrated in the capital or largest city more than expected under the rank-size rule. Relative to the rest of the world, African countries lack cities in the population range of 1 million–5 million (Freire, Lall and Leipziger, 2014), and the average share of population in the average country’s largest city in Africa excluding North Africa is higher than the corresponding city in other regions.

One popular explanation for Africa’s excessive primacy is centralization of power and favouritism in resource allocation, which can negatively affect the quality of life, including child mortality and education, in towns and cities outside the capital (Henderson, Shalizi and Venables, 2001). In such systems small and medium-sized cities play little role in hosting rising urban populations and urban investment unless they reach a minimum competitive size threshold or unless large cities become unlivable (O’Sullivan, 2007).

The presence of primary cities itself is not a problem. In fact, according to Henderson (2003), by spatially concentrating industrialization, often in coastal cities, lower-income countries can conserve “scarce economic capital infrastructure and managerial resources.” De-concentration and relocation can proceed with development as more resources become available and as cities begin to require more

African countries tend to be characterized by unbalanced systems where economic activities and administrative functions are concentrated in the capital or largest city more than expected under the rank-size rule.

expensive interventions to support the quality of life. Countries can allow for this process by addressing market failures that impede efficiency or distort the size structure itself and lead to excessive primacy (Overman and Venables, 2005).

In an urban context size matters given its relation to agglomeration economies. Primary cities, because of their size and diversity, are more productive than small cities, and small cities are more productive than rural areas (Duranton G. , 2015). However, there are both benefits and costs to large cities, and both increase with size. The same forces that drive clustering of businesses and people in cities also push cities to be too large (Annez and Buckley, 2009), when diseconomies set in: land and transport costs rise, and crowding can diminish the gains of urbanization (Quigley, 2008). Similarly, competition for space bids up housing prices and commuting costs.¹² Theoretically, cities have an optimum size, though identifying it is difficult (Overman and Venables, 2005).

Still, a study on China suggests that from an economic viewpoint, it costs much more to be undersized than oversized (Au and Henderson, 2005). Economic theory suggests that cities are past their optimum size but continue to grow owing to their continued productive advantage over other locations (O'Sullivan, 2007). In Lagos some workers commute hours in each direction daily, but most successful Nigerian firms still choose to have an office in the city.

A diverse national system of cities can give firms options, allowing them to select a large city with good urbanization economies or a smaller city with lower economies of agglomeration but also lower costs and congestion. The optimal location will vary by type and maturity of firm, and so having a functioning economic system of cities can improve the chances that firms will maximize the matching of their location-based requirements.

Large cities are important to the urban system, spurring growth by engendering innovation and entrepreneurship. Their role in reallocating resources from inefficient to efficient firms and sectors through churning (of jobs and firms) underlies the function of cities as engines of growth (Duranton and Puga, 1999). In developing countries large cities also offer the opportunity for entrepreneurs to access the market while learning from other firms

en route to reaching larger domestic, regional or global markets (Hausmann and Rodrik, 2003).¹³

Despite the advantages of a balanced urban system containing cities with a range of sizes and functions, policies to rebalance primary city-heavy systems are often ill advised and should be viewed with caution. Many African countries have historically pursued strategies to limit migration to the largest cities, which have been both ineffective and anti-growth (Turok, 2014; Harvey, 2009). Furthermore, Henderson (2014) argues that we do not yet know enough about the economic dynamics of urban systems to attempt to influence them, and such attempts risk a major policy error.

A study of programmes to foster agglomeration economies—many in Africa and targeted industrial sectors—suggests that there is a minimum threshold for locations to become competitive and begin attracting firms and investment (Gelb, Tata, Ramachandran and Rossignol, 2015). Very large investments may therefore be needed for some smaller cities to reach this threshold (Altbeker, McKeown and Bernstein, 2012).

Policies to promote secondary cities can have positive impacts if pursued alongside investments in existing large cities.

Still, some policies can foster development in smaller cities without harming national economic performance. Policies to invest in transport links between cities and improve urban-rural links have been shown to improve balanced productivity (AfDB, OECD and UNDP, 2016; UNECA, 2013). Additionally, industries with intensive use of immobile primary factors that are not heavily dependent on other firms for intermediate goods and services may prefer to locate in smaller cities—if infrastructure is improved (Henderson, Shalzi and Venables, 2001).

Policies to promote secondary cities can have positive impacts if pursued alongside investments in existing large cities. Big cities generally stay big and critical to the economy. Studies from France, Japan and the United States show that there is no downward relative size mobility at the top end

of the national urban system, as the top cities remain large after 100 years. Built-up physical infrastructure and housing, as well as accumulated knowledge, institutions and traditions, tend to give them a persistent advantage (Henderson, Shalzi and Venables, 2001). This is another reason why rebalancing policies should not restrict or neglect the economically central primary city.

Special economic zones (SEZs) are sometimes viewed as a custom-designed location for industrial productivity and can also play a role in an urban system, but they also have drawbacks, and Africa's experience with SEZs has been mixed (see box 4.4 below and the subsection "Connecting SEZs to the benefits of agglomeration" in section 5.4). The advantages of agglomeration economies are impossible to mimic in an isolated setting, and too often SEZs have been placed far from productive cities. Policymakers considering setting up an SEZ must therefore closely assess the locational needs of targeted sectors, including the ability to access a pool of skilled labour, suppliers and inputs, markets and shared knowledge (horizontal between same-sector firms and vertical between levels of the value chain). The process of locating SEZs should also consider the potential positive spillovers to existing firms and labour. Research suggests that links between SEZs and firms outside SEZs are often restricted in Africa and thus limit their impact on the wider economy (Newman, et al., 2016).

REGIONAL SYSTEM LINKS

Outside national systems of cities, specialization and trade-based complementary functions are sometimes seen among Africa's subregions,

African regional markets offer significant opportunity for industrial upgrading, a consideration that should shape spatial targeting and investment in urban systems and corridors

which are important for many reasons, including opportunities for firms to learn from regional value chains before competing globally (UNECA, 2015). Regional integration is linked to competitiveness and innovation through knowledge sharing and network connections.¹⁴ Yet despite the economic importance of such connectedness, Africa is lagging behind in this area (Wall and van der Knapp, 2011).

African regional markets offer significant opportunity for industrial upgrading, a consideration that should shape spatial targeting and investment in urban systems and corridors. In 2014 manufactured goods accounted for 41.9 per cent of intra-African exports, compared with only 14.8 per cent of Africa's exports outside the continent (UNECA and ODI, forthcoming)¹. Regional economic communities are one forum where regionally significant policies and infrastructure can be planned, in line with national systems. Countries scoring high on the African Regional Integration Index in the category of infrastructure are listed in figure 4.9. The Continental Free Trade Area (CFTA) is a more ambitious undertaking (see box 1.3 in chapter 1).

1 The reference is a forthcoming ECA paper with ODI called "Smart Industrialization Through Trade in the Context of Africa's Transformation." The figures are computed by ECA using data from UNCTADSTAT.

FIGURE 4.9 Top two ranked countries per regional economic community on regional infrastructure



Source: Africa Regional Integration Index (2016).

4.3 CITIES AS ENABLERS OF INDUSTRIALIZATION

AGGLOMERATION ECONOMIES AND THE URBAN ADVANTAGE

Internationally and historically, cities have formed and grown primarily because of the economic benefits of clustering in space. With the industrial revolution the urbanization process and its speed went through a dramatic shift—ultimately forming today’s megacities, transforming the world’s population to a predominately urban one and now rapidly transforming Africa. The economic benefits of cities can be seen in the enduring correlation between economic growth and urbanization, and in the fact that megacities, such as metropolitan Cairo and Lagos, continue to grow and attract firms, even with severe challenges of congestion, pollution, crowding and high prices.

Agglomeration economies—the economic benefits derived from the density of economic actors in urban space—have well-documented productive benefits for firms (see chapter 3) and are fundamental to the urbanization–industrialization nexus. But

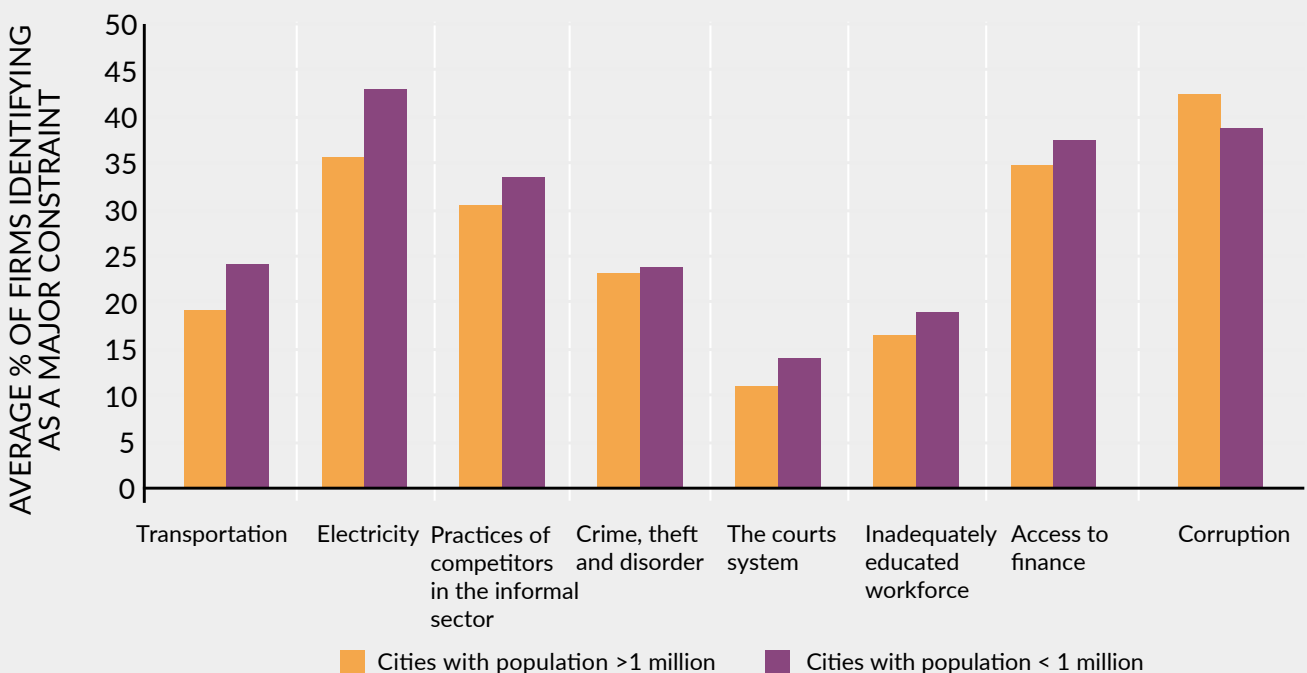
many obstacles impede countries from leveraging the full potential of agglomeration economies, even if Africa’s largest cities (those over 1 million) generally perform better on enterprise surveys than smaller cities (figure 4.10). They also demonstrate higher real annual sales growth and higher annual employment growth.¹⁵ Easing these constraints could release an even more powerful driver of economic development.

EVIDENCE OF AGGLOMERATION ECONOMIES FOR AFRICAN INDUSTRY

Studies to measure agglomeration economies of African cities are rare, but five quantitative studies on industrial clusters in Africa suggest that agglomeration economies are at work.

A case study of 11 countries—nine from Africa and two from Asia, including a four-country econometric

FIGURE 4.10 Major constraints listed by firms in cities above and below 1 million population, 2006–2015



Source: World Bank Enterprise Surveys.

Note: 188 subnational locations (25 over, 163 under 1 million) in 45 African countries.

study¹⁶—makes the following conclusions that confirm the positive impacts of industrial clustering (Page, Newman, Rand, Shimeles and Söderbom, 2016):

- Manufacturing firms are highly concentrated, indicating the strong role of clustering. Only firms whose main driver is the local market are dispersed.
- Firms in low-income countries appear to benefit more from localization than urbanization economies. With increasing income the importance of the latter appears to increase. Service sector firms more than manufacturing firms appear to benefit from urbanization economies.
- Industrial concentration attracts specialized services and expertise, including services needed by small enterprises aiming to break into new markets. Clustering makes intra-industry cooperation between firms possible, enabling them to overcome difficulties such as failures of information and of contract enforcement.
- In three of the four econometrically studied countries a positive relation between firm productivity and localization economies is seen. In Ethiopia the effect on productivity appears high when clustering firms are producing similar products. The effect of clustering in Cambodia is stronger for informal enterprises and manufacturing firms than for service firms.
- Clustering firms in low-income economies may face competitive pressure and a trade-off between increased productivity and decreased output prices.
- The driving forces of agglomeration economies appear linked to knowledge sharing and capability building. For firms with higher levels of technology, access to a pool of skilled labour also seems important.

Another study looked into six industrial clusters representing fish processing, metal processing, auto repair and cloth industries in Ghana, Kenya and South Africa to establish whether geographical proximity and interaction enhanced their competitive advantage and helped them expand (McCormik, 1999). There are three key findings. First, clustering helps firms to overcome barriers to growth; the nature and magnitude of the specific benefits and the relative importance of particular sources or channels of external economies vary by sector and national and local context. Second, collective action is required for participating firms to reap the benefits of agglomeration economies.

Five quantitative studies on industrial clusters in Africa suggest that agglomeration economies are at work.

And third, the small size of markets, oversupply of labour and weak institutions constrain the benefits of agglomeration.

A World Bank study of micro and small manufacturing enterprises in five African countries (Cameroon, Ghana, Kenya, Mauritius and Rwanda) found that cluster-based “enterprises are performing better—both in sales performance [per worker] and ability to reach distant markets—than enterprises of the same size, in the same industries, and in the same cities, but outside the clusters” (Yoshino, 2011, p. 5). Clustered enterprises were also on average more capital-intensive than their outside comparators, suggesting a correlation between sales performance and capital intensity. A cluster premium was also observed for value added per worker. Though clusters formed through a natural market-based process, participants in the clusters gradually built trust and organized joint actions that helped them to expand their market and increase the share of their input purchases within the cluster. Clusters to an extent enabled them to cope with risks and the high transaction costs of doing business and to overcome the limitations of their size.

Using 10-year (1996–2006) firm-level census data in 83 towns in Ethiopia, a study by Siba et al. (2012) looked at the relationship between agglomeration economies, physical productivity and output prices at the enterprise level. It found that agglomeration economies were associated with lower output prices for firms producing the same product, and a positive relationship between agglomeration economies and firm level physical productivity, showing the existence of increasing competitive pressure and positive externalities, but also a trade-off between physical productivity and price competition facing these firms.

The last of the five studies found that the benefits of proximity and interaction cascade through a network of cities in a regional corridor where development

nodes facilitate functional and economic linkages. Researchers who looked at the Gauteng regional development corridor in South Africa identified a hierarchy of cities, with Johannesburg and Pretoria the main drivers of urban agglomerations, and demonstrated that the relative size of economic activities of the cities and the distance between them to be the key factors determining the size and vibrancy of agglomeration economies (Brand, Geyer and Geyer, 2015).

In summary, these five studies found that urban areas hold benefits for firms in Africa. Generally, same-sector manufacturing firms were more productive when located in the same urban area, though they also faced price competition. Collective action and cooperation to address common barriers were one way firms could capitalize on co-localization. And while agglomeration economies seemed to be common across the studies, the benefits of clustering were not uniformly felt, differing by size of firm, sector and economic role of the city.

INDUSTRY-SPECIFIC ZONING AND SPECIAL ECONOMIC ZONES

Much of industry can be integrated into the urban fabric of a well-functioning city and benefit from proximity and connectedness at the heart of the urban productive advantage, particularly small industries and those devoted to serving local markets. Restrictive zoning, often a relic of colonial codes, should be avoided to allow firms to select the best location for their needs. But some industries—particularly those that are land-intensive, have “bad neighbour” characteristics (such as truck traffic or noise) or are focused on meeting rigorous

SEZs and industrial zones are geographically based tools and will bring the most benefits if they are well connected to the urban economy, including the informal sector firms that can provide low cost inputs and use linkages as a path to growth and formalization.

Links between the informal and formal sectors are spatially dependent and beneficial to both sectors. All basic urban requirements of formal industry also apply to informal industry.

international standards—may need specially zoned and protected areas.

Industry-specific zoning can manage four locational challenges. First, it can separate industrial nuisances from other land uses that would be in conflict with such industrial activity. Second, it can preserve large plots for those industries which need them. Third, it can promote proximity of compatible industrial activities, which can generate localization economies arising from clustering. Fourth, it can protect industry from land price competition, because land rents rise with development and other uses may be able to outbid industry. Cities such as Seattle and London have created “industrial sanctuaries” to protect industry from such land market pressures (Metro Vancouver, 2012; Harris, 2015).

This type of planning for industrial space is critical because of the very specific location requirements of some industries, often related to accessing trunk roads or ports (table 4.5). Governments should consider the operations of the supply chain and the transport links between them when identifying potential industrial sites. Such involvement in industrial land use planning is particularly important in African cities, where land markets may be complex and large parcels difficult to find, or where it is hard to obtain user rights. Agencies that keep an inventory of available industrial sites can help industrial enterprises find a fitting location.

Those involved in industrial land use planning should also consider the needs of informal enterprises, given their importance for job absorption in Africa and the challenges they often face in finding adequate premises for work. One option is to try to meet industrial firms’ location-specific needs through SEZs (box 4.4).

Links between the informal and formal sectors are spatially dependent and beneficial to both sectors.

TABLE 4.4 Industrial sector characteristics and location issues

SECTOR	ACTIVITY	LOCATION REQUIREMENTS	HEAVY TRUCK TRAFFIC VOLUMES	OTHER “BAD NEIGHBOUR” FACTORS	COMPATIBILITY WITH OTHER USES
Textiles	Manufacture of textiles, wearing apparel, luggage, handbags and footwear	Very high cost sensitivity and labour dependence on access to local labour pools	Low and irregular truck/ van movements	Very limited	Very high
Printing	Publishing, printing and reproduction of recorded media, including books and newspapers	Transport accessibility for printing facilities	Moderate	Fairly limited owing to process innovation	Very high due to limited overspill
Metals, machinery and equipment	Variety of activities, light manufacturing	Dependence on raw materials and components, proximity to trunk roads	Medium to high truck movements	Moderate environmental overspill, often localized: smell, noise, pollution	Limited; “bad neighbour”
Wood and paper products	Variety of activities, light manufacturing	Dependence on raw materials and components, proximity to trunk roads	Medium to high truck movements	Moderate environmental overspill, often localized: smell, noise, pollution, scale	Limited; “bad neighbour”
Construction	Construction companies, yards for equipment and materials	Proximity to markets important	High numbers of truck movements	High: noise, spread of dust and mud, visual amenity issues	Limited, often a “bad neighbour”
Utilities	Power and water companies, largely distribution	Very high sunk costs; relocation hard	Low	Low but visual amenity issues	Moderate
Motor vehicle maintenance and repair	Repair workshops	Dependence on low rent for repair workshops, car access	Moderate to high numbers of car movements	Some localised overspills, visual amenity issues	Moderate
Wholesale	Large variety in operations, from high-grade to low-grade	Importance of market proximity for most operations	High number of car and van movements	Limited overspills	High
Distribution and warehousing	Storage and distribution, some large, modern operations, some smaller, pick-and-pack labour-intensive operations	Access to major trunk roads crucial	Very high	High; transport, noise, visual amenity	Low or moderate, depending on scale

Source: Adapted from Metro Vancouver (2012).

BOX 4.4 SPECIAL ECONOMIC ZONES

The purpose of SEZs is to create a space where businesses can access a better business environment, overcoming infrastructure deficits, administrative hurdles and barriers posed by unfavourable policies, particularly when these advantages cannot be feasibly applied to a broader geographical area. An additional advantage of SEZs is that clustering industrial firms can generate economies of agglomeration. SEZs have become very prevalent over the past decades, going from only 176 to more than 3,000 globally between 1986 and 2003 (Aggarwal, 2006).

Africa's SEZs are underperforming, however, against those in Asia and Latin America. While they have made major improvements in infrastructure, supply chain access and human capital compared with the surrounding environment, these improvements are often not at the level needed to out-compete other countries for investment (Farole, 2011). As business leaders in South Africa have concluded, "Global

competitiveness is what counts—it's not enough just to be better than the host economy" (Altbeker, McKeown and Bernstein, 2012, p. 3).

SEZs perform best when they are connected to well-functioning cities. Farole's review of SEZs in Africa has many findings, in particular that "Location and market size matter. Zones with proximate access to large consumer markets, suppliers and labor tend to be more successful" (2011, p. 4). This highlights the importance of components of agglomeration economies and spatial considerations for industrial success. SEZs can have powerful impacts for an economy through sharing innovation or through value chain linkages (Altbeker, McKeown, and Bernstein, 2012).

Farole notes that integrating SEZs with local ports, value chains and labour markets can help them be catalysts rather than enclaves. SEZs should therefore be linked with cluster development, skill development and labour sharing with the wider economy. He also

recommends that SEZs not be used to bring up a lagging region, but instead placed in an area where infrastructure and labour markets are already working and can contribute to their success. SEZs must be connected with good infrastructure to facilitate trade, including roads and ports.

SEZs and industrial zones are geographically based tools and will bring the most benefits if they are well connected to the urban economy, including the informal sector firms that can provide low cost inputs and use linkages as a path to growth and formalization. Links to markets and skilled labour are also critical. SEZs present opportunities for co-investment by firms and the public sector in infrastructure and technical and vocational education and training, which can broaden participation in economic growth and provide avenues for inclusion of critical workforce groups such as women and youth.

All the basic urban requirements of formal industry also apply to informal industry: access to labour (with emphasis on proximity, public transit and pedestrian infrastructure), access to infrastructure and public services, and access to inputs and markets for goods. The prevalence of the informal economy in Africa is a major hurdle for the continent, and there is an emerging consensus that policy can support a "path to formalization" (ILO, 2015) (box 4.5).

TECHNOLOGY: AFRICAN URBAN DEVELOPMENT IN THE 21ST CENTURY

Is the drive to cluster in space still relevant in the digital age? African cities are developing in a new-technology context where information, money and even goods can travel without physical proximity owing to ICT, mobile money and 3D printing. The emergence of the Internet caused some to forecast

No leapfrog technology can supplant the essential economic and social role of a functional city, but technology has the potential to contribute to urban productivity.

the death of cities in a new world where proximity is obsolete. However, global trends have contradicted this prediction, with populations shifting towards cities even in developed countries, and especially in Africa. The spatial nature of agglomeration economies is at play: in-person interactions are still important for networks, knowledge sharing and relationships; goods still travel by truck and rail; food cannot yet be 3D printed; and workers still commute to offices, stores and factories daily. In short no leapfrog technology can supplant the

BOX 4.5 A PATH TO FORMALIZATION

Such a path in African cities should involve the creation of enabling conditions and the removal of barriers facing formal enterprises, so that transitioning becomes achievable. In the light manufacturing sector small firms in Africa are constrained by access to land and finance as well as entrepreneurial skills (Dinh et al., 2012). Helping to remove these barriers could open up opportunities for aspiring informal sector operators. The informal economy can also benefit from clustering (Newman et al., 2016).

Agglomeration economies should be considered in the context of locational policies related to the informal sector and a path to formalization. Agglomeration economies can benefit the informal sector particularly through proximity to suppliers and purchasers. Although the evidence is scant, studies suggest that informal operators benefit from clustering, and that they generally have a positive impact on their formal sector counterparts (Annez and Buckley, 2009; Page et al., 2016).

One study of informal manufacturing in India finds that the population of the urban area and industrial diversity positively affect the establishment of new firms. Prevalence of same-sector firms shows a negative impact, however, perhaps due to competition, but input linkages have a positive impact (firms tend to locate where purchasers are), and informal services firms are also attracted to intermediate-goods suppliers (Mukim, 2011).

Clusters such as Otigba computer village in Lagos emerge and grow organically, and show immense resilience, but their expansion or transformation is often limited by a host of challenges beyond their collective effort. They would benefit from policy support.

essential economic and social role of a functional city, but technology has the potential to contribute to urban productivity.

Urban development has many applications for 21st century technology, and with the right policy framework it can be put to work to tackle urban challenges. Big data can inform transport planning and how investments are prioritized. Mapping, GPS tracking and widely accessible mobile data have the potential to improve spatial efficiency and the way urban residents interact with public transit, transport congestion, the real estate market and monetary transactions. In Africa ICT is already enhancing urban-rural linkages, supporting the co-development of cities and their hinterlands through better market information, better access to services and easier cash transfers.

The digital era also brings new challenges for emerging cities and policymakers. The pattern of growth of African cities will no doubt be shaped by new technology. Incentives for dense and compact development fall as transport, trade and communication over longer distances become easier. But as density decreases, negative externalities (costs borne by society) increase, including congestion, pollution, segregation, infrastructure costs, loss of walkable commercial districts and the costs associated with public transit viability.

Technology has historically contributed to lower densities and the negative externalities of sprawl. Many of Europe's cities developed before the automobile, whereas cities in the Americas and Asia have seen the majority of their population growth and urban development in the era of motorized

African cities have considerable opportunities for smart growth particularly as the bulk of infrastructure for the next few decades of population growth has yet to be built.

transport. European cities therefore tend to be more green, connected and developed on a human scale, while cities at a similar level of income, in the United States for example, tend to be more sprawling and disconnected, with larger carbon footprints. In the United States carbon dioxide emissions per capita for 2014 were 16.5 tons (and 15.9 tons in Canada), double or even triple the 8.7 tons in Germany, 6.5 tons in the United Kingdom, 5.5 tons in Italy and 5 tons in France (Oliver et al., 2015). Automobiles increased the land and carbon footprints of cities; the Internet is likely to do so even further.

FIGURE 4.11 An isolated housing development south of Nairobi along Mombasa Highway



Source: Satellite imagery by Google.

Urban areas are already sprawling on the periphery of many cities with isolated gated community developments (figure 4.10), prompting the questions: Who has access to the new African city? Only those with cars and smart phones? Will technology in fact help to overcome the formal/informal and rich/poor dualisms facing African cities—or to deepen them?

It would seem that African cities have considerable opportunities for smart growth,¹⁷ particularly as the bulk of infrastructure for the next few decades of population growth has yet to be built (PricewaterhouseCoopers, 2016). African cities are well positioned to avoid the mistakes and negative externalities dampening growth and social development in cities in the Americas and Asia. The new African city can be smarter and more efficient, avoiding the costly retrofitting required in many of the world's more recently established cities.

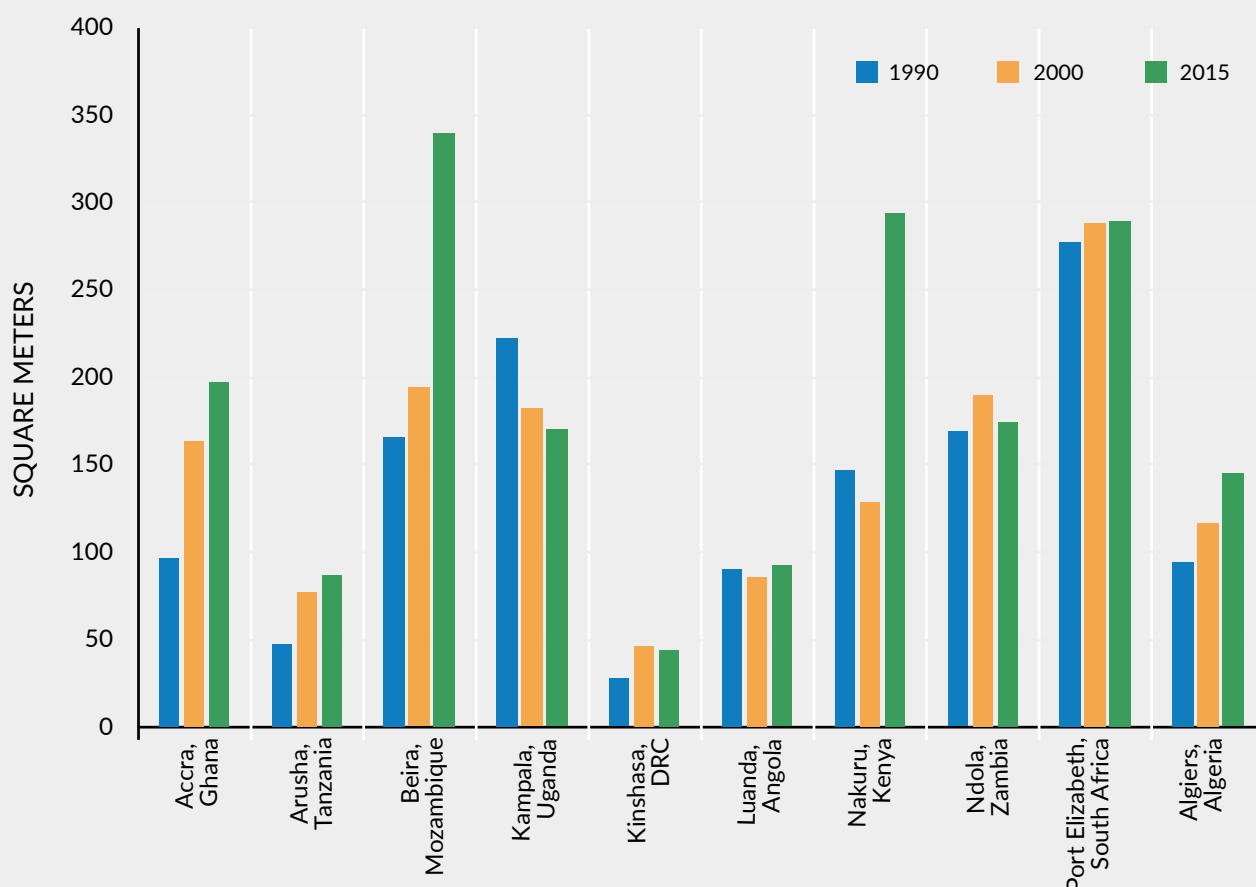
African cities are well positioned to avoid the mistakes and negative externalities dampening growth and social development in cities in the Americas and Asia.

Many African cities also have leeway to grow in a socially, environmentally and economically sustainable pattern, avoiding the mistakes of other regions. African countries tend to have very low carbon footprints, with many countries emitting less than 1 ton per capita.¹⁸ Under the right policies, carbon emissions will not have the same relationship with economic growth as seen in the Americas and Asia.

Similarly, although recent studies show that built-up land around cities is expanding faster than population growth, per capita urban land use in Africa is lower than the world average and increasing more slowly than the global pace, with 14 per cent growth versus 26 per cent between 1990 and 2015 (figure 4.12 shows selected African cities). This presents an opportunity for African cities to pursue a different development model from the more recent western development trajectory, characterized as it is by car-oriented development.

Guiding Africa's urban development in this direction will require policymakers to devote more attention to urban land use and transport. Even in the new technological age they must not neglect the fundamentals, as technology will shape cities,

FIGURE 4.12 Per capita land consumption, selected cities in Africa



Source: UN-Habitat and New York University (2016).

TABLE 4.5 Cost of living, Africa's 15 most expensive cities

RANK IN AFRICA	CITY	GLOBAL RANK	COUNTRY GDP PER CAPITA (\$)	MORE EXPENSIVE THAN...A
1	Luanda, Angola	2	4,102	Zurich, Switzerland (\$80,215)
2	Kinshasa, DRC	6	456	Shanghai, China (\$7,925)
3	N'Djamena, Chad	9	776	New York City, United States (\$55,837)
4	Lagos, Nigeria	13	2,640	Seoul, Republic of Korea (\$27,222)
5	Victoria, Seychelles	16	15,476	London, United Kingdom (\$43,734)
6	Abuja, Nigeria	20	2,640	Dubai, UAE (\$40,438)
7	Brazzaville, Congo, Rep.	23	1,851	Copenhagen, Denmark (\$52,002)
8	Libreville, Gabon	28	8,312	Chicago, United States (\$55,837)
9	Conakry, Guinea	36	531	Washington, DC, United States (\$55,837)
10	Djibouti, Djibouti	40	1,813	Paris, France (\$36,248)
11	Accra, Ghana	47	1,381	Milan, Italy (\$29,847)
12	Yaoundé, Cameroon	50	1,251	Vienna, Austria (\$43,439)
13	Abidjan, Côte d'Ivoire	56	1,399	Amsterdam, Netherlands (\$44,433)
14	Douala, Cameroon	70	1,251	Doha, Qatar (\$74,667)
15	Cairo, Egypt	91	3,615	San Jose, Costa Rica (\$10,630)

Source: Mercer, 2016; World Development Indicators. GDP per capita is for 2015 data.

^a Per capita GDP is in parentheses.

but not replace them, as the need for proximity and interaction will still be forces driving spatial development. Functional land markets, well-

functioning transport systems and good basic urban services will lay the groundwork for the 21st century African city.

4.4 BARRIERS

As economies of agglomeration increase as cities grow, diseconomies of agglomeration also rise—to a point when diseconomies begin to climb faster than economies, to the detriment of urban competitiveness. In Africa such diseconomies may be setting in prematurely given the speed of urbanization, poor planning, weak institutions to guide urban growth and low incomes of many cities and urban residents. Such premature diseconomies of agglomeration take a toll on industry and industrial value chains.

As economies of agglomeration increase as cities grow, diseconomies of agglomeration also rise—to a point where diseconomies begin to climb faster than economies, to the detriment of urban competitiveness.

A raft of urban inefficiencies means that many African cities are disproportionately expensive relative to cities in countries at similar or even far higher levels of development. A cross-sectional comparative analysis of cost of living price indices of 62 countries adjusted for urban prices in a World Bank study shows that African cities are up to 31 per cent more expensive than those in comparable countries (Nakamura et al., 2016). According to consulting firm Mercer's cost of living rankings, Luanda, Kinshasa and N'Djamena are among the 10 most expensive cities in the world (table 4.5).¹⁹

URBAN FORM

Urban form—the spatial layout of cities—is important to economic functioning. The link between

urbanization and development is reliant on whether urban form is compact and connected, or sprawling and disconnected (AfDB, OECD and UNDP, 2016; Turok, 2014). Many studies have empirically linked urban density to productivity (Abel, Dey and Gabe, 2012); low densities increase travel distances between economic actors. The trend of urbanization has been paired with that of de-densification, and infrastructure and transport costs rise as densities fall (UN-Habitat, 2014a).

Cities in developing countries tend to be denser than those in developed countries, but densities globally declined by an average of 2 per cent a year between 1990 and 2000 (Angel et al., 2010). Urban expansion is occurring faster in developing countries, and in Africa population growth accounts for 43 per cent of the expansion of developed land (Seto et al., 2011). Globally, factors accounting for urban de-densification include increased car ownership, an infrastructure investment bias towards roads, increases in incomes and private home ownership, and policies subsidizing peri-urban residential infrastructure.

Diverse, integrated urban form is also crucial. Mixed-use developments multiply the benefits of density, bringing people together for easier interaction (UN-Habitat, 2014a). The most vibrant cities are mixed and diverse, as argued persuasively by Jacobs (1961); over-planning and over-zoning can impose a false separation of land uses on a city's economic geography. Cities are also becoming more socially segregated, decreasing connectivity and undermining the interactions at the heart of agglomeration economies. Some new formal development takes the form of gated communities,

Urban form- the spatial layout of cities- is important for economic functioning.

lengthening travel times and creating barriers in the urban fabric. The often-cited rationale for such barriers is safety, but such segregation also contributes to weak social cohesion (Landman and Schönteich, 2002).

Just as problematic are large areas devoted to entrenched informal developments, and some analysts have even suggested that slums are the greatest threat to urban well-being (UN-Habitat, 2010b) because they cut off a generation from education and health (Henderson, 2010). They are generally seen as poverty traps, but can also be ladders to economic mobility under the right institutional and spatial conditions (Turok, 2015), and should therefore be intentionally connected (physically and socially) to the formal urban economy. Overcoming the barriers to employment presented by segregation and poor mobility is particularly important for Africa's urban youth and the potential for a demographic dividend (UN-Habitat, 2014b).

People's mobility also underlies urban productivity, and the costs of poor mobility and long travel times take a heavy toll, particularly on the urban poor in large African cities, reducing their chances of finding work. Residents of Nairobi, Kenya; Pretoria, South Africa; and Dar es Salaam, Tanzania spend as much as 30 per cent of their daily wages on commuting by collective taxi, motorbike, bus, or a combination. Surveys from Nairobi, Kenya; Lagos, Nigeria; and South Africa suggest that lower-income households pay 15–54 per cent of their income on travel (UN-Habitat, 2013). In South African cities the average commute by bus is 74 minutes each way (Statistics South Africa, 2014).

The idea of a “spatial mismatch” was described by Kain (1968) who observed that the residential

areas of lower-income groups were cut off from jobs, contributing to high unemployment (Kain, 1968). This idea has been tested in South Africa, where one study found that distance from the city centre plays a significant role in high rates of black unemployment in several of South Africa's metropolitan areas (Naudé, 2008). Investment in better multi-modal options for urban mobility is one way to decouple Africa's dual processes of urbanization and industrialization from the degradation of the environment so as to improve sustainability and avoid heavy future remediation costs (box 4.6).

Unplanned urban expansion will eventually pose major problems for connectivity and mobility, weakening agglomeration economies.

To see the benefits of labour sharing and labour pooling, firms must be accessible to their workforce. In Hong Kong SAR, China, industrial parks must have a transit connection (Metro Vancouver, 2012), in contrast to Johannesburg, South Africa, where some industries cannot add a third shift for lack of night buses. At a roundtable meeting in November 2011 on South Africa's industrial parks, arranged by South Africa's Centre for Development and Enterprise, speakers repeatedly cited access to labour as an issue (Altbeker, McKeown and Bernstein, 2012). Transport connections can also support backward linkages to informal enterprises (UNECA, 2011).

In fast-urbanizing countries an additional threat to mobility is a failure to plan for (and protect) a connected network of streets ahead of unplanned

BOX 4.6 AIMING TO URBANIZE MORE CLEANLY

Africa needs to de-link industrialization from the degradation of air quality (UNECA, 2016) and avoid a situation like China's where the health costs and working days lost due to air pollution are estimated at 3.5 per cent of GDP (World Bank, 2007). Transport accounts for a large share of emissions globally, but in African cities on average, walking accounts for 30–35 per cent of all trips—in some cities, such as Douala, Cameroon and Dakar, Senegal, over 60 per cent. Walking is especially common among women, but walking, bicycling and informal transit are often fraught with danger from vehicle traffic, pollution and discomfort (UN-Habitat, 2013). Failure to improve infrastructure for non-motorized modes and the comfort and safety of informal transit will propel a massive shift to single-occupancy vehicles as incomes rise, with corresponding economic, social and environmental costs.

FIGURE 4.13 The street grid in Ouagadougou, Burkina Faso

Source: Satellite imagery by Google.

development, which often manifests itself in the form of low-income informal settlements, higher-income private gated communities or some combination. Whether formal or informal, unplanned urban expansion will eventually pose major problems for connectivity and mobility, weakening agglomeration economies. Although UN-Habitat (2014c) recommends that at least 30–40 per cent of urban land be dedicated to streets, the reality is that in most African cities the proportion is much lower, particularly in rapidly urbanizing peripheries, and is a mere 6 per cent in Bangui, Central African Republic; 11.1 per cent in Accra, Ghana; and 12.3 per cent in Ouagadougou, Burkina Faso (UN-Habitat, 2013), for which city figure 4.12 reveals the stark contrast between planned and well-connected urban fabric and unplanned areas with poor connectivity.

Planning streets and industrial land in advance of growth saves money—hugely. The cost of obtaining or protecting a supply of land in urban expansion zones may well be steep, but imposing streets or plots for industrial use on existing development is extremely expensive, and often entails either extensive legal processes or evictions without due legal process. It is highly preferable to avoid these issues completely, with forward planning.

URBAN INFRASTRUCTURE

Infrastructure deficits are widely recognized as one of the greatest barriers to industrial success in Africa. Even controlling for income, African countries show higher deficits than their peers in other parts of the developing world (Yepes, Pierce and Foster, 2009). This poses significant indirect costs to firms, underlined by an observation about firms in Kenya: “By some estimates, Kenya’s factory floor productivity is close to China’s; but once we account for indirect costs, Kenyan firms lose 40 per cent of their productivity advantage” (Iarossi, 2009, p. 87).²⁰ Informal firms often most need access to infrastructure and public services to upgrade productivity, but face the highest barriers to access.

Electricity is often the most significant of the unmet needs for industrial firm productivity. Africa’s power generating capacity and household access to electricity stands at around half the levels observed

Infrastructure deficits are widely recognized as one of the greatest barriers to industrial success in Africa.

LAND AND PROPERTY MARKETS

in South Asia (Yepes, Pierce and Foster, 2009). Firms in Africa lose up to 13 per cent of their working hours due to outages. Electricity costs African firms 10 per cent of sales costs, with 6 per cent estimated to be due to power outages (Iarossi, 2009). Firms can buy generators, but this adds a financial burden, especially on micro and small enterprises. Findings from other studies, for example on India, confirm the importance of the quality and, to a lesser extent, the price of electricity to the performance

The functioning of urban land markets is one of the most critical components of a high-performing urban economy, as it underlies the arrangement of urban space and is fundamental in both private finance and public revenues.

of manufacturing industry (Lall and Mengistae, 2005). Electricity cost is one of the major factors in which Africa is disadvantaged relative to other regions, with the average effective electricity tariff in Africa at \$0.14 per kilowatt-hour in 2010, against \$0.04 in South Asia and \$0.07 in East Asia, harming the competitiveness of African firms (African Development Bank, 2013).

Another key infrastructure deficit is in goods transport. African firms lose what amounts to 13 per cent of their sales—11 per cent more than in East Asia and 7–8 per cent more than in other regions—on inefficiencies in infrastructure, credit markets and the regulatory environment, but this varies across firms and countries. Firms in East Asia, and in Latin America and South Asia save 70 per cent and 50 per cent respectively in inland transport costs of exports and imports compared with Africa (Iarossi, 2009). High transport costs, delays and uncertainties force African firms to keep a high volume of stocks, incurring associated additional cost. Infrastructure for freight transport is also important within cities: traffic congestion and delays cause additional costs in shipping by truck, and expanding road capacity is only a temporary fix. Innovative measures such as truck-only lanes have not been tested in Africa.

The functioning of urban land markets is one of the most critical components of a high-performing urban economy, as it underlies the arrangement of urban space and is fundamental in both private finance and public revenues. A variety of land rights systems operate in African cities, ranging from customary and collective ownership, to government ownership with leasehold rights, to full freehold titles. Under any system, the land market should allow for residential and firm mobility, and not place undue burdens on developing land while protecting lower-income households, informal enterprises and women.

If land and real estate markets are functioning smoothly, economic actors have more chance of sorting themselves into an economically efficient arrangement in urban space. Different firms have their own locational preferences based on the intensity of various factor inputs and the nature of production. In selecting the best location they weigh their preferences for access to land, labour (skilled or unskilled), inputs from other firms, market access (including the transport links to other cities or countries) and access to knowledge and amenities. A flexible land market allows households and firms to respond as economic conditions change, fostering innovation and competitiveness.

Well-functioning real estate markets do not necessarily imply a fully “laissez faire” system, and government involvement is important. Even the idea that a free urban real estate market can exist outside of government intervention is erroneous because governments help to determine where to locate infrastructure, public services and open spaces. While the institutional framework supporting the real estate market should support arm’s-length transactions between strangers, government intervention is also necessary to achieve the following:

The lack of good land records in Africa has far reaching impacts, including impeding the use of land based public revenues such as annual property taxes, leasehold payments and capital gains taxes.

- Preventing speculation, which can distort prices and undermine spatial efficiency.
- Providing adequate buildable and serviced land for housing and employment in locations that promote good connectivity and accommodate urban growth.
- Avoiding the development of high-risk or environmentally sensitive areas.
- Assuring the necessary land and institutional framework to support adequate housing for low-income households and to protect them from displacement by market forces.

- Carrying out zoning and protecting well-located land for industries that are incompatible with other uses or need large plots.

The lack of good land records in Africa has far-reaching impacts, including impeding the use of land-based public revenue such as annual property taxes, leasehold payments and capital gains taxes. Land value capture is, some argue, the most economically efficient (least distortionary) and important revenue instrument for decentralized governments (Walters and Gauntner, 2016). It is widely underused in Africa, however, in part because of the poor quality of land records and governance challenges (Monkam and Moore, 2015).

4.5 POLICY LEVERS

Expanding the urban advantages and leveraging them for industrial development is complex and challenging. The New Urban Agenda affirms the role of agglomeration economies and underscores the importance of spatial planning and urban form in achieving them (United Nations General Assembly, 2016). Harnessing agglomerations and clusters, along with stepping up investment in infrastructure and skills, is an important piece of the multi-front strategies being advocated for resurrecting Africa's industrial development (Newman et al., 2016).

Under the umbrella of national development planning, successful coordination and integration of urbanization and industrial development can be gauged if one looks at the policy and implementation spheres.

Policies to create productive cities and urban systems that can support structural change should be embedded in national development planning frameworks for three reasons:

- Infrastructure deficits underlie the weak performance of both African industries and cities, and fixing them requires a great deal of coordination among national agencies.
- Firms and value chains have sector-specific infrastructure needs, but invariably

involve improving not just the linkages between firms but also the connectivity between cities and regions.

- The urban and industrial development agendas demand policy reforms and implementation capacities (see table 3.2), which require coordination between the public and private sectors, and between levels of government.

Under the umbrella of national development planning, successful coordination and integration of urbanization and industrial development can be gauged if one looks at the policy and implementation spheres. The central questions are: How effectively and coherently are industrial and urban development goals and targets coordinated and embedded in the national development planning and policy framework? And how far are policy design and implementation capacity aligned, including subnationally? Some of the key aspects are:

- Linking industry and urban development policies and targets.
- Aligning flagship urban housing and infrastructure programmes with industrial development.
- Including spatial elements in industrial policy, and industrial priorities in the national spatial planning framework.
- Creating an institutional framework for implementation, including capacity, champions and coordination mechanisms.

- Linking sector strategies, national spatial planning and financing.
- Prioritizing economic objectives as part of the rationale for urban planning, zoning, land management and building regulations.

FINDINGS AND POLICY IMPLICATIONS OF DRIVERS, ENABLERS AND BARRIERS

URBAN DEMAND AND SHIFTING PATTERNS OF CONSUMPTION AS DRIVERS

Africa's urbanization is accompanied by a growing consumer class with more purchasing power and preferences for urban goods. The policy implication is that governments should target strategic sectors of growing demand and help domestic industry and value chains to develop, in order to meet this demand.

Alongside urbanization is a shift towards processed food and an increase in food consumption. This presents economic opportunities for contract farming, supply chain development and urban retailing. As large food retailers tend to have the most power in processed food value chains, the institutional framework and infrastructure to support each of the linkages in the food value chain are essential to supporting domestic food production. Working with lead firms in this area has the potential to be a powerful policy lever.

Governments should target strategic sectors of growing demand and help domestic industry and value chains to develop, in order to meet this demand.

The urban housing backlog is severe. The institutional framework here influences the ability of housing suppliers to respond to demand. Critical institutional factors include the permitting process; efficiency of land markets; availability of infrastructure, services, building materials and labour in the construction sector; and access to mortgage finance. As incomes rise, more and higher-quality formal housing is being built. Still, a large low-income population

has no access to market-rate housing. Accordingly, the framework must adapt to support housing supply generally and social housing particularly. Governments can leverage both types of housing to expand the domestic construction and building materials industries with the right policy framework.

The urban infrastructure backlog is also heavy, affecting the spatial structure of cities and undermining their competitiveness. Uninterrupted electricity supplies and good roads are urgently needed to support industrial productivity. Infrastructure investments should therefore be carefully supported to meet the needs of industry and cities, and to create industrial jobs during execution. Contracting and procurement policies should be designed to stimulate local construction and production capacity.

Urban-based business services are linked to industrial productivity and positive structural transformation. Consequently, cities should support the business services development, including finance and information technology, and their linkages to industry. This requires both targeted and integrated urban economic policies.

URBAN SYSTEMS AS ENABLERS OF INDUSTRIAL PRODUCTIVITY

The location of industry has an economic logic, based on first-nature and second-nature characteristics. Governments attempting to select a location for industrial development should, for this reason, consider natural location-based characteristics as well as the powerful forces of infrastructure and agglomeration.

Africa's urban systems are dominated by large primary cities, though there is an economic rationale for their dominance. In this light policies to promote balanced development should not neglect primary cities because they are at the crux of economic innovation and growth.

Firms have specific location preferences based on their age and reliance on knowledge sharing, technology, labour, inputs and access to final markets. Policymakers should therefore tailor location-based industrial policies to the needs of targeted sectors and firms.

Large, diverse cities tend to be the hubs of innovation

and new industry formation. Thus governments should foster these advantages by supporting knowledge-based institutions and mechanisms for knowledge sharing between firms of different sizes and sectors in large cities.

Regional trade and its economic advantages have spatial components that influence systems of cities and corridors. Policies targeting spatial investments should on this basis consider not just national but regional economic geography.

Input-intensive sectors tend to locate near the source of inputs. Good urban–rural linkages, in the form of infrastructure and institutional support, can therefore help input-intensive sectors to flourish.

Specialized secondary cities can provide attractive locations for industrial production, but there is a minimum threshold to trigger agglomeration economies. Consequently, providing serviced and viable secondary-city alternatives may give mature firms better locational options. Investment is more likely to be cost effective in cities that are already close to becoming attractive and productive locations for firms and investors, and in cities that can support investments targeted to industries already interested in locating there. Investment in roads and connectivity based on careful spatial vision will in the long run help to evolve viable secondary cities.

Regional trade and its economic advantages have spatial components that influence systems of cities and corridors. Policies targeting spatial investments should on this basis consider not just national but regional economic geography.

CITIES AS ENABLERS OF INDUSTRIAL GROWTH

The productive advantage of cities is well documented generally with some evidence in African cities, which serve as focal points for economic growth and productivity. The upshot is that governments should avoid policies that harm or undermine cities and their economic functioning.

Moreover, economic policies should focus on cities to an extent commensurate with their role in innovation, value addition and job creation.

Agglomeration economies hinge on improved accessibility to larger markets, pools of labour, selection of inputs and new knowledge and ideas. Against this backdrop policies to help diverse economic actors to interact within cities will improve productivity.

The ability of industries to access the productive advantages of cities is not a given. Governments should therefore plan cities and preserve prime industrial locations to help industrial firms to meet their unique locational requirements.

SEZs have the potential to improve the business environment, but as they are underperforming in Africa, governments should ensure that these zones create locational advantages strong enough to compete with those in other countries. SEZs perform better when they are connected to local labour markets and value chains. Creating these links can also broaden the benefits of SEZs to the wider economy.

New technology presents a different development context for African cities, with opportunities tied to smart planning, trade and travel, and challenges related to sprawl and its negative externalities. Thus policymakers should leverage technology for planning better cities while continuing to focus on the fundamentals: connected, compact and diverse land use, and efficient and green transport systems.

Economic policies should focus on cities to an extent commensurate with their role in innovation, value addition and job creation.

BARRIERS

Agglomeration economies are powerful but underperforming in Africa's largest cities, so improving the economic functioning of the largest cities holds potential benefits.

African cities tend to be too expensive, reducing firm competitiveness and hurting the urban poor.

Agglomeration economies are powerful but underperforming in Africa's largest cities, hence improving the economic functioning of the largest cities holds potential benefits.

Therefore, investing in improving urban institutions, making property markets work, implementing urban transport strategies, and facilitating compact, connected and integrated development will help African firms to compete on the global market.

Urban economic advantages are undermined by inadequate density, residential segregation and the artificial separation of land uses. For these reasons governments should refrain from over-zoning and constraining the density of urban development, while still providing well-located industrial land and space for streets. Government intervention is also needed to foster social mixing and to reduce barriers between communities, including provision of affordable housing in a range of urban locations.

Agglomeration economies are undercut when connectivity, urban mobility and infrastructure are poor. Weak transport connections between industries and workers harm industrial productivity and job seekers. So governments should improve urban efficiency by providing a network of connected transport links, including to industrial areas, and by supporting policies to cut transport costs and congestion. Support to mass transit and non-motorized modes can slow the increase of congestion, provide better transport options for many urban residents and have benefits in reduced greenhouse emissions and for health.

Infrastructure, particularly for electricity and transport, poses crucial barriers to industrial firms and the economies of cities generally. For this reason infrastructure investments that have benefits for urban and industrial policy agendas should be prioritized and coordinated.

The poor functioning of land and real estate markets poses cross-cutting disadvantages, undermining economies of agglomeration, access to mortgage finance, and subnational land-based revenue streams. The final policy implication is that improving

land management, including easy and transparent property registration, should be prioritized.

In summary, policymakers have a wealth of opportunities to link urbanization and industrial development under the umbrella of a national development planning framework. However, they must make hard choices in prioritizing the policy focus and investments. These choices should be grounded in a clear understanding of the existing and emerging opportunities tied to urbanization, the complementary and connected roles within the national and regional systems of cities, and the importance of policies to improve the functioning of existing cities.

The next chapter reviews country experiences from case studies in leveraging urban demand, balancing systems of cities, overcoming barriers to agglomeration economies, and linking urban and industrial development through integrated policies.

Policymakers have a wealth of opportunities to link urbanization and industrial development under the umbrella of a national development planning framework. However, they must make hard choices in prioritizing the policy focus and investments.

REFERENCES

- Abel, J., I. Dey and T. Gabe. 2012. "Productivity and the Density of Human Capital." *Journal of Regional Science* 52 (4): 562–586. Available at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr440.pdf.
- AfDB (African Development Bank). 2013. "The High Cost of Electricity Generation in Africa." Abidjan, Côte d'Ivoire. Available at: <http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/the-high-cost-of-electricity-generation-in-africa-11496/>.
- AfDB, OECD (Organisation for Economic Co-operation and Development) and UNDP (United Nations Development Programme). 2016. *African Economic Outlook 2016: Sustainable Cities and Structural Transformation*. Paris: OECD Publishing. Available at: <http://www.africaneconomicoutlook.org/>.
- AU (African Union). 2014. *Agenda 2063: The Africa We Want*. August. Accessed October 24, 2016. Available at: http://agenda2063.au.int/en/sites/default/files/agenda2063_popular_version_05092014_EN.pdf.
- Aggarwal, A. 2006. "Special Economic Zones: Revisiting the Policy Debate." *Economic and Political Weekly* 41 (43/44): 4533–4536.
- Altbeker, A., K. McKeown and A. Bernstein. 2012. "Special Economic Zones: Lessons for South Africa from International Evidence and Local Experience." CDE Round Table. Johannesburg: Centre for Development and Enterprise.
- Angel, S., J. Parent, D. L. Civco and A. M. Blei. 2010. *The Persistent Decline in Urban Densities: Global and Historical Evidence of 'Sprawl.'* Boston, MA: Lincoln Institute of Land Policy.
- Annez, P., and R. Buckley. 2009. "Urbanization and Growth: Setting the Context." In M. Spence, P. Annez and R. Buckley (eds.), *Urbanization and Growth: 1–46*. Washington, DC: Commission on Growth and Development.
- Au, C., and J. Henderson. 2005. *Are Chinese Cities too Small?* Providence: Brown University.
- Bertaud, A. 2015. *The Spatial Distribution of Land Prices and Densities: The Models Developed by Economists*. New York: Marron Institute, New York University.
- Bloch, R., M.B. Yunusa, M. Crighton, N. Makarem and N. Papachristodoulou. 2015. *Economic Development in Urban Nigeria*. London: ICF International.
- Bogetic, Z., and I. Sanogo. 2005. "Infrastructure, Productivity and Urban Dynamics in Côte d'Ivoire: An Empirical Analysis and Policy Implications." Working Paper 34247. Washington, DC: World Bank.
- Boston Consulting Group. 2014. *Understanding Consumers in the "Many Africas."* Boston: BCQ Perspectives.
- Brand, A., H.S. Geyer and H.S. Geyer. 2015. "Corridor Development in Gauteng, South Africa." *GeoJournal* 1–17.
- Dasgupta, B., S. Lall and N. Lozano-Gracia. 2014. "Urbanization and Housing Investment." Policy Research Working Paper. Washington, DC: World Bank.
- Deichman, U., S. Lall, S. Redding and A. Venables. 2008. "Industrial Location in Developing Countries." *World Bank Research Observer* 23 (2): 219–246.
- Deloitte and Touche. 2013. *The Rise and Rise of the African Middle Class*. Johannesburg: Deloitte and Touche.
- Dinh, H. T., V. Palmade, V. Chandra and F. Cossar. 2012. *Light Manufacturing in Africa: Targeted Policies to Enhance Private Investment and Create Jobs*. Washington, DC: World Bank.
- Duranton, G. 2015. "Growing through Cities in Developing Countries." *The World Bank Research Observer* 30 (1).
- Duranton, G., and D. Puga. 1999. "Diversity and Specialisation in Cities: Why, Where and When Does it Matter?" *Research Papers in Environmental and Spatial Analysis* 56. London: Department of Geography and Environment, London School of Economics.
- Duranton, G., and D. Puga. 2001. "Nursery Cities: Urban Diversity, Process Innovation, and the Life Cycle of Products." *American Economic Review* 91 (5): 1454–1477.
- Ernst & Young. 2014. *Ernst & Young Attractiveness Survey Africa 2014*. Ernst & Young.
- Euromonitor International. 2016. *Doing Business beyond South Africa: Growth and Opportunity in Sub-Saharan Cities*. London.
- Farole, T. 2011. *Special Economic Zones in Africa: Comparing Performance and Learning from Global Experience*. Washington, DC: World Bank.
- Fedderke, J., and A. Wollnik. 2007. *The Spatial Distribution of Manufacturing in South Africa 1970–1996, its Determinants and Policy Implications*. Cape Town, South Africa: University of Cape Town.
- Freire, M. E., S. Lall and D. Leipziger. 2014. "Africa's Urbanization: Challenges and Opportunities." Working Paper 7. Washington, DC: The Growth Dialogue.
- Fujita, M., P. Krugman and A. Venables. 1999. *The Spatial Economy Cities, Regions and Interntional Trade*. Cambridge, MA: The MIT Press.
- Gelb, A., G. Tata, V. Ramachandran and I. Rossignol. 2015. *When Agglomeration Theory Meets Development Reality: Preliminary Lessons from Twenty World Bank Private Sector Projects*. Washington, DC: Center for Global Development.
- Glaeser, E. 2009. "What Makes Cities Great." *Economix*, December 8. Available at: <https://economix.blogs.nytimes.com/2009/12/08/what-makes-cities-great/>.
- Glaeser, E., and M. Resseger. 2010. "The Complementarity Between Cities and Skills." *Journal of Regional Science* 50 (1): 221–244.

- Gutman, J., A. Sy and S. Chattopadhyay. 2015. *Financing African Infrastructure: Can the World Deliver?* Washington, DC: Brookings Institution.
- Harris, E. 2015. *Industrial Lands Analysis*. Seattle, WA: Puget Sound Regional Council.
- Harvey, D. 2009. "Reshaping Economic Geography: The World Development Report 2009." *Development and Change* 40: 1269–1277.
- Hausmann, R., and D. Rodrik. 2003. "Economic Development as Self Discovery." *Journal of Development Economics* 72 (2): 603–633.
- Henderson, J. 2003. *Urbanization, Economic Geography, and Growth*. In P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*. Volume 1, Part B. Elsevier.
- . 2010. "Cities and Development." *Journal of Regional Science* 50 (1): 515–540.
- . 2014. *Urbanization and the Geography of Development*. Washington, DC: World Bank.
- Henderson, J., Z. Shalzi and A. Venables. 2001. "Geography and Development." *Journal of Economic Geography* 1: 81–85.
- Iarossi, G. 2009. *Benchmarking Africa's Costs and Competitiveness*. Washington, DC: World Bank.
- ILO (International Labour Organization). 2015. *Formalization of the Informal Economy: Follow-up to the Resolution Concerning Efforts to Facilitate the Transition from the Informal to the Formal Economy*. Geneva.
- Jacobs, J. 1961. *The Death and Life of Great American Cities*. New York: Random House.
- Jedwab, R. 2013. "Why Is African Urbanization Different? Evidence from Resource Exports in Ghana and Ivory Coast." *Job Market Paper*. Available at: <http://www.colorado.edu/Economics/seminars/SeminarArchive/2012-13/jedwab.pdf>.
- Kain, J. F. 1968. "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *The Quarterly Journal of Economics* 175–197.
- Kerby, E., A. Moradi and R. Jedwab. 2014. "Three Policy Lessons from Africa's Colonial Railways." *International Growth Centre Blog*, October 15. Available at: <http://www.theigc.org/blog/what-policymakers-can-learn-from-africas-colonial-railways/>.
- Lall, S., and T. Mengistae. 2005. *The Impact of Business Environment and Economic Geography on Plant-level Productivity: An Analysis of Indian Industry*. Washington, DC: World Bank.
- Landman, K., and Schönteich. 2002. "Urban Fortresses: Gated Communities as a Reaction to Crime." *African Security Review* 11 (4): 71–85.
- Lozano-Garcia, N., and C. Young. 2014. *Housing Consumption and Urbanization*. Washington, DC: World Bank.
- McCormik, D. 1999. "African Enterprise Clusters and Industrialization: Theory and Reality." *World Development* 27 (9): 1531–1551.
- Metro Vancouver. 2012. *Best Practices for the Intensive Use of Industrial Land*. Vancouver, BC: Metro Vancouver.
- Monkam, N., and M. Moore. 2015. *How Property Tax Would Benefit Africa*. London: Africa Research Institute.
- Mukim, M. 2011. "Industry and the Urge to Cluster: A Study of the Informal Sector in India." SERC Discussion Paper 72. London: Spatial Economics Research Centre. Available at: <http://www.spataleconomics.ac.uk/textonly/SERC/publications/download/sercdp0072.pdf>.
- Nakamura, S., R. Harati, S. Lall, Y. Dikhanov, N. Hamadeh, W. Virgil Oliver, M. Rissanen and M. Yamanaka. 2016. "Is Living in African Cities Expensive?" *Policy Research Working Paper 7641*. Washington, DC: World Bank.
- Naudé, W. 2008. "Is There a Spatial Mismatch in South Africa's Metropolitan Labour Market?" *Cities* 25 (5): 268–276.
- Ncube, M., C. Lufumpa and S. Kayizzi-Mugerwa. 2011. "Middle of The Pyramid: Dynamics of the Middle Class in Africa." *Market Brief*. Abidjan, Côte d'Ivoire: African Development Bank.
- Newman, C., J. Page, J. Rand, A. Shimeles, M. Söderbom and F. Tarp. 2016. *Made in Africa: Learning to Compete in Industry*. Washington, DC: Brookings Institution Press.
- Oliver, J., G. Janssens-Maenhout, M. Muntean and J. Peters. 2015. *Trends in Global CO2 Emissions: 2015*. The Hague: PBL Netherlands Environmental Assessment Agency.
- O'Sullivan, A. 2007. *Urban Economics*. Singapore: McGraw-Hill.
- Overman, H., and A. Venables. 2005. "Cities in the Developing World." *CEP Discussion Paper 695*. London: Centre for Economic Performance.
- Page, J., C. Newman, J. Rand, A. Shimeles and M. Söderbom. 2016. *Made in Africa*. Washington, DC: Brookings Institution Press.
- PricewaterhouseCoopers. 2015. *Into Africa: The Continent's Cities of Opportunity*. PricewaterhouseCoopers.
- . 2016. "A New Urban Agenda: Accommodating 2 Billion New Urban Citizens." *PwC UK*. Available at: <http://www.pwc.co.uk/issues/megatrends/rapid-urbanisation.html>.
- Puga, D. 2010. "The Magnitude and Causes of Agglomeration Economies." *Journal of Regional Science* 50 (1): 203–219.
- Quigley, J. 2008. "Urbanization, Agglomeration and Economic Development." *Working Paper 19*. Washington, DC: Commission on Growth and Development.
- Reardon, T., D. Tschirley, B. Minten, S. Haggblade, C. Timmer and S. Liverpool-Tasie. 2013. "The Emerging 'Quiet Revolution' in African Agrifood Systems." *Brief for Harnessing Innovation for African Agriculture and Food Systems: Meeting Challenges and Designing for the 21st Century*. Addis Ababa: African Union.
- Rodrik, D. 2015. *Premature Deindustrialization*. Princeton, NJ: IAS School of Social Science.

- Rosenthal, S., and W. Strange. 2004. "Evidence on the Nature and Sources of Agglomeration Economies." In V. Henderson and J.-F. Thisse (eds.), *Handbook of Regional and Urban Economics 4: Cities and Geography*. Amsterdam: Elsevier.
- Rothenburg, A. 2011. "Transport Infrastructure and Firm Location Choice in Equilibrium: Evidence from Indonesia's Highways." Available at: <https://sites.google.com/site/alexrothenberg/research>.
- Sarzin, Z., and B. Mehta. 2011. *Sudan: Issues in Urban Development Phase I: Overview of the Urban Landscape*. Washington, DC: World Bank.
- Sautier, D., H. Vermeulen, M. Fok and E. Bienabe. 2006. "Case Studies of Agri-Processing and Contract Agriculture in Africa." RIMISP (Latin American Center for Rural Development). Available at: http://sarpn.org/documents/d0002434/Agriculture_Africa_Nov2006.pdf.
- Seto, K., M. Fragkias, B. Güneralp and M. Reilly. 2011. "A Meta-analysis of Global Urban Land Expansion." *Plos ONE* 6 (8): e23777.
- Siba, E., M. Söderbom, A. Bigsten and M. Gebreeyesus. 2012 "Enterprise Agglomeration, Output Prices, and Physical Productivity: Firm-level evidence from Ethiopia." Working Paper 2012/85. Helsinki: United Nations University, World Institute for Development Economics Research (UNU-WIDER).
- Statistics South Africa. 2014. *National Household Travel Survey 2013: Statistical release P0320*. Pretoria, South Africa: Statistics South Africa.
- Tschirley, D., S. Hagglade and T. Reardon. 2013. "Africa's Emerging Food Transformation." White Paper. East Lansing, MI: Michigan State University, Global Center for Food Systems Innovation.
- Tschirley, D., T. Reardon, M. Dolislager and J. Snyder. 2014. "The Rise of a Middle Class in East and Southern Africa: Implications for Food System Transformation." Working Paper 2014/119. Helsinki: United Nations University, World Institute for Development Economics Research (UNU-WIDER).
- Turok, I. 2014. "Urbanization and Development in the BRICS." In S. Oldfield and S. Parnell (eds.), *Handbook on Cities in the Global South*. London: Routledge.
- . 2015. *Informal Settlements: Poverty Traps or Ladders to Work?* Pretoria, South Africa: Human Sciences Research Council.
- United Nations General Assembly. 2016. "Draft Outcome Document of the United Nations Conference on Housing and Sustainable Urban Development (Habitat III)." A/CONF226/4. Available at: <https://www2.habitat3.org/bitcache/99d99fbd0824de50214e99f864459d8081a9be00?vid=591155&disposition=inline&op=view>.
- UNDP (United Nations Development Programme). 2012. *The Roles and Opportunities for the Private Sector in Africa Agro-food Industry*. New York.
- UNECA (United Nations Economic Commission for Africa). 2011. *Economic Report on Africa 2011: Governing Development in Africa: The Role of the State in Economic Transformation*. Addis Ababa.
- . 2013. *Economic Report on Africa 2013: Making the Most of Africa's Commodities: Industrializing for Growth, Jobs and Economic Transformation*. Addis Ababa.
- . 2015. *Economic Report on Africa 2015: Industrializing through Trade*. Addis Ababa.
- . 2016. *Economic Report on Africa 2016: Greening Africa's Industrialization*. Addis Ababa.
- UNECA and ODI (Overseas Development Institute). Forthcoming. *Smart Industrialization Through Trade in the Context of Africa's Transformation*.
- UN-Habitat (United Nations Human Settlements Programme). 2010a. *A Practical Guide for Conducting Housing Profiles*. Nairobi.
- . 2010b. *State of the World Cities 2010/2011: Cities for All: Bridging the Urban Divide*. Nairobi.
- . 2013. *Planning and Design for Sustainable Urban Mobility*. Nairobi.
- . 2014a. *Economics of Urban Form*. Nairobi.
- . 2014b. *The State of African Cities 2014: Re-imagining Sustainable Urban Transitions*. Nairobi.
- . 2014c. *A New Strategy of Sustainable Neighborhood Planning: Five Principles*. Nairobi.
- UN-Habitat and New York University. 2016. *Urban Expansion Project*. Nairobi: UN-Habitat.
- Vernon, H., Z. Shalizi and A. Venables. 2001. "Geography and Development." *Journal of Economic Geography* 1 (1): 81-105.
- Wall, R., and G. van der Knapp. 2011. "Sectoral Differentiation and Network Structure within Contemporary Worldwide Corporate Networks." *Economic Geography* 87 (3): 267-308.
- Walters, L., and L. Gauntner. 2016. "Sharing the Wealth: Private Land Value and Public Benefit." In M. Kamiya and L.Y. Zhang (eds.), *Finance for City Leaders Handbook*. Nairobi: UN-Habitat.
- World Bank. 2007. *Cost of Pollution in China: Economic Estimates of Physical Damages*. Washington, DC.
- . 2015. *Stocktaking of the Housing Sector in Sub-Saharan Africa: Challenges and Opportunities*. Washington, DC: World Bank.
- Yepes, T., J. Pierce and V. Foster. 2009. *Making Sense of Africa's Infrastructure Endowment: A Benchmarking Approach*. Washington, DC: World Bank.
- Yoshino, Y. (ed.). 2011. *Industrial Clusters and Micro and Small Enterprises in Africa*. Washington, DC: World Bank.
- Zhang, J., W. X. Wei and Z. Liu. 2013. "Strategic Entry and Determinants of Chinese Private Enterprises into Africa." *Journal of African Business* 14 (2): 96-105.

ENDNOTES

- 1 The link between urbanization and industrialization is bidirectional. This chapter and the following chapters focus on the ways urbanization can better support industrialization because this side of the relationship is of policy concern for countries experiencing urbanization in the context of poorly performing industrialization, as described in chapter 3.
- 2 Several issues critical for industrial development are not discussed here, including education systems, trade policy and currency valuation, and access to specific infrastructure and public services. Previous Economic Reports on Africa cover various aspects of industrialization in more depth.
- 3 The African Development Bank categorizes the middle class in three categories: the “floating class” (earning \$2–4 PPP a day), the “lower class” (\$4–10 PPP) and the “upper class” (\$10–20 PPP). The Pew Research Center defines members of the middle class as those earning \$10–20 a day.
- 4 Data from UN Comtrade database and World Development Indicators.
- 5 The scale and growth of the middle class in Africa are controversial, partly for definitional and measurement reasons. Numbers aside though, cities offer growth opportunities to domestic industry from their expanding populations’ rising disposable incomes, particularly in countries with large national markets.
- 6 Approved by UN member states in Quito, Ecuador, in October 2016.
- 7 Tradeable services such as finance tend to be more supportive of industrial value chains and have greater potential to contribute to growth than non-tradeable services.
- 8 Knowledge sharing, labour pooling and skills matching—all critical to the urban productive advantage—cannot operate in the face of inadequate education and training. Even in a perfectly designed city, agglomeration economies will falter without good institutions of education and training for industrial jobs.
- 9 “First-nature” and “second-nature” geography are terms used to differentiate between truly natural advantages of a location from that of advantages generated through concentration of population and production.
- 10 That is, with many economic actors on both the supply and demand sides.
- 11 Centrifugal and centripetal forces are terms borrowed from physics but used in the New Economic Geography to discuss the push and pull forces of urban economies on firms.
- 12 Based on data for 80–90 cities from Organisation for Economic Co-operation and Development (OECD) and low-income countries, Henderson, Shalzi and Venables (2001) calculate an elasticity of 0.25 for both housing and commuting costs.
- 13 In many countries, large cities are particularly important in harnessing the demographic dividend from a large population of educated youth.
- 14 See UNECA’s report, *Assessing Regional Integration in Africa VII* (2016), for detailed treatment.
- 15 Using the most recent data available for enterprise surveys in African countries, the average real annual sales growth was 1.1 per cent for cities of over 1 million, and -5.1 per cent for other locations. The annual employment growth was 5.6 per cent for cities of over million and 5.0 per cent for other locations. Source: World Bank Enterprise Surveys.
- 16 Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Senegal, Tanzania, Tunisia and Uganda; Cambodia and Vietnam; and Ethiopia, Tunisia, Cambodia and Vietnam.
- 17 Smart growth refers to urban development that is compact and connected, with benefits for social mobility, economic connectivity and environmental sustainability.
- 18 However, the two regions with the lowest carbon footprint, East and West Africa have also seen the most rapid increase in per capita carbon emissions over the last decade: 39 per cent and 13 per cent, respectively (using data in 2005–2014), highlighting the need for policy action. Data: (Oliver et al., 2015); calculations by authors.
- 19 Mercer’s cost of living data are based on expatriate living expenses (including rent), but the rankings are informative for cross-city comparisons.
- 20 There is wide variation in production costs among African countries. It is less costly to produce in Algeria, Botswana, Egypt, Kenya, Morocco, Namibia and South Africa. These countries are viable competitors with major international players such as Brazil, Thailand and Vietnam. It is twice as expensive to produce in Nigeria (Iarossi, 2009).