

Chapter 4

Africa's new urban dynamics

This chapter explores the characteristics of large agglomerations and the variety of recent forms of urbanisation on the African continent. The hierarchy of national urban systems are characterised by the large size of metropolises relative to intermediary cities, and high primacy indices relative to the rest of the world.

New forms of urbanisation are appearing: the development of small and medium agglomerations forming large metropolitan regions, conurbations and mega-agglomerations. These agglomerations spread spontaneously in areas that are officially considered rural, though already densely populated, and notably in the interior of the continent. The evolution of metropolises into metropolitan regions has resulted in a redistribution of densities and the emergence of new intermediary urban centres with a new balance between inland and coastal urbanisation. The densification of territories weakens certain policies that protect natural areas (ex. national parks) as burgeoning peripheral urbanisation is seldom integrated into regional planning strategies. Driven by strong demographic growth, the densification of territories raises larger questions on urbanisation and its relation to the environment.

LARGER AGGLOMERATIONS AND NEW FORMS OF URBANISATION

The large agglomerations that have emerged spontaneously in Africa are often not politically, and therefore statistically, recognised. Their urban processes and conditions are unique as they emerge in traditionally rural areas, where densities are now reaching a critical mass favouring widespread urbanisation. Africa's large agglomerations vary significantly in terms of their emergence, function and spatial imprint, and a better understanding of these factors is essential for anticipating economic, developmental and societal transformations. The spatial dimension is illustrated both at national and regional levels, both by discontinuities within national systems and by the emergence of metropolitan areas across borders. New urban forms, such as the emerging mega-agglomerations are distinct from more traditional patterns of urbanisation and creating an urban geography specific to Africa, its challenges and needs.

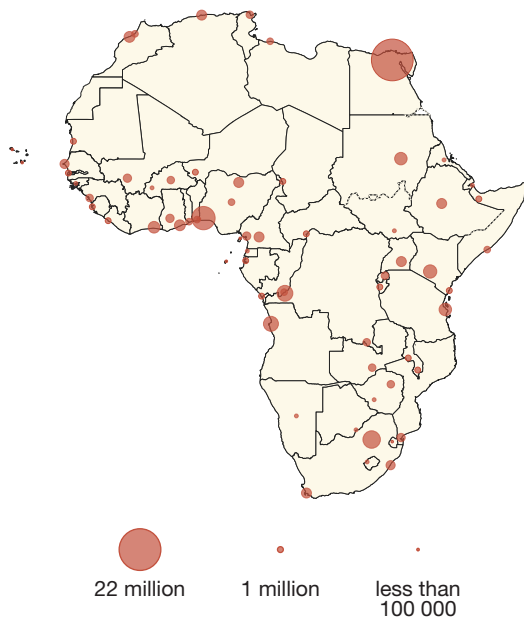
The dominance of national metropolises

Most African countries' urban networks are dominated by at least one metropole. In

Angola, the population of the capital Luanda (7 million) equals the combined population of the next 27 largest agglomerations. In Sudan, Khartoum has as many inhabitants, 5.3 million, as the country's 248 smallest agglomerations combined (out of a total of 301 agglomerations). These metropolises, in some countries two (e.g. Burkina Faso, Congo, Ghana), or three agglomerations (South Africa), dominate national urban hierarchies. Their exceptional size reflects their dominant position as economic and political centres and their role as interface between the national and global levels. The disparity is therefore quantitative and qualitative.

Most of today's national metropolises have existed for long periods and many also served as colonial capitals. Yet, their demographic ascent really accelerated post-independence. The "metropolisation" process of a politically delimited territory centred around a "mother-city" and coupled with strong demographic growth, translates into spectacular growth. Today, the size of the biggest cities may appear excessive, not in absolute size, but rather in terms of their relative size in relation to the entire urban

Map 4.1
National metropolises, 2015



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018

system (macrocephaly), to the second largest city (primacy), or to a political territory (metropole). For instance, in countries with small total populations like Cabo Verde, Equatorial Guinea, Namibia and Sao Tome and Principe, national metropolises have fewer than one million inhabitants, yet their dominance on the national urban hierarchy is as pronounced.

Africapolis identifies 67 national metropolises, accounting for one-third of the total urban population (183 million) (Map 4.1). They account for an average of 51% of their countries' total national urban populations. In 10 countries, this share exceeds 66% of the total urban population, and more than 80% in Cabo Verde, Djibouti, Eswatini and Sao Tome and Principe. The metropolitan concentration tends to be higher in countries with small areas and population sizes and low levels of urbanisation. A notable exception is South Sudan with the lowest share of metropolitan population in Africa (11%). South Sudan gained independence only in 2008 and the political system remains fragile, providing little time for Juba to establish a dominant position within the urban system.

In countries with large urban populations and more developed urban networks, the relative weight of metropolises tends to be smaller and to decrease. This is the case for instance in Algeria, Egypt, Morocco and Nigeria. Also, countries with large urban populations can have more than one metropole. In South Africa, besides the huge industrial and mining conurbation of Johannesburg, the port cities of Durban and Cape Town are also important metropolises. In Nigeria, the two metropolises besides the former capital Lagos are Abuja and Kano. These metropolises correspond to three major historical settlement areas —Yoruba, Igbo and Hausa —and play a dominant role in the country's political structure. Two aspects characterise these metropolisation processes in Africa:

- Their systematic nature: only in a few countries the metropolitan primacy is low, for instance South Sudan;
- The magnitude of the imbalance between national metropolitan agglomerations and the most populous intermediary agglomerations: some of which are of key importance in their country, such as Bouaké (Côte d'Ivoire), Touba (Senegal), Lubumbashi (Democratic Republic of the Congo, DRC), Kitwe (Zambia), Lubango (Angola), etc. In monocephalic countries, the highest primacy is recorded in Liberia, where Monrovia is 21 times larger than Buchanan. Nine other national urban systems have a primacy of over ten. In bicephalous countries, the record is reached in the DRC, with Pointe-Noire, the country's second largest city, 9 times larger than Dolisie the third largest agglomeration. In tricephalic countries there is no exception.

Polycephalic urban systems

The importance of historical, political and geographic factors on the structure and hierarchy of national urban systems is evident in countries with polycephalic urban primacy. The existence of more than one urban agglomeration distinguished by their scale and significance can be attributed to characteristics of a political nature. In Cameroon and Congo, the second largest agglomerations are port cities (Douala and Pointe-Noire), while the national capitals are located in the interior of the country. In Zimbabwe,

Bulawayo is an important mining city; in Cabo Verde and Equatorial Guinea the particular geography—*islands and mainland*—supports the emergence of more than one primate city (Chapter 2).

However, over the long-term, the urban primacy of the largest cities seems to be increasing, tending towards a *monocephalic* structure, underlining the importance of policy and location of political power. In Burkina Faso, Bobo Dioulasso, situated at the end of a railway line connecting the landlocked territory to a port, used to be slightly larger than Ouagadougou. After independence the hierarchy changed and the primacy of Ouagadougou, the national capital, over Bobo-Dioulasso grew gradually and was 3.4 in 2015. Similar patterns are observed in Equatorial Guinea, with Bata overtaking Malabo; in Zimbabwe, Harare increases its lead over Bulawayo; in Cabo Verde, Praia over Mindelo. In some cases political decisions reduce potential competition with the largest agglomeration. In Côte d'Ivoire for instance, since the 1960s, Bouaké is by far the country's second largest city, yet when the political capital was moved to the interior of the country to increase its proximity to the total territory, it is Yamoussoukro and not Bouaké. Since then the primacy of Abidjan continues to grow. Touba, the second-largest agglomeration in Senegal, does not have an official status as urban.

Indicators and limits

The growth of an urban system is generally accompanied by a relative decrease in the weight of the metropolitan population. This decrease is not, however, reflected in the evolution of metropolitan primacy, since the primacy index connects the populations of two agglomerations (for example, the first and second cities), or two "parts" of the urban system, and not the whole system, the metropole and the total "urban population". Metropolitan primacy continues to increase in most African countries. In Côte d'Ivoire, while the share of the population of Abidjan within the total urban population decreased from 57% to 41% between 1960 and 2015, the primacy index rose from 4 to 9. This growing gap is explained by the less dynamic population growth of the country's second

agglomeration, Bouaké, as compared to Abidjan.

The size of African metropolises is in many cases so disproportionate that it questions the significance of national urbanisation indicators. What does the level of urbanisation capture in a country where more than 50% of the urban population live in one agglomeration? In the Central African Republic for instance, besides the capital Bangui with almost 1 million inhabitants, there are only 30 other agglomerations with an average size of 30 000 inhabitants in a country the size of France. In more than 30 countries one single agglomeration makes up more than 1/3 of the total urban population and in 5 countries more than 2/3. Indicators such as the average size of agglomerations, average density and level of urbanisation are in many cases strongly biased by the national metropole.

Strong metropolitan primacy is in many cases the spatial equivalent of social inequality of power, wealth and status (J.R. Short, 2009). Demographic concentration translates into an even higher concentration in terms of economic, political and social power. In the least urbanised and least populated countries, the concentration of key services, infrastructure and political institutions can reach 100%. This dominance is particularly pronounced in *monocephalic* countries. The GDP per capita in Kinshasa is 50% above the national average (UNDP, 2017); Monrovia with 30% of the national population accounts for 80% of Liberia's GDP (Backiny-Yetna et al., 2012), in Mali, Bamako has GDP per capita of USD 1 550 compared to USD 490 nationally and the agglomeration accounts for 40% of the GDP with 12% of the population (World Bank, 2015). In Senegal, Dakar concentrates 60% of GDP and 83% of all formal enterprises¹. In addition, countries with more balanced urban systems can show strong economic concentrations. In South Africa, Gauteng Province (including Johannesburg) shows a GDP per capita 50% above the national average and contributes 33% to the national GDP². In Nigeria, Lagos has a GDP per capita 80% above the national average and 50% above the average for southern Nigeria (including Onitsha)³.

Metropolises and intermediary agglomerations

In 2015, the agglomerations between 300 000 and 1 million inhabitants accounted for only 13% of the population of Africa, compared with 17% for metropolitan agglomerations. The dominance of national metropolises combined with the proliferation of small towns is explaining the relative weakness of intermediary cities. The stability of the growth of metropolises contrasts with the more irregular evolution of the population of intermediary agglomerations. Over the long term, and even for as short a period as the post-independence period, the trajectory of population growth in metropolitan agglomerations has been characterised by its persistence and relative regularity. However, the combined population of intermediary agglomerations is growing faster than that of metropolises. This is due to the fact that their number grows faster: four-fifths of the agglomerations identified in 2015 were villages or did not exist in 1960.

One of the consequences of these developments is that the main discontinuity of contemporary African settlement is not between “urban” and “rural”, but between metropolises and intermediary urban agglomerations. The vast majority of urbanisation studies focus on large cities, whose population figures are the most—if not the only—accessible figures. Agglomerations with 500 000 inhabitants are thus considered as “small cities”, whereas they are in the top 2% of agglomerations in the Africapolis database. A clear distinction between “metropolitan” and “intermediary” agglomerations and their documentation is crucial for urban strategies and policies and for the implementation of appropriate land use planning.

A new scale of African urbanisation: Metropolitan regions

When urbanisation is concentrated in certain regions, new settlement patterns emerge, such as metropolitan areas. These metropolitan areas form within concentrated regions and are composed of large agglomerations, as well as small and medium-sized agglomerations. The impression dominating metropolitan regions is that of urban sprawl. However, at a more local

scale (for example, municipalities, districts or border areas), the regionalisation of urban dynamics reveals new forms of urban concentration that may have lower densities but show strong economic and social integration. These transformations and new urban forms highlight the rapid development of areas undergoing metropolisation and a decoupling from the rest of the territory.

The dynamics of metropolitan areas

As with “urban agglomerations”, there is no standardised statistical definition of “metropolitan” regions or areas at the international level. In Africa, this notion officially appears only in South Africa with the metropolitan municipalities (MM), which are primarily political entities. Metropolitanised areas or ‘regions’⁴ are areas that extend beyond the boundaries of parent agglomerations, encompassing densely populated countryside, villages and intermediary agglomerations with a high degree of economic and social integration. The territory concerned is defined by the intensity of flows polarised around the centre of a large metropole or agglomeration. This functional integration can be measured from the flow data, especially travel to work commuting statistics. They are also supplemented by characteristics of attractiveness of the centre—number of jobs, shops, services and infrastructure. Due to the lack of data in Africa, the extent of a metropolitan area is approximated by density maps and population growth dynamics. Metropolitan regions are not only spaces dominated by a large urban centres, but areas where new small settlements are emerging such as dormitory towns (around capitals such as Lomé for example) and commercial and industrial hubs grafted to flows between the metropolitan agglomeration and the national hinterland (like Diamniadio situated 30 kilometres from Dakar). Their emergence is linked to the presence of large nearby agglomerations or an intermediate position between two major centres.

The emergence of metropolitan areas introduces two major changes in urbanisation:

- A process of flattening densities in metropolitan areas. In particular in areas midway from the centre of the metropolitan area

and between different urban nodes (Figure 4.1). This process illustrates the blurring of the boundary between “urban” and “rural” (Chapter 3) on a regional scale between the metropolitan area and the rest of the territory.

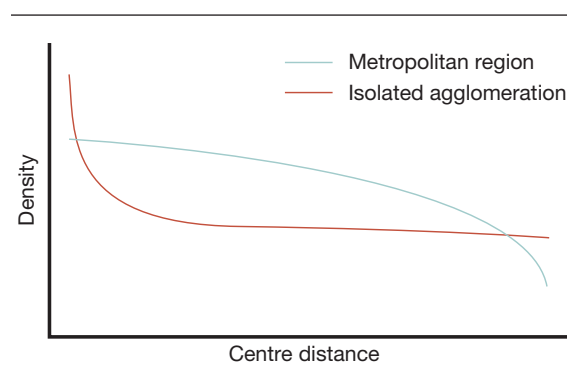
- New intermediary urban “centres” emerge within the region. From a certain scale onwards, agglomerations cease to function around a single centre. New, more accessible nodes appear on the peripheries, and even on the fringes of agglomerations (“edge” cities).

The transition from an agglomeration to a metropolitan region results in a redistribution of densities at the regional scale. The inclusion of peri-urban areas increases the population of a metropolis, but it also leads to a multiplying of its (surface) area. Extreme densities are lower and density gradients are shallower. However, the peripheries are relatively dense. Thus, in 2015 the population of the Ouagadougou agglomeration was estimated at 2.3 million inhabitants, covering an area of 400 square kilometres. Ouagadougou is situated in the Centre region, which roughly corresponds to the metropolitan region of Ouagadougou, which is both the smallest and the most populated region of Burkina Faso, covering 2 800 square kilometres and 2.5 million inhabitants. The peri-urban periphery thus adds about 200 000 inhabitants, including 3 agglomerations of more than 30 000 inhabitants, but crucially adds an additional 2 400 square kilometres, which has the effect of dividing the density by 6 compared to the agglomeration proper. The peri-urban area thus represent 8% of the population but 86% of the area of the “region” whose average density falls to 900 inhabitants per square kilometre.

A density of around 1 000 inhabitants per square kilometre represents the lower limit of many statistical or political definitions of “metropolitan region” in the world. It is comparable to Ile-de-France, the Comunidad de Madrid (Spain), Durban Metropolis (South Africa), the Metropolitan Region of Montreal (Canada), or Monterrey Metropolitana (Mexico). Densities fall abruptly outside of these metropolitan regions. Lower density automatically translates into a wider spatial spread with an influence on mobility and connectivity issues, such as transport and

Figure 4.1

Density distribution: agglomeration vs. metropolitan area



infrastructure, which need to be addressed by urban planning policies.

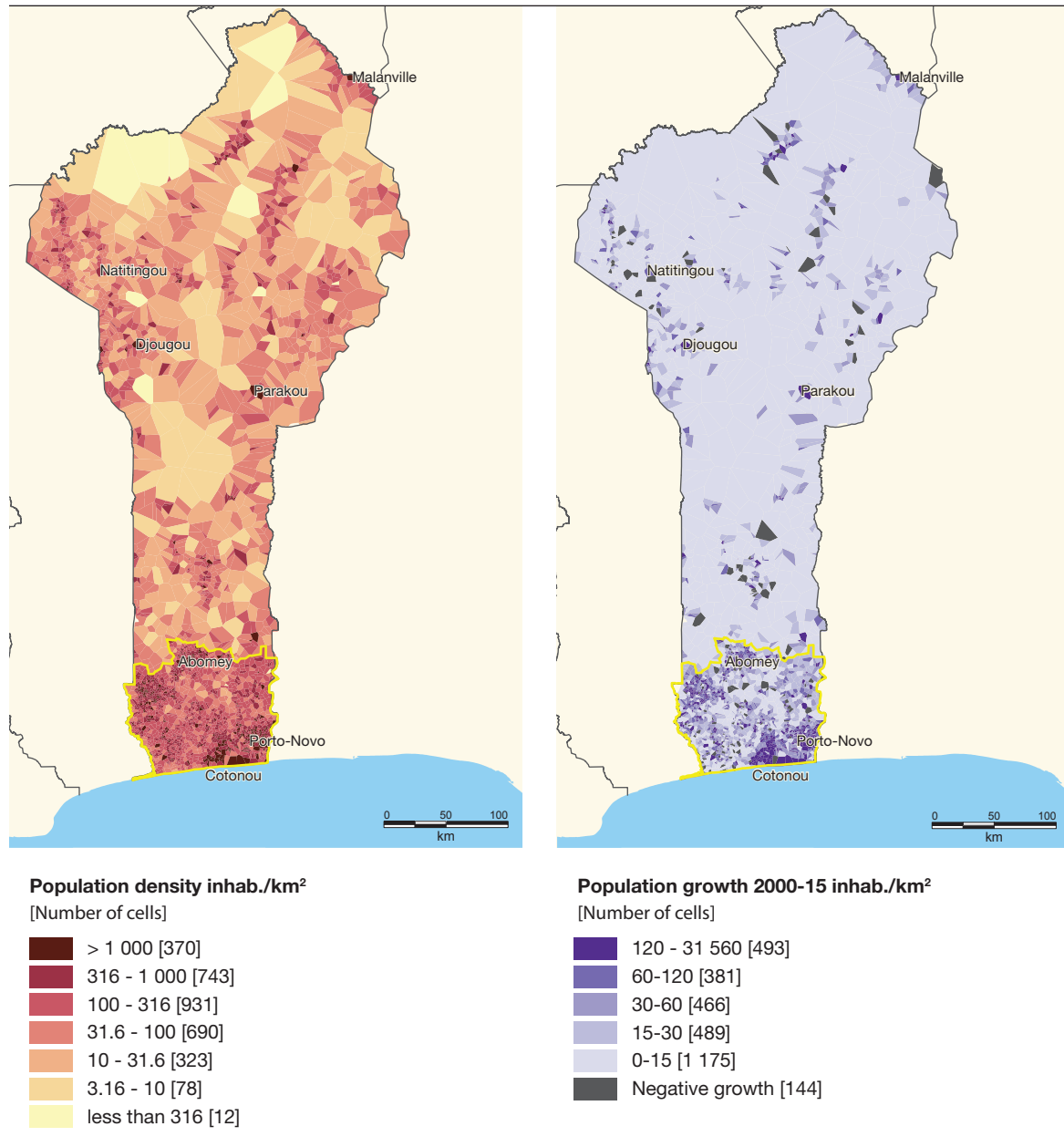
Territorial imbalances

The metropolitan area represents a new spatial scale of urbanisation. The development of regions that are linked by mobility and trade contrasts with even larger territories that are disconnected. This new trend raises the issue of spatial inequality in terms distribution of wealth across entire countries. In Benin, the primacy of Cotonou, the economic capital, over Porto-Novo, the political capital, is weak. However, these two agglomerations are located only separated by a few hundred metres of non-urbanised land (25 kilometres centre to centre). A true metropolitan area is developing between these two coastal poles and Abomey, the former capital, located less than 100 kilometres in the interior (Map 4.2). The whole region covers only 10% of the national territory but makes up 50% of the country’s population. It accounts for most of the population growth and half of the country’s intermediary agglomerations are located there. Two-thirds of the population already live in an agglomeration of more than 10 000 inhabitants, more than double the level of urbanisation of the rest of the country. The average distance between agglomerations is seven kilometres (Map 4.2).

Similar patterns are observed in Senegal, where the agglomerations of Dakar, Mbour, Touba and Kaolack account for most of the urban growth. The nine departments concerned

Map 4.2

Concentration of density and population growth in Benin, 2015



Source: Geopolis 2018 - Map: François Moriconi-Ebrard

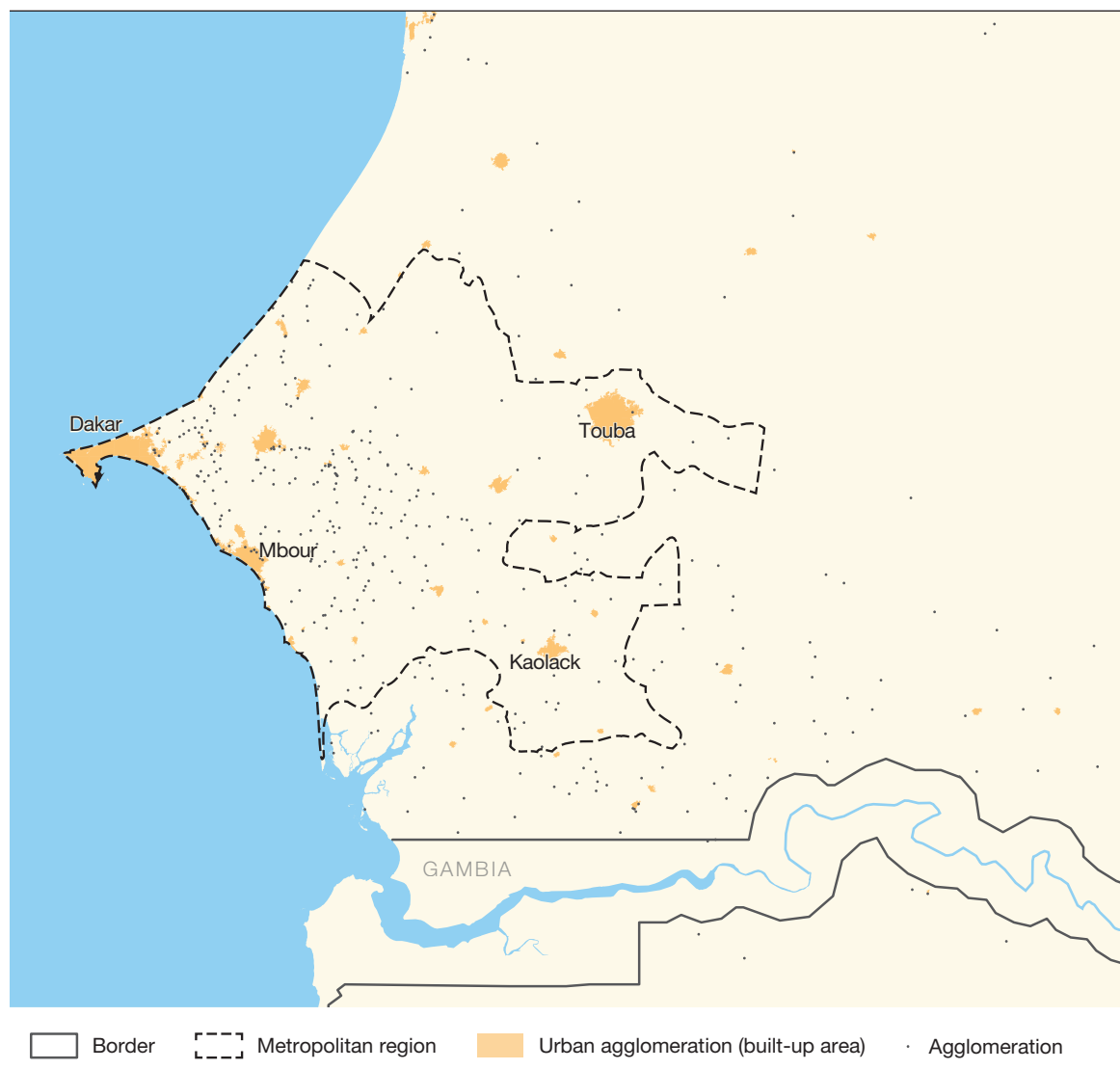
(Bambey, Diourbel, M'Backé, M'Bour, Thiès, Fatick, Tivaouane, Guinguinéo and Kaolack) cover 17 000 square kilometres and brought together 7 million inhabitants in 2015, or 55% of the population on 9% of the territory (Map 4.3). In 1960, the proportion was reversed, with the rest of the country accounting for 55% of the population. In 2015, one-third of Senegal's urban agglomerations were located there, including the five

most populated agglomerations in the country. The level of urbanisation is 73%, compared with 22% in the rest of the country (Map 4.3).

The concentration of urbanisation is even more striking in Gambia, where Banjul the capital with 33 000 inhabitants, is an isolated centre on a peninsula linked to the mainland by an 8 kilometres-long road (Map 4.4). Due to lack of space, urban growth took place at the other

Map 4.3

Extended metropolitan region of Senegal



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

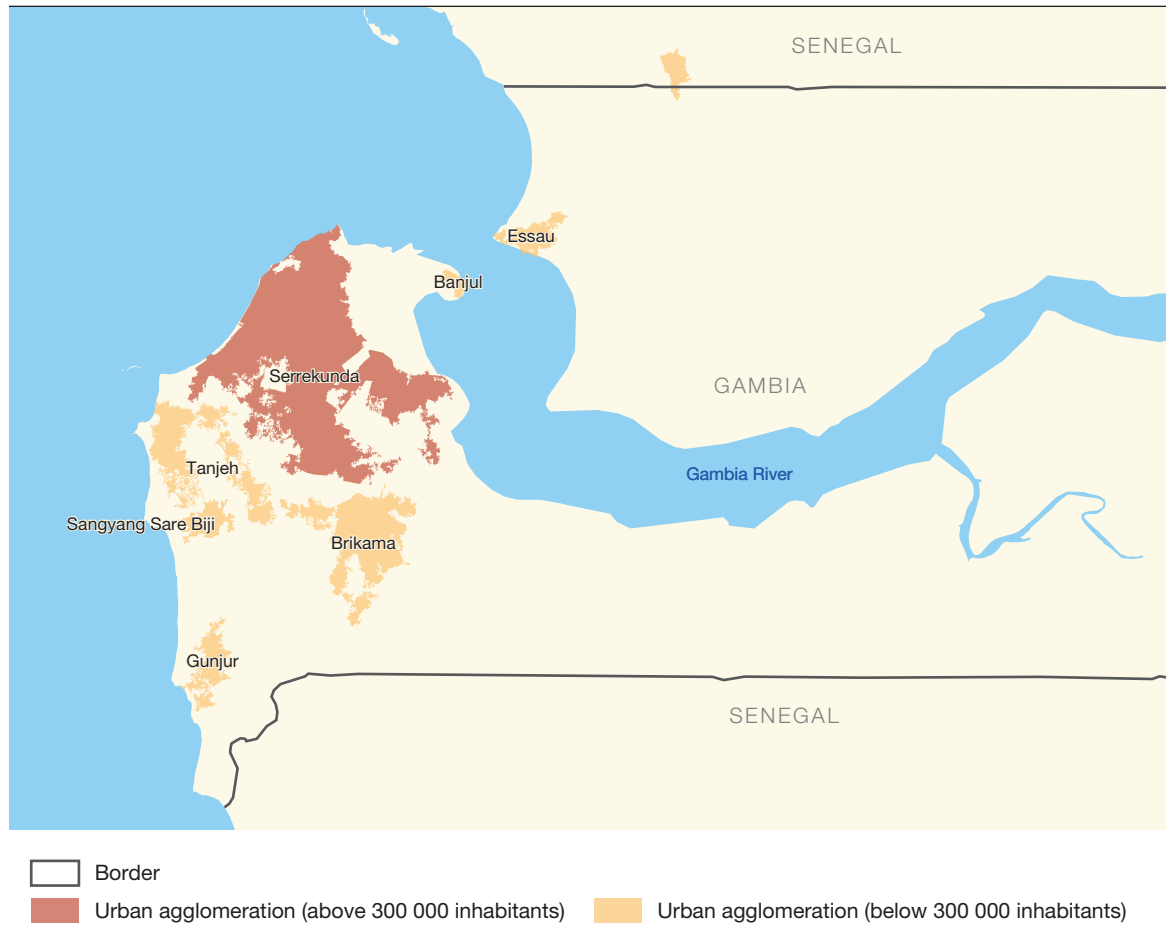
end of the road, starting from the agglomeration of Serrekunda, which dominates the urban hierarchy with 800 000 inhabitants in 2015. Today, Serrekunda is part of a true metropolitan area, made up by the country's four most populated urban agglomerations which are separated from each other by only a few hundred metres of undeveloped land. Including the agglomeration of Essau, located opposite Banjul on the north bank of the estuary, this region has increased from 14% to 53% of the national population between 1960 and 2015. The population is 95%

urban. In contrast, the remainder of the country has only 3 agglomerations with more than 10 000 inhabitants and the level of urbanisation barely exceeds 10%.

In Ghana, 80% of agglomerations and one-third of the national population are part of the Accra-Kumasi-Takoradi triangle in the south of the country. The north of the country remains poorly developed and barely urbanised, where only small isolated urban centres have emerged. Tamale, its main regional centre, hardly exceeded 300 000 inhabitants in 2015.

Map 4.4

"Metropolisation" in Gambia, 2015



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

These examples highlight different national realities. They show the gap between the metropolitan and intermediary agglomerations of a country. The small agglomerations of large metropolitan areas complement the main urban centres by decongesting and connecting. Although individually they might still be small towns, they increase the relative weight of metropolitan areas and increase territorial inequalities at the level of whole countries.

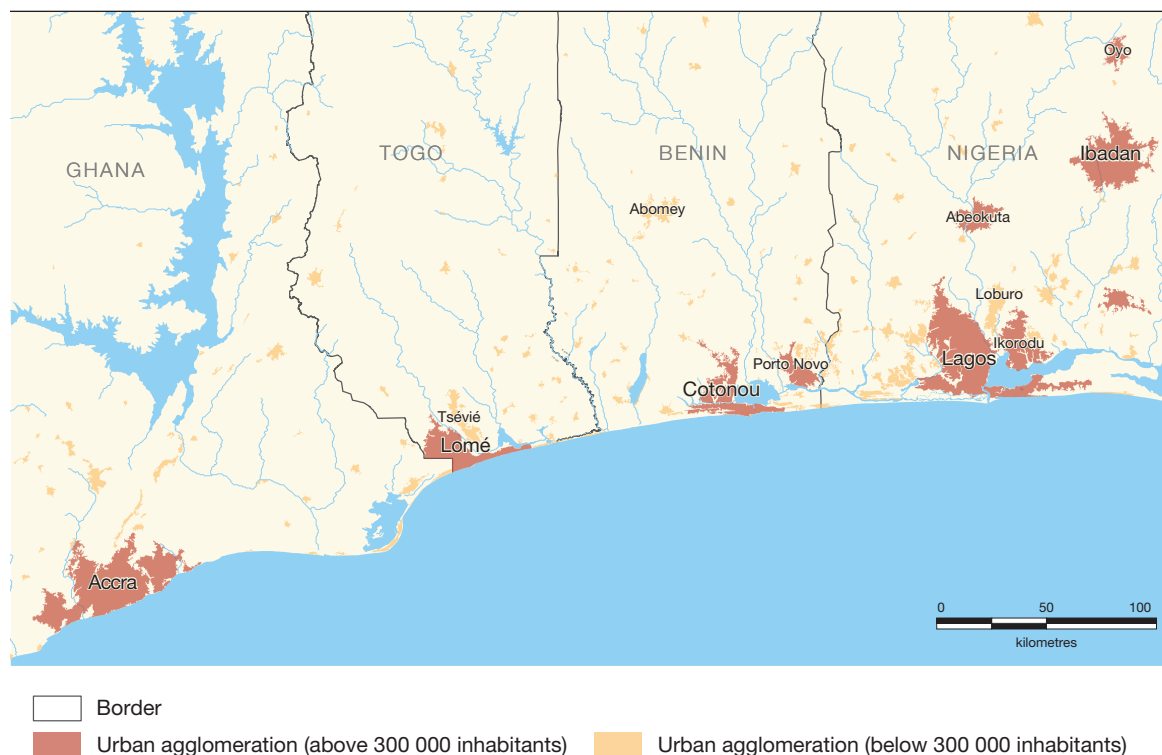
This trend, however, cannot be generalised to all African countries. Some national metropolises do not induce the formation of metropolitan areas. For example, the peripheries of, Kinshasa, Bangui, Kinshasa, Lusaka, N'Djamena, Niamey and Nouakchott are surrounded by areas of very low density. Even if the influence of the

metropolitan agglomeration on its periphery is never totally nil, a satellite agglomeration or development corridor has yet to appear.

Hence, the increase in the number of urban agglomerations in a country does not imply that urbanisation is spreading homogeneously at the national level. On the contrary, it can be highly concentrated in certain regions of a country. A spatial approach with indicators disaggregated to the relevant scales, is needed to better understand these processes.

Map 4.5

The Greater Ibadan-Lagos-Accra Urban Corridor



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

Transnational and international metropolitan regions

The development of metropolitan regions illustrates a change in the scale of trade. Africa's metropolises are increasingly connected to the global economy. Financial, commercial and human flows link to major cities in Europe, North America and Asia. In addition, veritable transnational metropolitan areas are emerging. Thus, the metropolitan areas of southern Ghana, Benin, Togo and Nigeria juxtapose, and form what UN-HABITAT calls "The Greater Ibadan-Lagos-Accra Urban Corridor" (UN Habitat, 2008) (Map 4.5).

The formation of metropolitan regions can also be seen in the highlands of the Great Lakes region, between Rwanda and eastern DRC (Kivu), and between Uganda and western Kenya. Some pairs of cross-border cities such as Kinshasa-Brazzaville, N'Djamena-Kousséri, Bangui-Zongo or Bujumbura-Uvira may also be considered transnational metropolitan areas. The

agglomerations of Nairobi and Johannesburg are extended and surrounded by other agglomerations forming larger metropolitan areas. These transnational metropolitan regions contribute to regional integration by promoting the flow of people and goods between countries and by insisting on improving the fluidity of circulation and better enforcement of related treaties.

The emergence of mega-agglomerations

As early as 1991, the morphological approach proposed by e-Geopolis highlighted the existence of mega-agglomerations that were not yet recognised by any official body. This included the conurbation between Brussels, Antwerp and Ghent, establishing a junction with Lille in France (INSEE, 1991), confirmed since by STATBEL⁵, the national statistical office of Belgium. In 2001, e-Geopolis also showed that several official "urbanised areas" of the United States were merging together, notably the New

York and Philadelphia agglomerations as well as Washington and Baltimore. In 2018, these units were formalised by the United States Census Bureau (USCB) with the “combined metropolitan area” concept. In sub-Saharan Africa, 15 agglomerations with more than 600 000 inhabitants fit this definition (Table 4.1).

By identifying these agglomerations, the Africapolis database informs policies on current transformations and their impacts. To facilitate identification, a name is proposed by the authors for each mega-agglomeration, often that of a smaller agglomeration, at the top of the administrative hierarchy. Within these vast morphological units, sometimes only a few small urban centres are officially identified.

These 15 urban agglomerations in sub-Saharan Africa represent 8% of the urban population and 35.7 million inhabitants, hence the importance of taking into account the morphological criterion. In Africa, the evolution of population settlement is so rapid that everything indicates that the process of emergence of this type of agglomeration will intensify. Mega-agglomerations share certain common characteristics which make it possible to project and anticipate their development. Moreover, on a more theoretical level, these new morphological objects for both researchers and actors can be framed with different known models of urban geography and spatial economics such as *conurbations* and *desakota*.

Factors affecting the spontaneous emergence of mega-agglomerations

Large, spontaneous agglomerations are found in four regions of sub-Saharan Africa; (1) the highlands around the Great lakes, in Burundi, western Kenya, Rwanda, southern Uganda, north-western Tanzania and the far northeast from the DRC (new province of Ituri); (2) the Ethiopian highlands; (3) the Cameroonian highlands; (4) south-eastern Nigeria. The situation in Egypt is different as two large metropolitan urban centres—Cairo and Alexandria—have long been concentrated in contrast to the scattered settlements of the Nile valley. Although, each spontaneous mega-agglomeration has specific trajectories, several common features can be identified:

A very high rural density

The average density of mega-agglomerations is 1 300 inhabitants per square kilometre, with a high of 3 500 inhabitants per square kilometre in Gisenyi (Rwanda) and a low of 500 inhabitants per square kilometre in Bomet (Kenya). Too dense to be considered rural, these spontaneous agglomerations remain below the thresholds for urban agglomerations. This high density in rural areas is the result of excellent agricultural conditions and the environment, especially the climate (rainfall or irrigation as in Egypt). This is why the major settlement clusters are found in Africa's highlands and, above the Niger delta in the Gulf of Guinea. They are also the regions where sedentary agriculture is ancient, and where the population has accumulated for centuries, even millennia. This particular origin of agglomerations has two consequences:

- *A linear or dispersed settlement pattern*
High agricultural yields allow for a fragmentation of land holdings as agricultural output compensates for small farm size. In the tropics, two or more crop rotations are possible on the same plot, provided the soil quality is carefully maintained. Dispersed settlements maximise proximity of different crops and traditionally dominate in all areas of very high density. Egypt is an exception, since the mode of production linked to irrigation favours linear and clustered settlements, as in the Great Asian plains.
- *A tendency to the retention and demarcation of the territory*
Confronted with the lack of space reserved for agriculture, populations must expand their territory, or emigrate. This implies either the development of land with less favourable agronomic or climatic qualities, or the risk of neighbourhood tensions for land. Whatever the strategy adopted, it tends to increase the population density limit. The confinement of settlements within a territory may also result from strict territorial boundaries. The boundary may correspond to a natural discontinuity, such as the edges of the Ethiopian highlands (Map 4.7) or the desert in the Nile valley where land is available but barren. In some cases the discontinuities are

Box 4.1**Metropolitan regions in southern Africa: Political tools**

Some metropolitan areas originate from specific spatial planning policies. In southern African countries, urbanisation inherits both ruralist ideology and a policy of racial segregation that prevailed until the early 1990s. The “Garden City” with its a sparse agglomeration and small size dominated. When human concentration becomes too great, urban planning fragments urbanised areas into distinct agglomerations separated by wide undeveloped corridors. The non-continuity of agglomerations supports both racial and socio-economic segregation. Since the abandonment of segregationist regimes, certain corridors have been populated and developed with the construction of shopping centres, sports and leisure areas, reconnecting some agglomerations. Many urban agglomerations’ built-up areas have a uniquely fragmented layout (Map 4.7). Africapolis distinguishes several agglomerations within the same municipality, based on the

continuity of the built environment. The map shows that each agglomeration is itself a small conurbation organised in different blocks.

Since 1996, the government of South Africa has undertaken a vast programme of territorial reform. The Bantustans⁶ have been removed, the map of administrative divisions remade, and town plans redesigned.

The Johannesburg-Pretoria agglomeration (8.3 million inhabitants) extends to the north through Soshanguve, which itself exceeds one million inhabitants. Duduza, Evaton, Vanderbijlpark, Vereeniging, Saulsville, Etwatwa, Madibeng “A” and “B” are between 100 000 and 785 000 inhabitants. A true metropolitan region has formed, comprising more than 13 million inhabitants in 2015 in a nebula of agglomerations. Similar patterns are also observed in Botswana, Kenya, Malawi, Namibia, Zambia and Zimbabwe.

Table 4.1

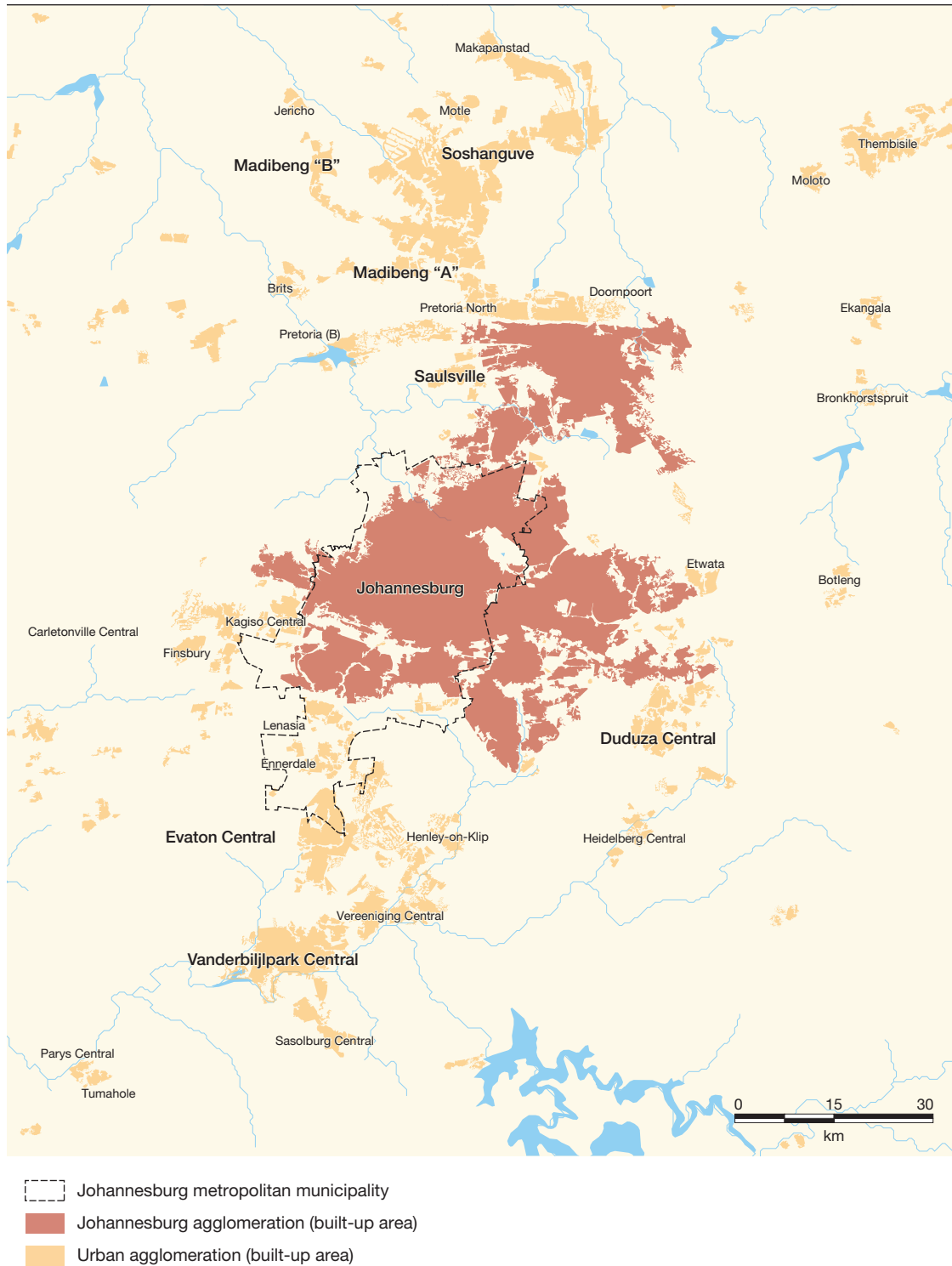
Spontaneous mega-agglomerations of more than 600 000 inhabitants in sub-Saharan Africa, 2015

Agglomeration (2015)	Country	Agglomerated urban population	Population of administrative centre	Built-up area (km ²)	Number of LU*	Population density (inhab/km ²)
Onitsha	Nigeria	8 530 514	176 200	2867	46	2 976
Aba	Nigeria	1 687 158	136 000	754	14	2 237
Nsukka	Nigeria	1 430 312	390 525	699	9	2 047
Bafoussam	Cameroon	1 146 320	248 377	1 318	43	607
Sodo Town	Ethiopia	2 261 958	145 100	1930	318	1 172
Hawassa City	Ethiopia	2 182 604	300 100	1302	236	1 677
Kisumu aggl.	Kenya	5 040 159	N/A	5863	655	860
Kisii aggl.	Kenya	3 407 476	N/A	5001	466	681
Uyo	Nigeria	2 271 025	414 600	997	22	2 277
Mbale	Uganda	2 228 643	98 746	1060	125	2 109
Embu aggl.	Kenya	2 046 897	N/A	1555	361	1 317
Gisenyi/Kisoro	Rwanda/Uganda/RDC	1 255 024	21 348	355	48	3 534
Maua aggl.	Kenya	848 272	N/A	943	137	899
Bomet aggl.	Kenya	753 093	N/A	1504	179	501
Busia	Uganda	612 696	57 354	366	43	1 675

Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018

Map 4.6

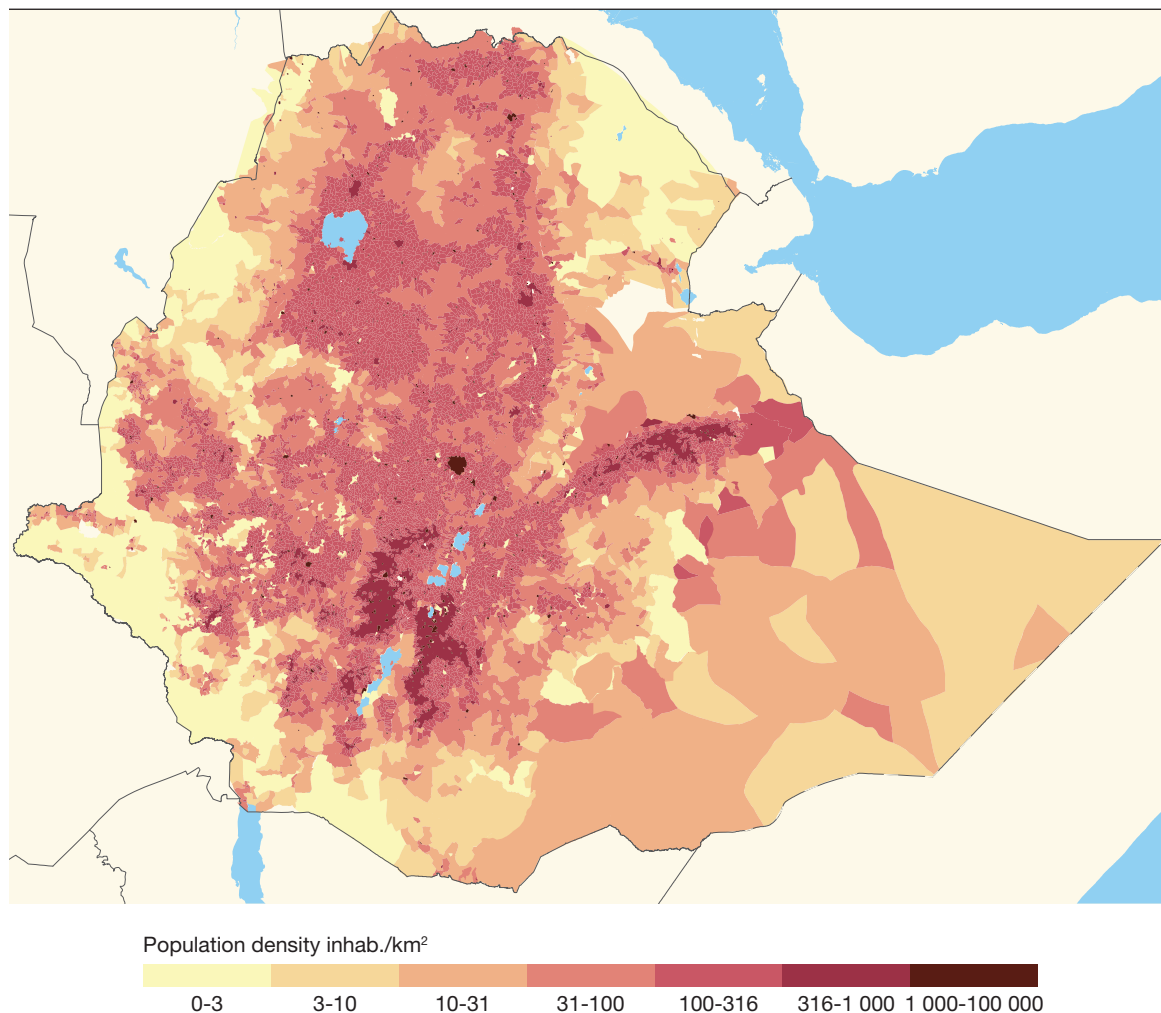
The nebulous agglomerations around Johannesburg



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

Map 4.7

Population density in Ethiopia in 2015



Source: Geopolis 2018 - Map: François Moriconi-Ebrard

administrative, as for instance in Lomé, Togo or Mbale along the Uganda-Kenya border where urban expansion is blocked by an international border. In other cases again, physical and administrative boundaries overlap (Map 4.7). This cantonnement of populations, due to administrative or physical constraints, can lead to strong urban concentrations as highlighted by protected areas and natural reserves. Thus, Kisii (Kenya) emerged as a continuously built-up area around 2010. In 2015, it had 3.4 million inhabitants stretched over 5 000 square kilometres, making it one of the world's least dense large agglomerations, similar to Atlanta in the United States.

However, unlike the latter, densification continues within the bounded space at the rate of 2.5 to 3% per year. At this rate, it will have 5 million inhabitants before 2030.

Low emigration

At the national level, the demographic pressure that drives the process of spontaneous emergence of agglomerations is stronger when emigration and rural-urban migration are weak. Since the mid-1970s, state and development partner strategies have focused on limiting rural exodus. Many organisations stress the adverse effects of this policy which has not taken into account

Image 4.1

An administrative boundary: South of the Kisii agglomeration (Kenya)



Note: The image shows a detail at the southern limit of the spontaneous agglomeration of Kisii. This boundary is a long almost straight line of 50 kilometres. It is superimposed on an agricultural landscape that follows contour lines to minimise erosion in this particularly rainy equatorial region. This spatial discontinuity also corresponds to the administrative boundary between two provinces, Nyanza and Rift Valley. Although provinces were abolished by the 2013 territorial reform, their visible boundary on the map remains at the same location of the new county boundaries, separating the counties of Kisii and Narok.

Source: Google Earth (accessed July 2017), $y = -0.919$, $x = 34.900$, Alt. 4 700 metres

the consequences of rapid population growth. Constant in terms of rate, this linear growth becomes exponential once it is related to a bounded area.

For a rural region with 5 inhabitants per hectare (500 inhabitants per square kilometre) in 1975, similar to the average of the 15 spontaneous mega-agglomerations in (Table 4.1), the density will have reached 13 inhabitants per hectare in 2015 at a constant natural growth rate of 2.5% per year. By 2050, with the same growth and in the absence of migratory movements, the density will increase to 32 (3 200 inhabitants per square kilometre). The question is therefore not whether this rural region will become urban, but when it will become urban. Similarly, several areas in Africa, where population settlement is still dispersed and densities are still below the critical threshold of agglomerations, should expect to become urbanised.

With a density of 3 000 inhabitants per square kilometre, the conurbation/mega-agglomeration of Onitsha (Nigeria) is no longer identifiable as rural. The natural population growth rate predicts a tripling of the population in 35 years. At the current rate, in 2050, the agglomeration will house more than 25 million inhabitants in its perimeter and its density will reach 9 000 inhabitants per square kilometre. In addition, under current trends in sprawl, it will lead to the formation of a single agglomeration that extends throughout the Port-Harcourt-Uyo-Nsukka triangle forming a mega-agglomeration of 50 million people by 2050, surpassing Lagos as the country's largest agglomeration. In many cases these agglomerations are not recognised by national or international political institutions, even though they are positioned among the most populated of the country. The territory of south-eastern Nigeria's conurbations is managed as a set of rural units without taking into account the

increase in density and the gradual transformation of the economy and societies. The projected trends make the “political recognition” of cities and agglomerations all the more important (Table 4.2).

Mega-agglomerations and similarities with other urban forms

Characteristics of conurbations

Popularised at the beginning of the 20th century, the word “conurbation” refers to agglomerations built during the industrial revolution. It is a form of urbanisation of the North American “Rust Belt”, English “Black Counties” and Northern Europe. They are characterised by the weakness of service industries and a more polycentric form, with several centres distributed throughout the agglomeration, and higher spatial dispersion which leads to lower density. Their lack of economic, political and social structure means that their functional and statistical units are often difficult to determine. In Africa, the only real industrial conurbation is that of the Witwatersrand, where a number of cities have developed in conjunction with industrialisation: Johannesburg, Germiston, Brakpan, Krugersdorp, Roodepoort, Boksburg.

From a structural and functional point of view, three generic forms of conurbations are present in Africa:

- Type 1 characterises conurbations without a real centre: these did not develop from a large city, but simultaneously from all centres of the basin. The most representative example is the Ruhr in Germany. The Ethiopian agglomerations of Sodo and Hawassa, in which no significant centrality emerges, are of this type.
- Type 2 distinguishes conurbations that associate a nebula of small peripheral industrial or service cities to a larger centre. Each small town retains a strong local identity, but their regional, national or even international political influence is reduced. The development of the city-centre also stimulates growth of cities and villages of the region. The archetypes are Manchester and Birmingham in the United Kingdom or Naples and Milan in

Italy. In Africa, Aba (Nigeria) belongs to this category.

- Type 3 characterises conurbations that combine two “centres” of comparable size and strong local identity, such as the twin cities Leeds-Bradford (United Kingdom), Minneapolis-St. Paul (Minnesota), Dallas-Fort Worth (Texas), Miami-Fort Lauderdale (Florida). Conurbations or mega-agglomerations such as Onitsha and Uyo are also this type.

In Europe and North America, “city” centres concentrate the symbolic seats of spiritual, political, financial and cultural power. In the absence of true centrality and political function, conurbations of industrial origin tend to suffer from a deficit of urbanity in the sense of the Anglo-Saxon sociologist Louis Wirth. In the African context, where agglomerations are not born of an industrial impulse but of a densification of the rural world, this deficit of urbanity is amplified.

Africa’s spontaneous mega-agglomerations share common characteristics, but also differences with conurbations. A commonality for instance is the absence of a real centre, indicating that the urbanisation process did not follow a centrifugal diffusion from the centre to the periphery. As for the differences: historically, conurbations, often of an industrial nature, have densified due to the inflow of people from outside the agglomeration, from other regions or countries (most conurbations of Europe or North America). In Africa, the densification of mega-agglomerations results primarily from an increase of the local population. Mega-agglomerations in Africa are rather emigration areas, whose diaspora networks have contributed to their development, as in eastern Nigeria.

Mega-agglomerations and “desakotas”

“Desakota” originates from the Bahasa language of Indonesia, in which *desa* means village and *kota*, city (McGee, 1991). The English and French translations remain imperfect because urban village or *village urbain* does not transcribe exactly the idea of *desakota*.

At the micro-local level, South Asian *desakotas* combine farms, houses or concessions adjacent to cultivated plots, industrial

Table 4.2
Nigeria: An underestimated southeastern urban population

Regions and agglomerations	Area km ² 2015	Africapolis population 2015	WUP population 2015	Difference
South East				
Onitsha	2 867	8 531 000	1 109 000	
Nnewi			770 000	
Owerri			716 000	
Uyo	997	2 271 000	1 114 000	
Port Harcourt	368	1 845 000	2 343 000	
Aba	754	1 687 000	944 000	
Nsukka	699	1 430 000	n.d.	
Enugu	178	905 000	681 000	
Umuahia	96	393 000	580 000	
Total		17 062 000	8 257 000	- 52%
Other regions				
Lagos	1 093	11 811 000	13 123 000	
Kano	282	3 889 000	3 587 000	
Ibadan	608	3 088 000	3 160 000	
Abuja	489	1 999 000	2 440 000	
Benin City	438	1 570 000	1 496 000	
Kaduna	271	1 447 000	1 048 000	
Maiduguri	139	1 012 000	728 000	
Ilorin	220	891 000	857 000	
Jos	184	870 000	810 000	
Sokoto	87	840 000	552 000	
Zaria	88	796 000	703 000	
Osogbo	182	764 000	650 000	
Abeokuta	179	748 000	495 000	
Ikorodu	273	732 000	706 000	
Gombe	72	601 000	417 000	
Warri	141	586 000	663 000	
Akure	158	533 000	556 000	
Bauchi	96.08	528 000	496 000	
Calabar	80.64	517 000	467 000	
Total		33 222 000	32 954 000	-1 %

Notes: According to the World Urbanization Prospects (WUP): Enugu, Port Harcourt, and Calabar are identified as cities. Aba and Uyo are listed, but their populations are half of Africapolis figures. Onitsha is divided into three "agglomerations" (Onitsha, Nnewi and Owerri) losing 5.9 million inhabitants and declining in the national urban hierarchy. The Nsukka, 1.4 million inhabitants according to Africapolis, is not mentioned in the WUP. In contrast, the population of the capital Abuja is overestimated, with the WUP estimates referring to entire federal capital territory which covers 7 800 km². Similarly, the population of Port-Harcourt, home to several headquarters of gas and oil companies, is 27% higher than Africapolis. Thus, the recognition or lack thereof of the estimated size of agglomerations may take on a political dimension.

Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 and United Nations 2018

enterprises, shops, and schools. At the regional level, their development is based on large cities, such as Jakarta in Indonesia, Hanoi and Ho Chi Minh City in Vietnam. In this context, this concept only describes the periphery of these large cities. In Africa, the development of spontaneous mega-agglomerations differs in the sense that it does not rely on large cities, comparable to those in South Asia.

However, Africa's mega-agglomerations benefit from highly productive agricultural activities within the agglomeration like the *desakotas*, notably in terms of promoting agri-food processing activities. For instance, agglomerations of the Kenyan Highlands are home to the production of off-season vegetables that supply major distribution companies of Western frozen products, as well as battery farming and

Box 4.2

Southeast Nigeria: From a mega-agglomeration to a megalopolis of 50 million inhabitants in 2050

The urban development of southeastern Nigeria with the existence of several conurbations close to each other unites all the features of spontaneous mega-agglomerations. The combination of natural and administrative barriers limit the region: the mangroves of the delta in the south, and the floodable areas of the Niger valley in the west covered with palm kernel forests (Oil River). To the east, the region abuts a rugged massif covered with dense (and protected) forest towards the Nigeria – Cameroon border, constituting a geopolitical division analogous to Kruger or Virunga Parks ([Map 4.8](#))

The Onitsha agglomeration morphologically unites several historic urban centres buried in an immense area of dense dispersed settlement. Located at the extreme north-west of the agglomeration, the centre was described during the 1950-60s as “the most active market of all West Africa” (Laroche, 1962, *op.cit.*). The original centre is identifiable on a map by a very dense urban habitat. An anomic maze of roads lined with various constructions extends to Awka, the capital of Anambra State to the east, and to Nnewi to the south. Several smaller centres like Ihiala, Nkwerre and Orlu are also absorbed by the conurbation. East of the delta, the agglomeration of Uyo spreads on alluvial terraces about 60 metres above the level of the Cross River flood plain. Uyo’s 2.3 million inhabitants mainly speak Ibibio.

Between these two agglomerations, Aba, located in the south of Abia State is 95% Igbo. The agglomeration has 1.7 million inhabitants and has a dense centre. Industrial zones and workshops are spreading producing cosmetics, textiles, plastics, cement, pharmaceuticals, palm oil, etc.. The Ariaria International Market of Aba, nicknamed the “China of

Africa” handles millions of transactions internationally in shoemaking and clothing. With 7 000 shops, it is the largest market in West Africa besides Onitsha. North of this area, Nsukka (1.4 million inhabitants) extends on a plateau at an altitude of more than 450 metres. It is considered one of the main centres of Igbo culture and houses the first Nigerian university. The agglomeration has some small intermediary centres: Enugu-Ezike, Obolo, Ibegwa.

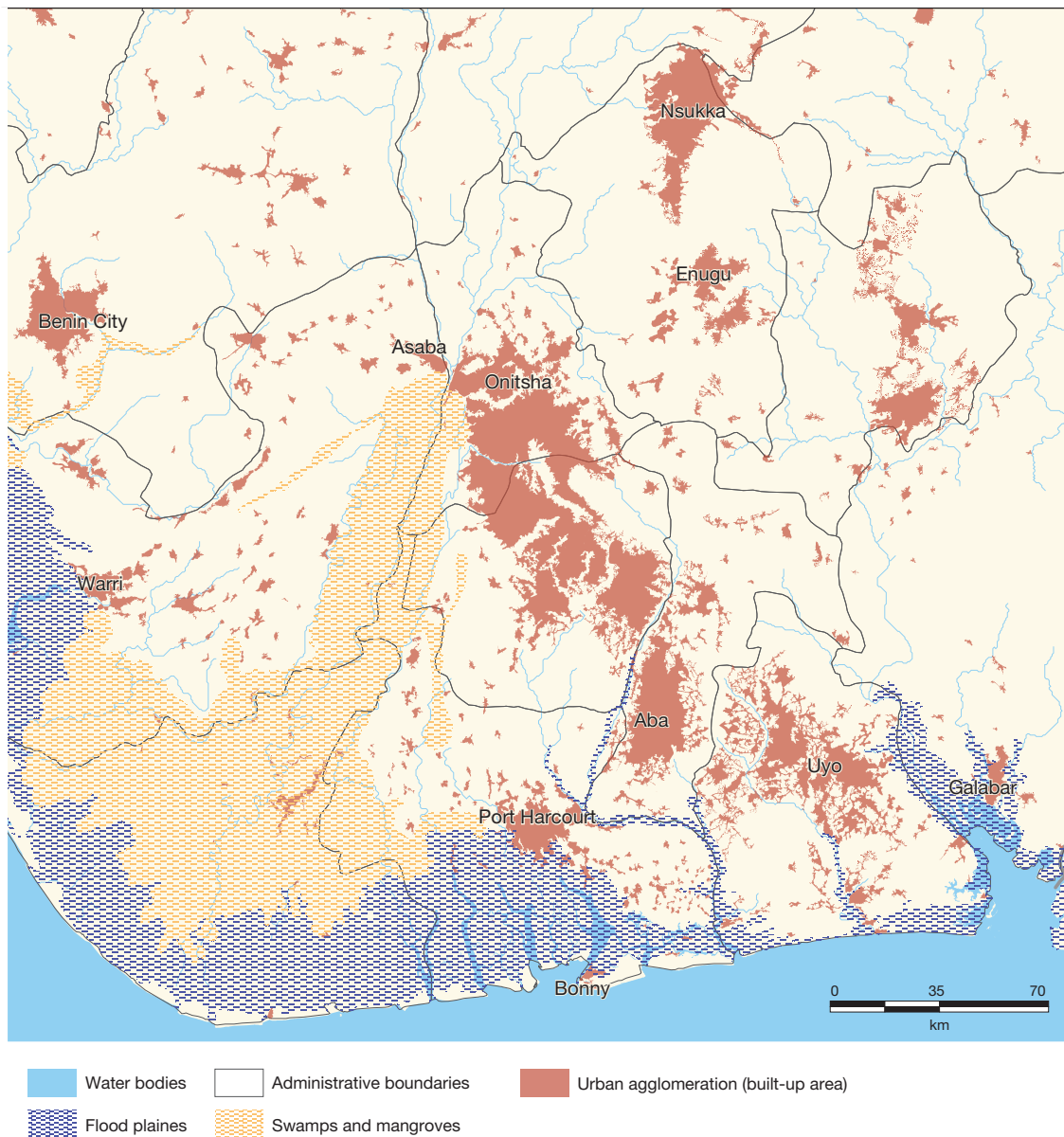
The central core of Onitsha is divided into two Local Government Areas (LGAs), Onitsha South and Onitsha North. Both had only 340 000 inhabitants in 2015. They do not correspond to the old municipality, which already had 165 000 inhabitants in 1962 and 657 500. Within the conurbation, Nnewi has around 200 000 inhabitants within a dense core. Akwa has about 300 000 inhabitants, Orlu, 150 000, and Nkwerre, 100 000. At the extreme south of the conurbation, Owerri spreads out over three LGAs (Municipal, North and West) and has a dense urban core of about 550 000 inhabitants. These figures are very roughly estimated at this stage on the basis of the presence of compact habitat nuclei, structured by a regular urban-type road network.

above-ground farming. The production practices are well adapted to availability of a large local workforce and relative small farms size. These local economies centred around agri-food industries are specific to spontaneous mega-agglomerations, and link them to the continental and global economy.

The singularity of the conditions and factors leading to the emergence of spontaneous mega-agglomerations make them difficult to classify in the vocabulary of development and geographical sciences. They are only partially similar to that of conurbations or *desakotas*. “Mega” refers to their large areas and “spontaneous” to the fact that their emergence is not part

Map 4.8

The political and natural confinement of urban areas in the southeast of Nigeria



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

of any urban development plan. Another shared characteristic of spontaneous mega-agglomerations is their location within the interior of the continent and not along the coasts. The features, conditions, and specific forms of these spontaneous mega-agglomerations make them new urban territories. The morphological, economic and territorial heterogeneity of these new urban

forms must be analysed and projected in order to be able to anticipate and accompany ongoing transformations and their spatial impacts beyond the national scale.

Table 4.3
Share of coastal urban population in Africa by agglomeration size

Agglomeration size	Coastal urban population (in millions)	Number of coastal agglomerations	Share of coastal agglomerations in total	Share of coastal urban population in total
> 1 million inhabitants	86.3	28	38 %	38 %
> 500 000 inhabitants	98.3	47	34 %	36 %
> 100 000 inhabitants	115	113	16 %	29 %
Total (> 10 000 inhabitants)	121	424	6 %	21 %

Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018

COASTAL URBANISATION AND INTERIOR URBANISATION

Most major colonial cities were port cities. These port cities are the foundation of many of today's most populated African agglomerations. And yet, this view of an urban coastal Africa should be qualified. The colonial period also saw the emergence of cities within the interior of the continent: Bamako, Bangui, Brazzaville, Bujumbura, Bulawayo, Cairo, Harare, Johannesburg, Kampala, Kinshasa, Lubumbashi, Lusaka, Nairobi, N'Djamena, Niamey, were founded inland. Other ancient big cities like Addis Ababa, Ibadan, Kano, Khartoum, or Sokoto are also in the interior of the continent.

In addition, many coastal cities have only limited contact with the seafront. Nouakchott's urban area barely touches the coast. The centre of Lagos is located on a lagoon and not at the edge of the ocean, just like Abidjan, Boma, Cotonou, Porto-Novo, Saint-Louis, or Tunis. Douala and Port-Harcourt developed in an estuary. At the local level, many buildings and sites along the coastline are more inward looking than seaward.

Finally, the strong urban growth in the interior of the continent is salient, including not only small agglomerations and political capitals, but also new spontaneous mega-agglomerations. These two urban faces - coastal and interior - and their dynamics highlight some of the political issues of urbanisation and the new social and economic dynamics at work.

Africa's low urban coastalisation

The perception that African urban networks are coastal is biased for two reasons. The first is the subjective perception of many of Africa's elite

who reside in coastal metropolises, as well as of foreigners who enter the continent through international airports of major coastal cities. Second, the most commonly used and known maps focus primarily on the most populated and officially-recognised agglomerations which are coastal. The spontaneous mega-agglomerations identified by Africapolis are located in the interior of the continent, many of which do not appear on maps. In addition, about 80% of smaller agglomerations are not included in "urban" categories and are mostly located in the interior.

The larger the size of the agglomerations sampled, the higher the relative weight of coastal agglomerations. At a threshold of 1 million inhabitants and above, coastal agglomerations represent 38% of all the agglomerations and 38% of the total urban population (Map 4.9). At a threshold of 100 000 inhabitants, their share in the total urban population drops to 29%. And, covering the entire urban network (threshold of 10 000 inhabitants), coastal agglomerations represent 6% of the total number of agglomerations and 21% of Africa's urban population. Africa comprises 17 landlocked countries which represent 29% of the continent's population.

The development of Africa's coastline is discontinuous and heterogeneous. Southern Africa has the most urban coastal region, with 100 agglomerations comprising 29% of the urban population, including Luanda, Cape Town, Durban, Maputo and Dar-es-Salaam (Table 4.4). It also has the most developed seaboard, with 8 500 kilometres of coastline. The two truly "coastal" areas in sub-Saharan Africa are around Durban, with many seaside resorts, and

Table 4.4
Coastal urbanisation of Africa's main regions

Régions*	Number of coastal agglomerations	Share of coastal agglomerations in total	Coastal urban population (in millions)	Share of coastal urban population in total	Coastline (km)
Central	15	2 %	4 700 000	8%	1 998
East	36	2 %	11 600 000	10 %	8 386
North	178	10 %	40 000 000	28 %	8 201
Southern	100	10 %	24 100 000	29 %	8 440
West	96	4 %	40 700 000	25 %	6 065
Total	424	6 %	121 100 000	21 %	33 090

Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018

*North Africa: Algeria, Egypt, Libya, Morocco, Tunisia

Central Africa: Burundi, Cameroon, Central African Republic, Congo, DRC, Equatorial Guinea, Gabon, Sao Tome and Principe

East Africa: Djibouti, Eritrea, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania, Uganda

Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe

West Africa: Benin, Burkina Faso, Cabo Verde, Chad, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo

the Dar-es-Salaam-Bagamoyo-Zanzibar triangle, which foreshadows the emergence of a Tanzanian metropolitan region.

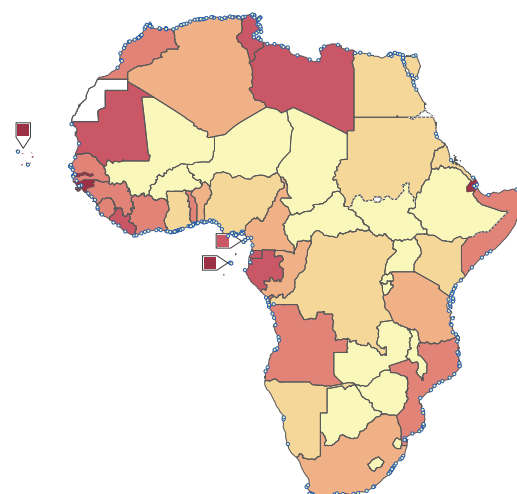
West Africa's urban expansion only concerns limited portions of the coastline: from Dakar to Mbour, the coast of Togo, some sectors of the Ghanaian coast. Along the Greater Ibadan-Lagos-Accra urban corridor (GILA) the urban built-up areas only occasionally follow the coastline, contrary to North America, Europe or South Asia. The major routes of the corridor avoid the coastal rims of the lagoon regions and bypass the Volta River delta.

One of the most striking examples of Africa's low urban coastalisation is that of Nigeria, the country with the largest urban network in Africa and 853 kilometres of coastline. The number of urban contact points with the ocean increased slightly in the 20th century, but mostly at the edge of lagoons and within the immense Niger delta. Even by extending the idea of "coastal" to these agglomerations, the urban/ocean interfaces remain very limited, concerning mainly Lagos, Warri, Port-Harcourt and Calabar. By extracting estuarine estates and lagoons, only ten of the country's 1 236 agglomerations are located on the coast in the strict sense.

Although cities have developed on the coast of East Africa since antiquity, it is the least coastally settled region. In Sudan, Port Sudan, only one of two major ports in the country, with a population of 423 000 is 12 times smaller than

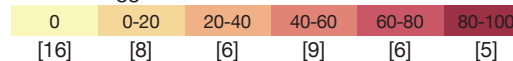
Map 4.9

Share of urban population living in coastal agglomerations 2015



Share of coastal population urban/total (%)
[Number of countries]

• Coastal agglomeration



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018

Khartoum, the country's largest agglomeration. Significantly, Hargeisa, the "capital" of the self-proclaimed state of Somaliland, a city of more than 700 000 inhabitants, is prospering far

from the coast, at an altitude of 1 300 metres. In Kenya, the Mombasa region is the only stretch of coastline where an urban network runs parallel to the coast, but the agglomeration itself was only the fifth-largest in the country in 2015, far smaller than the spontaneous mega-agglomerations that have emerged in the highlands of the interior.

In Central Africa, the coast of the DRC (40 kilometres) has only two agglomerations, with a combined population of slightly more than 300 000 inhabitants, or 1% of the urban population of the country. In Angola, four major cities with more than 500 000 inhabitants are located on the coast (Luanda, Cabinda, Benguela and Lobito), while other major agglomerations, including Lubango (616 000 inhabitants) and Huambo (600 000), and Malanje (470 000), are all at an altitude of more than 1 100 metres. The urban development of the interior continues.

The weak coastalisation of urbanisation is a common feature of African societies, and also present in Central America. In mainly agrarian and pastoral societies, coastal areas are less attractive because of the poor agrarian quality of soils. Sea fishing is poorly developed. In addition, movement of goods and travel is done by land, and at a good distance from a coastline with many bays that are difficult to cross. For the moment, urbanisation has only led to little development of the coasts. With the exception of northern and southern Africa, the coastalisation of African populations is recent but should not be neglected. It operates in two ways: The first is domestic and still marginal: the recent appropriation of the seafront by construction near major urban centres (Lagos, Abidjan, Durban, Mombasa). It is of interest to a limited segment of the population, mainly the emerging middle classes. These socio-economic groups are more numerous in the richest countries, especially in South Africa. However, they also emerge in a few stations along the South Atlantic between Kribi (Cameroon) and Namibe (Angola), on the Indian Ocean in South Africa and Mombasa (Kenya), and along the Mediterranean coasts that attract domestic and foreign tourists (Egypt, Tunisia). The second is the promotion of new housing developments. This new attraction for the coastline signals a significant societal change.

Emergence of an inner urban Africa

At the continental level, the presence of large cities on the African coast is a legacy of the colonial period. The original foundation sites tended to be insular. Dakar originated on the island of Gorée, Conakry on that of Tombo, Mozambique was founded in the island of the same name at a good distance from the coast. Similarly, Banjul, Monrovia, Freetown and Cape Town are hardly accessible from the mainland. When these initial sites proved too small, urbanisation spread across to the mainland. It then proceeded perpendicular to the coast, and not parallel, as illustrated by Guinea Bissau. The territory was first administered from outside the continent as a dependency of the Cabo Verde islands. Becoming an autonomous colony (1879), its capital was located in Bolama, on an island in the archipelago of Bijagos, still outside the continent. It was not until 1941 that the capital was transferred to the mainland in Bissau.

Along the coasts, the natural sites most conducive to the installation of deep water harbours, that are well sheltered are accessible, are relatively rare. These were coveted by major powers for the development of export economies. This scarcity has resulted in a few cities, but with strong urban concentrations. The value of these coastal positions is, however, derived from the riches of the interior. Thus, networks tended to turn their backs on the ocean, developing perpendicularly to the coastline. This spatial logic persisted after independence, and the same agglomerations became the bridgeheads of increasingly globalised trade. Today, trade with the outside world is increasingly focused on emerging economies like China, Thailand, Brazil or the Persian Gulf countries.

The main historical settlement areas of sub-Saharan Africa are in the interior of the continent, mainly in the highlands long dominated by dense rural settlement. The major migratory and trade corridors are located far from the coastlines, connecting these large settlement clusters. Indicators show that Africa's greatest potential for urban growth lies in these inner territories, and this has political implications.

The dynamics of big cities in countries whose capitals have been located in the interior since

before independence, illustrates the fundamental role of political functions. Thus, in Cameroon, Yaoundé has supplanted the port of Douala in terms of population. In the Congo, Brazzaville has passed Pointe-Noire. Namibia has only two agglomerations on the coast, with its capital flourishing far inland on the plateaux. Finally, the capitals of the 17 landlocked countries display urban growth that is just as rapid as that of countries with a coastline.

This change in the dynamics between interior and coastal cities, with an increasingly rapid increase in the former, can also be measured by introducing a third spatial variable, altitude. In addition to the longitude and latitude variables, this dimension is rarely used in spatial analysis. It is introduced in Africapolis by the average altitude of each agglomeration relative to sea level (Box 4.3). Africa is the highest of all the continents in terms of average altitude. In the intertropical zone, altitude has a considerable impact on the climate, and thus on the conditions of agriculture and urban development. Altitude profoundly affects temperatures and precipitation patterns. High altitude areas get more rain and less evaporation. They provide favourable conditions for types of agriculture less practicable in low, drier and forested areas.

Altitude influences the development conditions of cities: population health, epidemiology, energy consumption, supply, natural risks, accessibility. In the intertropical zone, it tempers extreme heat and therefore the proliferation of certain diseases and parasites that have long decimated livestock and humans. The flipside of high altitude locations is a relative isolation, compared to civilisations that were constantly expanding and interconnected by sea. Of all the areas of Africa, the highlands have long remained the most rural: with the continuous increase of their population.

However, despite the reversal of trade routes, driven by colonisation and then globalisation, to the benefit of coastlines, the highlands continue to concentrate the major centres of settlement in sub-Saharan Africa with the highest potential for urban growth.

Political equilibriums are influenced by urban development, especially in inland territories. Some of the intermediary agglomerations

of the interior, such as Kumasi in Ghana, Kano in Nigeria, Touba in Senegal and Bouaké in Côte d'Ivoire, are the second largest agglomerations competing with national metropolises. They are home to hotbeds of political dissent. To a lesser extent, in Togo, Kara, "city of the President" and Abomey, seat of the Kingdom of the same name, represent important domestic political centres.

In Somalia the vigorous growth of Hargeisa highlights tensions between the interior Africa, focused on intracontinental circuits and coastal Africa, developed during the colonial period, such as Mogadishu. In Cameroon, the Bamileke of Bafoussam, an "informal" agglomeration of more than one million inhabitants, are traditionally differentiated by their "high" and the "low" altitude position.

This bipolarity of African urbanisation, increasing with the continued urbanisation of the interior, is affecting political stakes and potentially aggravating tensions. These issues may not be only economic and financial, but also signal the beginning of a shift in political power relations to the benefit of inland agglomerations and populations long subjected to colonial and more recently national coastal interests.

Box 4.3

Altitude, coastal and inland Africa

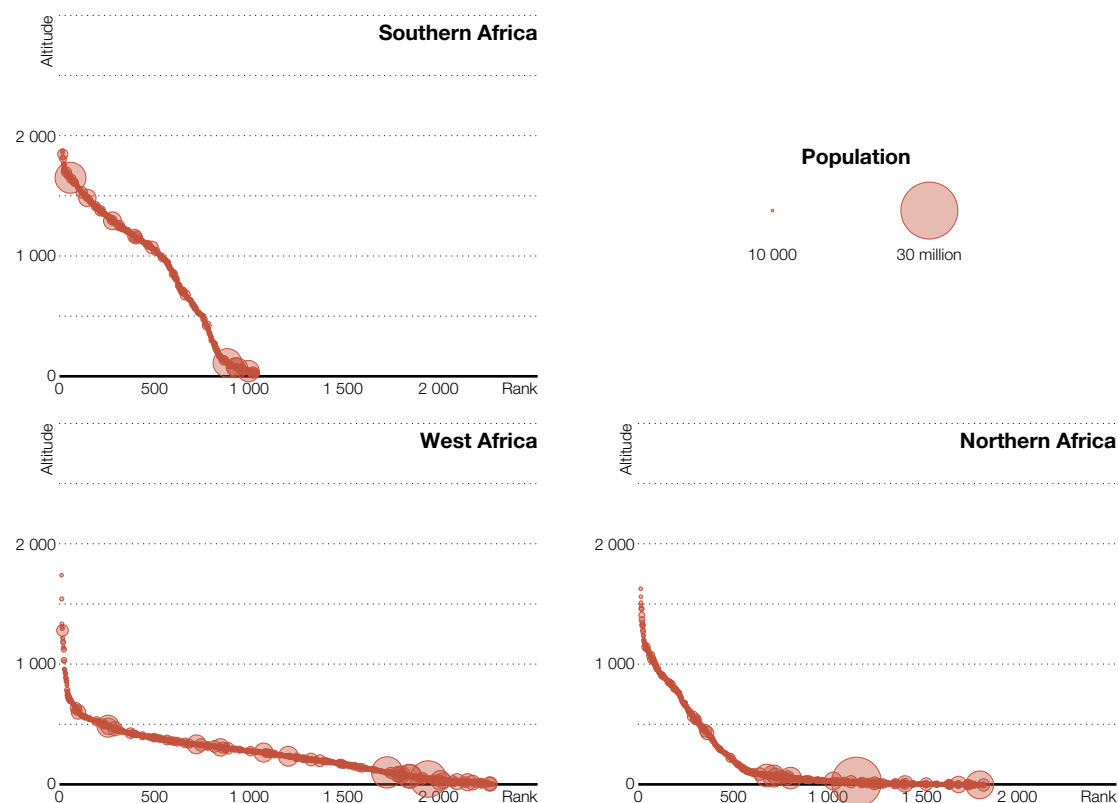
The contrast between coastal Africa and the interior of Africa is reflected in Figure 4.2. Agglomerations in each region are ranked in descending order of altitude. Each is represented by an area proportional to its population in 2015. The altitude of African agglomerations ranges between -43 metres in the Fayoum basin in Egypt and up to 3 372 metres in Ethiopia. However, all the graphs highlight two altitude attractors: low altitude coastal plains and high altitude, highland settlement clusters.

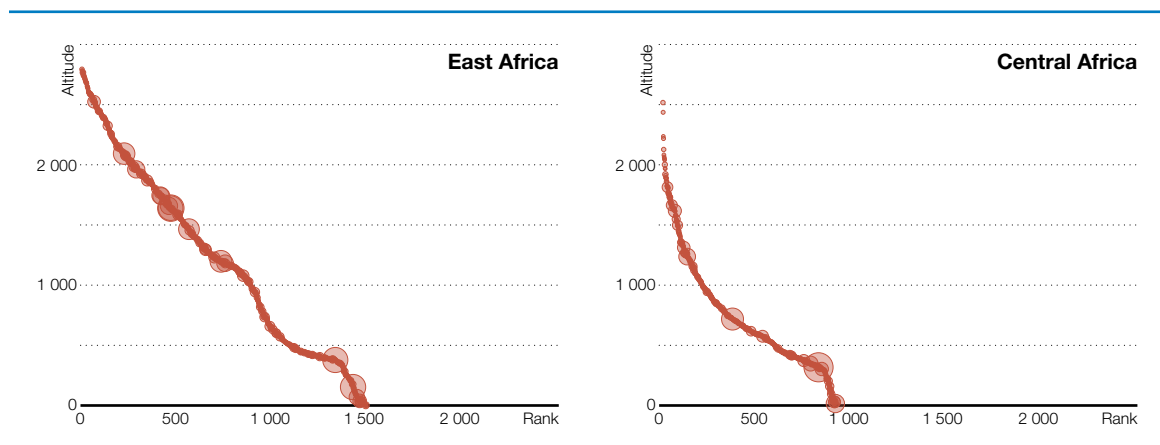
The “low” attractor corresponds to old colonial cities. Today these cities continue to benefit from the globalised economy. The “high” attractor corresponds to highland regions that are rapidly urbanising.

The most remarkable contribution of this statistical representation is that, on all the graphs, a break is visible between the two groups, indicating a relative deficit of agglomerations at intermediate altitudes. This gap is particularly marked in Central Africa, East Africa and Southern Africa. It is more attenuated in Nigeria and especially in the rest of West Africa, because the reliefs are less pronounced. It also appears in North Africa, where it corresponds to a political reality: the populations of the Great Rift Valley, the Moroccan Atlas Mountains and of Kabylie are historically rebellious regions whose centres of power are situated in the large “low-lying” agglomerations. It should also be noted that as Mediterranean rim does not belong to the inter-tropical zone, the mountain climate of North Africa is much more rigorous than in the rest of Africa. From this point of view, the highlands of North Africa belong less to the African climate than to the Mediterranean.

Figure 4.2

Population of agglomerations relative to altitude





THE ENVIRONMENT AND THE URBAN

In recent decades, the protection of natural environments has developed as well as new correlated town planning policies. The first Garden City-style projects were created at the beginning of the 20th century and influenced colonial urbanism particularly in South Africa, Rhodesia (Zimbabwe, Zambia, Malawi) and Kenya. In the 21st century, the idea of conserving urban nature is part of numerous urban planning projects in developed countries of the north.

The challenge for public policies is to integrate and co-ordinate different scales of urbanisation effectively, from the neighbourhood to that of the entire agglomeration. This integration makes it possible to empower citizens, reduce excessive mobility that is expensive in terms of energy consumption, shorten supply chains, and promote new sustainable and efficient practices. While in the most technologically advanced countries the city abandons parts of its urbanity, in African countries, the densest rural areas cede part of their rurality. In both cases, this development leads to a reconsideration of the urban/rural divide. The African city of tomorrow fits into this new framework.

The balance between humans and nature

In rural territories, the introduction of ecological thinking has followed two approaches. One approach excludes all human settlement and human activity from natural areas — apart from regulated and controlled tourist

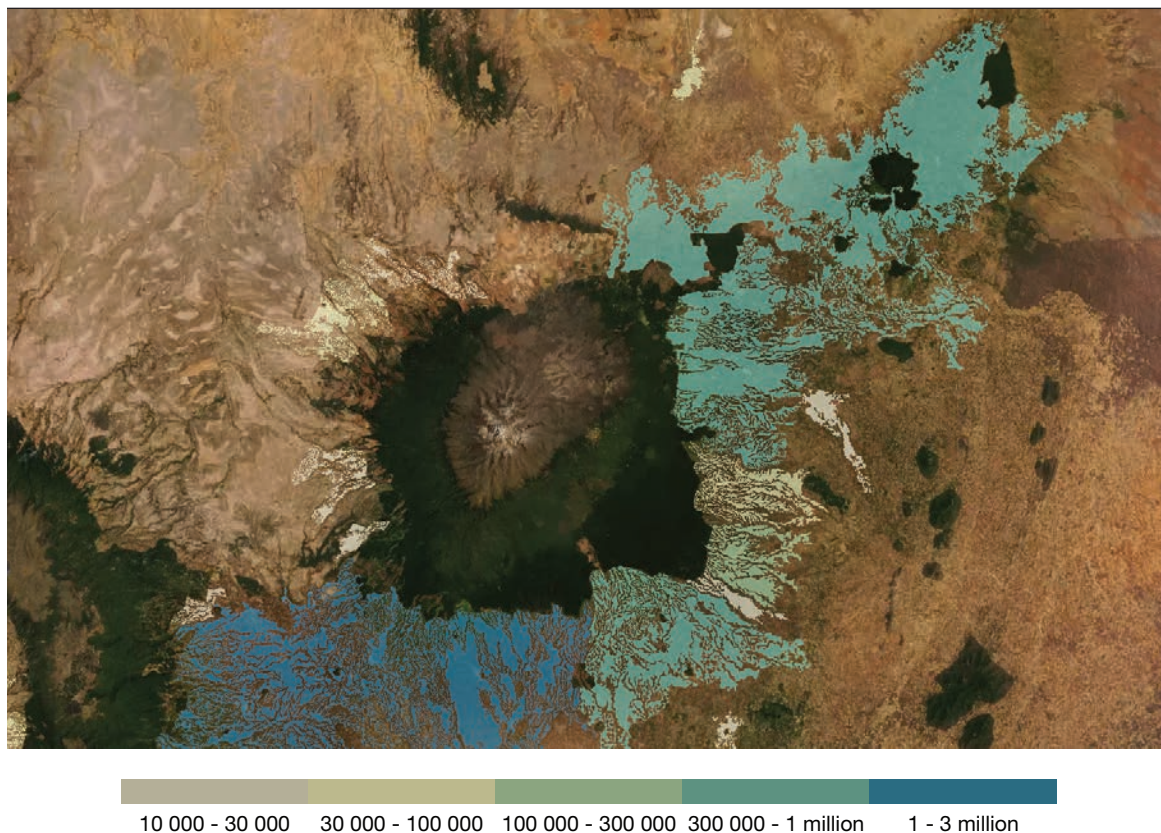
activity. This approach appears in industrialised countries as early as the 1930s with the establishment of reserves and natural parks, especially in northern Europe. In the United States, the Yellowstone National Park was established in 1872. With nearly 9 000 square kilometres, it is as large as Gambia.

The second approach maintains that human presence is part of Nature, provided that its activities are respectful of environmental balances. However, environmental equilibriums are challenged when population density reaches critical values. In Africa, these two approaches existed long before European colonisation. For millennia, men and wildlife cohabited without destroying each other. There are also cultures where human settlement in certain areas is prohibited, such as the sacred forest of Mbuti pygmies.

Borrowing from the French legal tradition, some former colonies consider national and regional parks more like conservatories of rural environments than as a forbidden sanctuaries. In the former British colonies, vast reserves have instead been created where the resident population is zero. These territories have a special administrative status, equivalent to the municipality, the canton or even the department. These various protection strategies evolved as regimes changed. Today they converge. The first approach attempts to integrate more participatory management with the participation of local populations. The second approach introduces

Image 4.2

The urban footprint of agglomerations at the base of Mount Kenya



Note: The attraction exerted by the edges of the reserve is reinforced by the agronomic quality of the volcanic soils and the climatic conditions favourable to agriculture (coffee, tea, food crops). The northern slopes are drier and less desirable. The "zebra skin" pattern of the agglomerated areas indicates a strong deference of settlement patterns to the natural constraints of the volcanic slopes, cut by deep valleys. Finally, the contrast is very clear between the edge of the reserve located upstream, where agglomerations stops abruptly along the borders of the park, and downstream, where filaments of unequal length dissolve into the rural confines at the bottom of the slopes. This illustrates that the immediate proximity of the reserve is the most popular position.

Sources: *Google Earth* (accessed December 2018); OECD/SWAC 2018, *Africapolis* (database); *Geopolis 2018* - Map: François Moriconi-Ebrard

zonings ranging from absolute protection to areas where the presence of certain forms of agriculture is tolerated.

In the current context, however, land withdrawn from human occupation contributes to an over-densification of the peripheries of the protected territories. These growing and uncontrolled forms of urbanisation are a challenge for local elected officials and politicians.

Urbanisation and protected areas

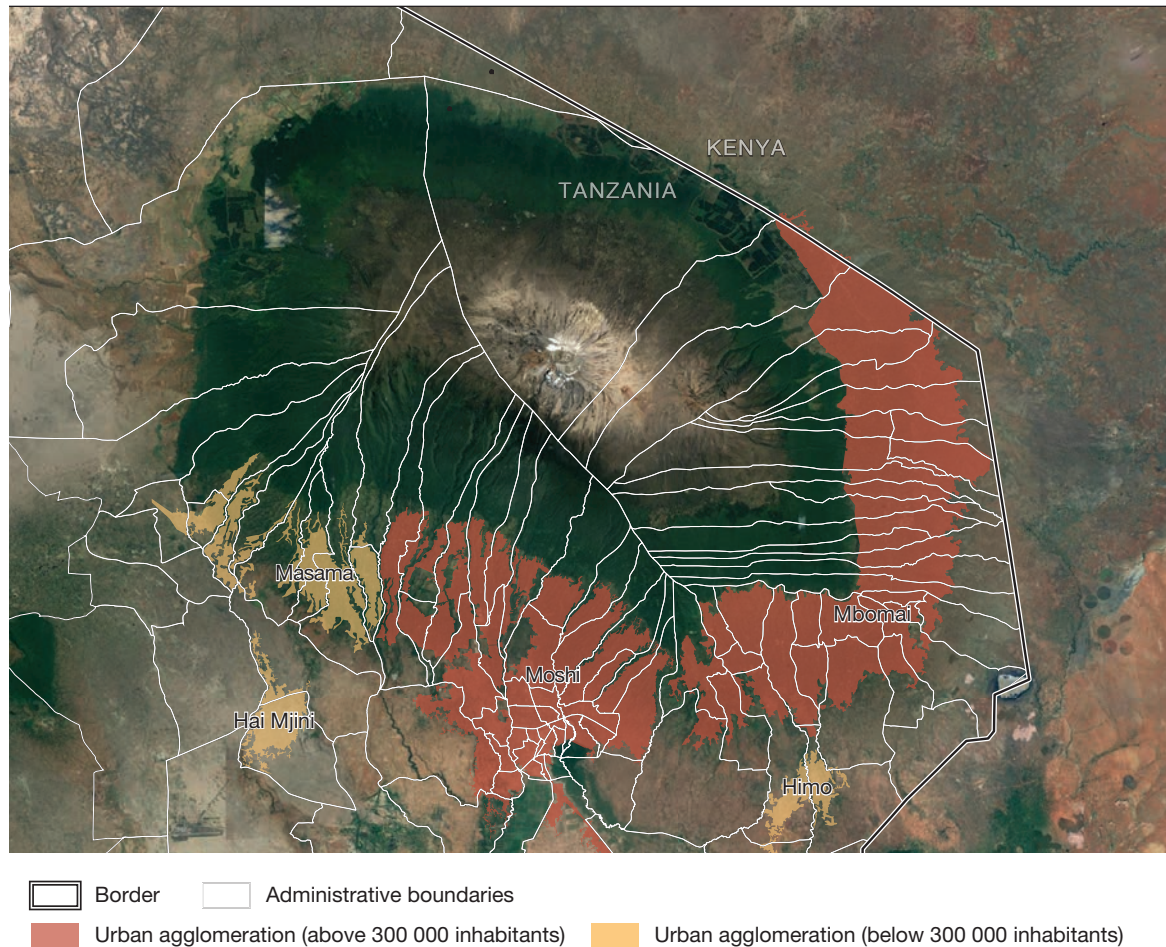
The case of protected territories illustrates agglomeration processes that are generated by a spatial prohibition on settlement. By excluding any construction and activity on a block of land, habitable and cultivable land is mechanically

"subtracted" at the regional level. Mapping the built-up areas of agglomerations shows the emergence of agglomerations that line the borders of protected territories as in Malawi, Kenya, Uganda, South Africa, the DRC (Kivu), Tanzania, and even Botswana ([Images 4.2 and 4.3](#)). These agglomeration-building processes are more similar to the hyper-urban forms of large metropolises rather than rural forms.

Visitors of national parks are mainly international, while the local population are sensitised by international communication campaigns. The flow of visitors generates activities — transport and hotel services and artisanal or industrial production. Agricultural activity is in many cases export-oriented — tea, coffee, bananas, frozen

Image 4.3

The Kilimanjaro massif surrounded by urbanisation



Note: At the bottom of the snow covered slopes of Kilimanjaro, the massif is surrounded by urban agglomerations with a combined population of one million inhabitants in 2015. The Kilimanjaro scenario is similar to that of Mount Kenya, with a strong dissymmetry between the south and east and north-west due to unequal rainfall conditions. In 2015, the agglomeration of Moshi had 480 000 inhabitants, half of whom live in the city. The agglomeration of Mbomai with 450 000 inhabitants, on the other hand, is totally spontaneous and not recognised as "urban" or even "semi-urban" by the Tanzanian statistical definition. Unlike Kenya, the protected massif is not established as a single administrative unit, but rather shared between neighbouring communities.

The asymmetry between upstream and downstream, visible in both examples displays the unequal intrinsic value of land, and therefore the hierarchy of appropriation faced with an attractor of a purely political nature: the legal boundaries of a park.

Sources: *Google Earth* (accessed December 2018); OECD/SWAC 2018, *Africapolis* (database); *Geopolis 2018* - Map: François Moriconi-Ebrard

vegetables. The influx of money partly supports the social and economic costs of conserving, monitoring and protecting nature reserves.

However, in certain cases a strategy of exclusion simply displaces the problem and challenges of urban concentration. The social cost may become too large. Its effect is to polarise the human settlement along its edges, thus establishing the optimum conditions for a urbanisation to take place. This model is more or less true depending on local conditions. However, it is acts

as a generator of agglomerations throughout Africa, like on the edges of Mount Kenya and the slopes of Kilimanjaro. The protection of natural areas should be accompanied more systematically by compensatory measures, such as relocation programmes. In their absence, two options are available to populations: migration to a city, or a spontaneous rural-to-rural movement, likely to create tensions if not properly anticipated and accompanied.

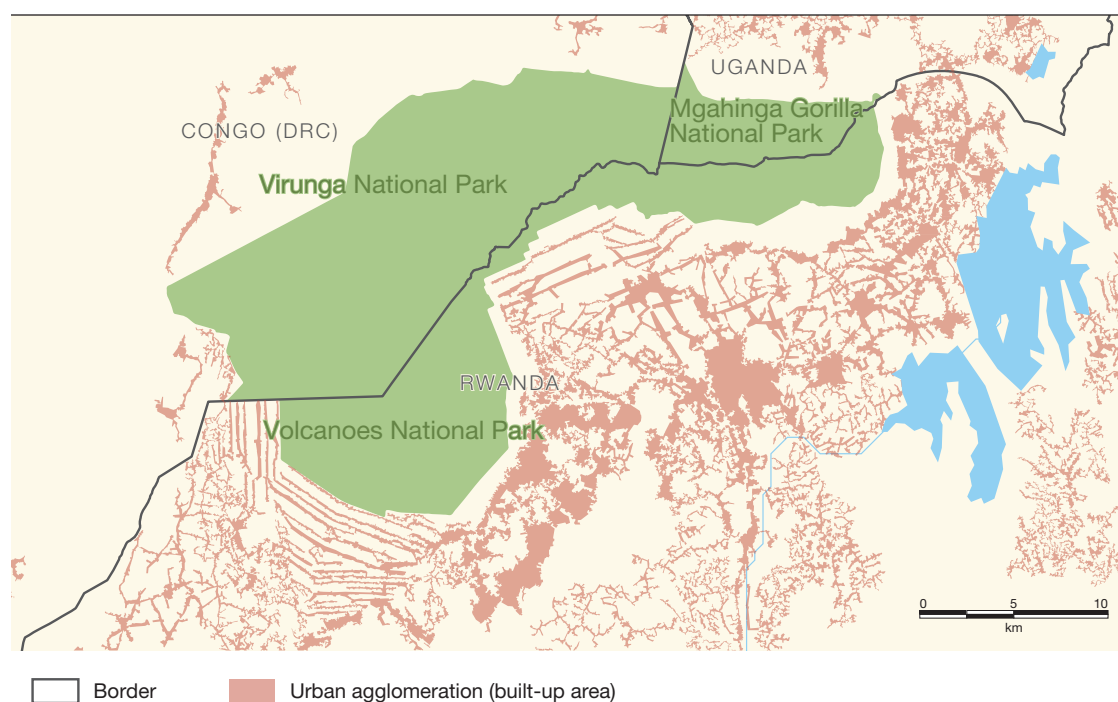
Box 4.4

Environment and geopolitics

Several national parks are shared between the territories of the DRC (Virunga Park), Rwanda and Uganda. The Virunga National Park is one of the last reserves of mountain gorillas on the planet (Map 4.10). In this region, human density is very high. The park was, in 2015, almost entirely encircled by agglomerations, otherwise not recognised as urban according to official statistics.

Map 4.10

Virunga National Park, border between DRC, Rwanda and Uganda



Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

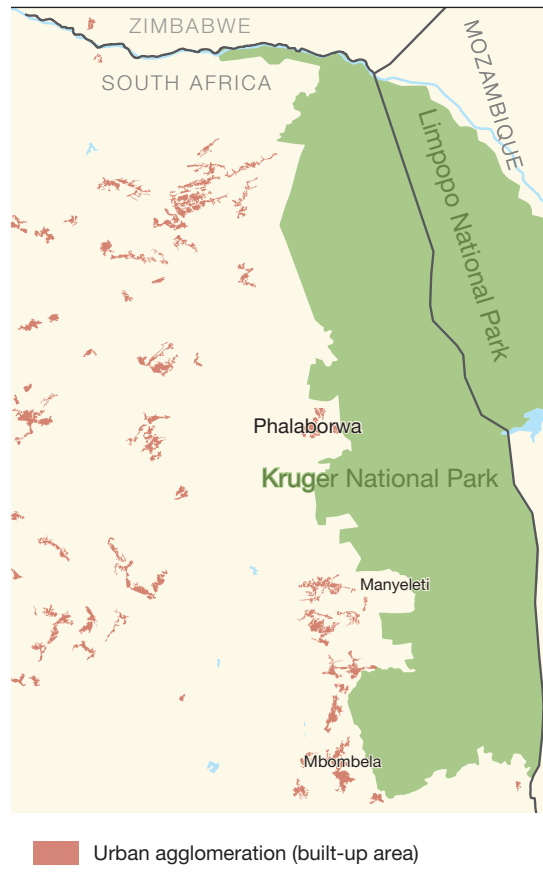
Prospects for sustainable development

As long as cities are spread out from one another across a low-density rural environment, they can be represented as simple points on a map. Until the 1990s, aspatial — demographic or economic — approaches provided satisfactory results. They relied on the natural dynamics and net-migratory flows of populations as well as on economic growth parameters, without integrating spatial factors. However, with rapid population growth, the situation has changed, and factors related to spatial distribution are

now essential. As the continent's population has doubled, urbanisation is now taking place through rural densification and outside of the traditional administrative boundaries of cities. Urban areas are incorporating their peripheral areas and populations into increasingly larger urban agglomerations. The density of previously rural areas is reaching pivotal levels and urbanisation is spreading to an extent which policies have not sufficiently anticipated in terms of volume, form and type. These densely populated areas concentrate the continent's largest rural populations. For example, the Lower Nile

Map 4.11

Urbanisation and protected areas in southern Africa along the border with Mozambique



Note: Protected areas are classified from I to VI according to their level of protection, which goes from the prohibition of access to different forms of legal occupations. Kruger Park is surrounded by territories of different categories, including hunting reserves and large properties for tourists. Spontaneous and very extensive agglomerations emerge further away, where the population lives on subsistence farming and remittances. Most of these agglomerations were born during the apartheid era. Today, as a result of emigration, they have very low or even negative population growth.

Sources: OECD/SWAC 2018, Africapolis (database); Geopolis 2018 - Map: François Moriconi-Ebrard

This protected region is located at the intersection of three national borders with strong geopolitical implications, establishing a *de facto* space between countries that have experienced episodes of war and tension. Similarly, Kruger National Park and its adjacent areas form an uninhabited block of more than 20 000 square kilometres (Map 4.11). The park establishes a buffer, where access and traffic inside the protected area are controlled, between the people of South Africa and Mozambique, a country devastated for years by civil war. By establishing no man's lands along the borders, the geography of the protected areas could be akin to the military strategy of the glacis.

The vacancy of a territory implies a densification of the human population in the peripheral areas. The immediate vicinity of the borders of the coveted areas can also suit the richest populations, national elites or international groups. Spatial prohibition enacted in the name of public concern can then trigger practices of land speculation.

Valley, the Highlands of Africa, the Great Lakes, Ethiopia, and southeast Nigeria make up about one-third of the continent's population.

The border between urban and rural areas is becoming increasingly blurred: the development of agglomerations through the in situ densification of rural areas is creating urban forms characterised by relatively low densities. This new type of development questions the link between "urban" and "density" and thus the traditional morphological concept of agglomerations that is based solely upon the concentration of buildings, activities or populations within a

restricted space. Once again, the integration of context and scale interactions early on in the definition of urban policies is crucial.

From an environmental perspective, the interactions between natural environments are illustrative of a global trend that seeks to address climate-related and other issues according to the specific forms of urbanisation that are already in place. Whilst the African countryside is urbanising, OECD countries are trying to reintroduce nature, micro-agriculture and proximity into their cities. Finding a balance and reconciling urban and sustainability concerns by building

on existing adaptation strategies is a major challenge for development policies in Africa. A territory can become urban while remaining moderately dense, adopting an urban development model that is more adapted to the diversity of African needs and which fulfils sustainable development and international climate change objectives. Local responses to the challenges and opportunities that arise do, in certain cases, exist and should be heard.

The last three decades of African urbanisation have seen the considerable spatial extension of agglomerations. Cities are, for the most part, horizontal, requiring daily commutes of more or less long distances, creating challenges in terms of congestion, transportation, “smart” development, pollution and social fragmentation. Rapid urbanisation, especially in developing countries, poses increasing challenges for the balance between populations and resources and between the available and efficient use of land. A city is a complex system that cannot be reduced to a

single dimension, be it demographic, economic or social (Campaud, 1991). Several aspects must be considered simultaneously and coherently in spite of the rapidity of urban growth. Following COP 21 and the Paris Agreement, cities were recognised as important drivers of resilience to climate change. This momentum on the part of citizens, governments and international actors could help open the door to development opportunities, in particular, through climate finance.

Urban agglomerations are an essential factor of development, not only because of the boom in services and industrial sector employment but also through the development links with rural areas and with territories in general.

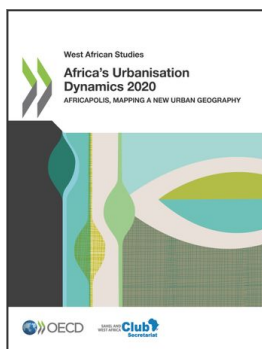
The need to observe and analyse urban growth in relation to surrounding environments in the medium to long-term is crucial. This is one of the many environmental challenges that all countries, with their urban diversities, must tackle.

Notes

- 1 Cited by Joan Clos, Habitat III, Quito, October 2016.
- 2 Gross domestic product: Annual estimates 2002–10, Regional estimates 2002–10, Third quarter 2011 (PDF) (Report). Statistics South Africa (29 November 2011. p. 31).
- 3 www.nigerianstat.gov.ng
- 4 This notion is officially used only in certain countries and under different terms: metropolitan areas in the United States, urban areas in France, metropolis region in Brazil, etc. In general, this concept refers to that of an extended metropolis.
- 5 <https://statbel.fgov.be/fr/open-data/agglomerations-200m>
- 6 The Bantustans were the regions created during the apartheid period in South Africa and south-west Africa, reserved for black populations that had varying degrees of autonomy.

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