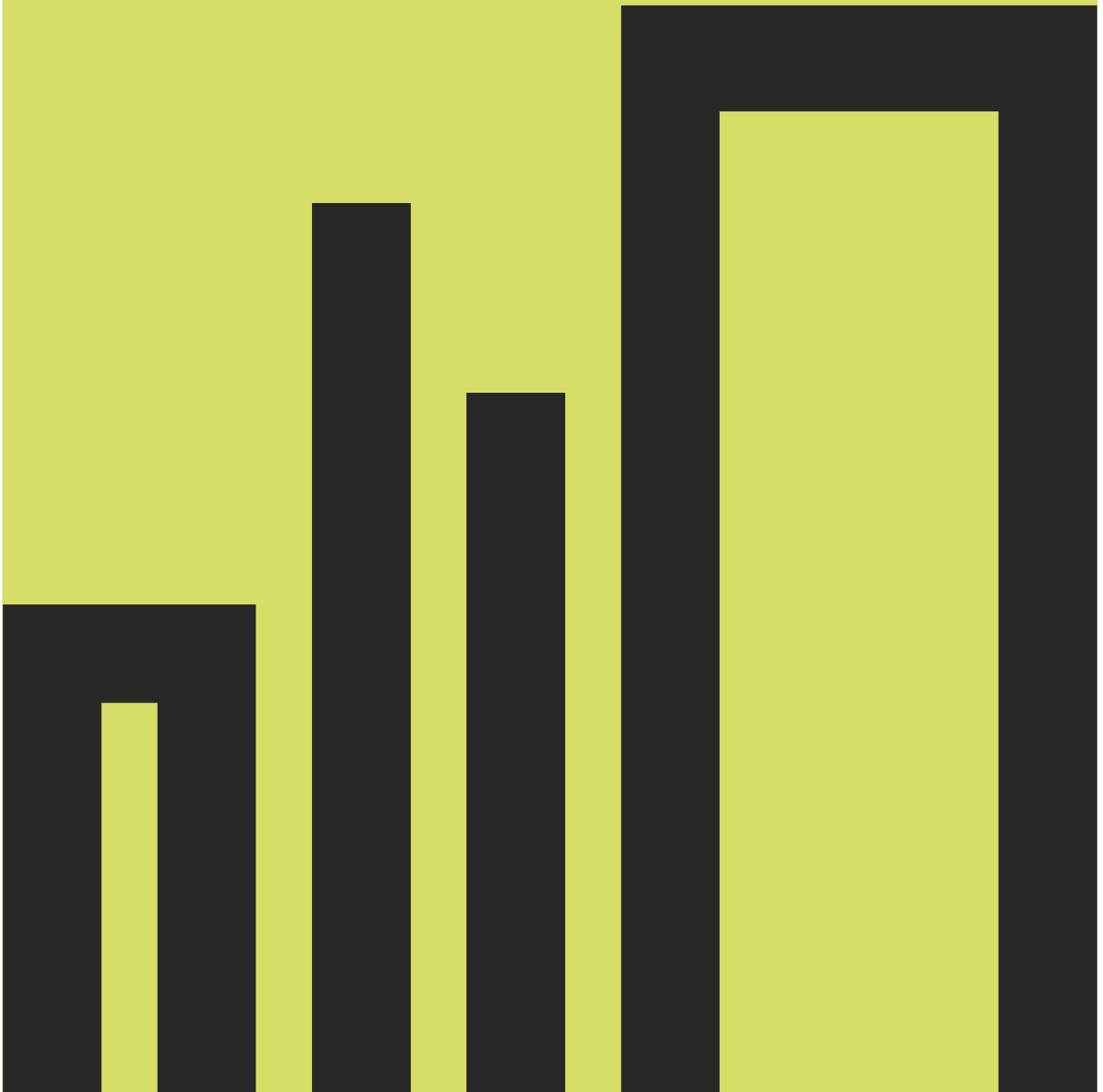




**african**

**metropolitan  
report**



# contents



—————→	<b>foreword</b>	p. 4
—————→	<b>executive summary</b>	p. 6
—————→	<b>overview</b>	p. 10
—————→	<b>background of African metropolisation</b>	p. 12
—————→	<b>analysis of metropolitan indicators in Africa</b>	p. 20
	context and governance	p. 21
	economic development	p. 33
	social cohesion	p. 39
	environmental sustainability	p. 44
	quality of life	p. 47
—————→	<b>conclusions</b>	p. 52
—————→	<b>appendices</b>	p. 57
	bibliography	p. 58
	metropolitan indicators	p. 59

# foreword



**Metropolitan expansion is one of the trends of the 21st century: as urbanisation continues, cities grow in interdependence with surrounding territories. The current pace of urban growth exacerbates issues such as the shortage of access to services, the degradation of the environment, the alienation of the poor to peripheries, and the spread of slum conditions, to name a few. Women, youth and other less powerful citizens are especially vulnerable in the metropolises, with limited access to decent jobs, public space, housing, public transport, and other services and goods. Gender inequalities are reflected in low protection from human rights violations and inadequate inclusion of disadvantaged groups in urban planning, design and legislation.**

To face such acute challenges, global agendas stress the importance of monitoring mechanisms that disclose disaggregated data at local levels. Because traditional boundaries are less fixed, though, many shocks on urban areas transcend municipal boundaries, and must be examined at the metropolitan scale.

At Metropolis, our efforts on understanding metropolisation and the responses from our members, the governments of major cities and metropolitan areas, whose diverse institutional profiles show ways to achieve sound metropolitan governance for a more sustainable development. For this reason, in 2016, encouraged by the Metropolitan Area of Barcelona, we launched the Metropolis Observatory, a project that promotes reflection about metropolisation globally and offers frameworks to include the metropolitan perspective in urban governance.

In 2019, the Metropolis Observatory took a big step forward, with the launch of a system of metropolitan indicators, which allow to compare various metropolises across the world. Resulting from pioneering research carried out by LSE-Cities, the initial sample of indicators contains a total of 2,789 data points about 58 metropolitan spaces from Africa, Asia, the Americas and Europe. They cover economic, environmental and social dimensions in each metropolitan space, and were finalised in consultation with Metropolis members. As we tried to frame metropolitan spaces and not specific subnational jurisdictions, data is provided for territories often made up of one or more administrative units – this is why we find 69 Metropolis members in the 58 spaces studied.

In ever-changing metropolises, data is a very important tool for public policy, but we need to understand its context in order to effectively use it. Moreover, because worldwide comparisons may be biased, specific analysis of each region become necessary. This report is the first of a series that reviews the metropolitan indicators in regional contexts, building on the information provided by the metropolitan indicators and analysing the results for 18 Metropolis members in Africa.

Africa was chosen to start the series not only because it is one of the fastest urbanising regions, but also because it hosts this year the World Summit of Local and Regional Leaders convened by United Cities and Local Governments (UCLG), whose metropolitan section is operated by Metropolis. Taking place this month in Durban, the event welcomes the Forum of African Metropolises where this publication is being released.

I hope that this report brings new insights about urbanisation in Africa, drives the continuous improvement of our common database of metropolitan indicators, and contributes to building a shared metropolitan narrative across the globe.

→  
**Octavi de la Varga**  
Metropolis Secretary General  
November 2019



# executive summary



This report describes the results for the initial sample of 38 metropolitan indicators launched by Metropolis in June 2019, focusing on just 17 out of the 58 metropolitan spaces originally researched: namely, the ones located in the African continent. It analyses them in relation to one another, as well as to the Metropolis members from other parts of the world for which disaggregated data is available.

Although the 2,789 data points available through the Metropolis' indicators represent the main source of data and information used, the research was complemented by other sources which provided further information about urban spaces in Africa, such as publications from United Cities and Local Governments (UCLG), the United Nations (UN) agencies and the European Union's Global Human Settlement Layer Urban Centre Database (GHS-UCDB). The latter showed that, in 2015, there were 65 African urban conurbations that accommodated, each, over one million residents. Together, these house a population of approximately 192 million people. Some of the key defining features of these settlements include their high growth rate, high densities, low levels of access to services, and high levels of poverty.

The first part of this report provides the background for metropolisation in Africa, outlining some of the main trends and factors impacting on metropolitan governance. The second part goes into the analysis of indicators in the 17 African metropolitan spaces, following the structure of five out of six categories in which the metropolitan indicators were initially grouped: 1) context and governance, 2) economic development, 3) social cohesion, 4) environmental sustainability, 5) quality of life. Gender equality, originally a separated category of the full set of metropolitan indicators, has been incorporated into each of the five aforementioned categories, representing the effort to achieve tangible gender mainstreaming across the research process.

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## context and governance

The average population of the 17 African metropolises studied is 4.3 million, smaller than the international average of 7.5 million. Cairo and Johannesburg are the largest urban areas in the database. **Population density** is relatively high compared to world averages, but varies significantly across African metropolises.

Whilst rates of growth are slowly declining amongst African metropolises, they are still significantly higher than those in urban areas in the rest of the world. The total number of people living in African urban areas is steadily increasing and is expected to continue to do so. This is anticipated to be a particular feature of East Africa which, by 2050, is expected to have Africa's second highest number of people living in urban areas, after West Africa which has the largest urban population.

The speed of this growth presents a significant governance challenge for African urban governments in keeping up with the required provision of basic services, infrastructure, health, social and transport services.

Metropolisation, or the process of urban areas growing together into a larger functional urban unit,<sup>1</sup> is underway in a number of African urban areas. The increasing interdependency between component areas requires the development of governance models which can operate across jurisdictional boundaries. The management of multi-sector governance is a particular challenge although African metropolises have a slightly higher degree of coordination compared to other world regions, and a lower level of fragmentation.

Urban growth is leading to higher residential densities across the continent. This makes the provision of services more cost effective and can result in urban dividend, but must be managed by metropolitan governments as higher density living requires increased service levels as well as higher levels of access to open space. However, the African metropolises analysed have significantly low levels of **economic density** – less than half of the worldwide averages for metropolises in the database.

On average, across Africa, the sum of the budgets for local governments in the metropolises is significantly lower than the international average.

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<sup>1</sup> Metropolis, (2017) The metropolitan scale of resilience, Issue Paper 03, November 2017, Barcelona

However, powers and functions differ markedly across contexts and, in comparison to the worldwide averages, African metropolises have a relatively strong degree of influence over the development of policy in sectors influencing metropolitan development. This decision-making authority is essential to the effectiveness of urban governance.

African metropolises have a slightly lower level of **fiscal autonomy** than other regions, with just three metropolises raising almost their entire revenue themselves and receiving very little from the national fiscus. And, although they have a slightly higher score on **leadership of policy sectors** than the worldwide average, they show a lower **fiscal decentralisation** average, often without the necessary fiscal power for implementation, which prevents them to have a greater say over what gets done.

In terms of gender equality, African metropolises have a lower share of elected women in local government than the world average, although there are large differences across different contexts. There are also lower reported levels of tools to promote gender equality in African metropolises compared to other world regions. Whilst many metropolises have made significant strides in moving towards gender parity, much still remains to be done.

## economic development

African metropolises have significantly lower levels of **GDP per capita** compared to all other regions. In addition, poverty rates are more than double the world average. This puts African metropolises under great pressure to perform their duties and provide services within severe economic constraints. A strong case can be made for metropolisation in comparing levels of fragmentation and budget per capita. Municipal fragmentation can increase the costs of service provision and reduce the equity of access to services.

The African metropolises have made significant progress in addressing some areas of gender inequality, with lower levels of gender pay gap than the world average. However, the data shows that women have lower employment compared to men and there are lower levels of women in workforce. This does not however measure the non-wage activities women are engaged in, such as agricultural activities and household welfare. These activities are generally not fully acknowledged nor formally counted in measures such as GDP or formal employment figures. The **informal economy** indicator provides some indication, but is self-reported and therefore cannot provide the depth of information that the formal statistical data does.

Generally, there are high levels of **unemployment** in African metropolises: almost twice that of the international average. This is a significant contributing factor in the low levels of financial resources that are available to local governments to put in place measures to address basic needs.

There is a significant gap between total unemployment and youth unemployment (a feature observed in other world regions as well), making women and youth increasingly marginalized in many African metropolises. This has a negative impact on GDP and jeopardises economic growth on the continent. In addition, economic growth is also compromised by the relatively high dependency on work in the primary sector.

## social cohesion

Economic development indicators can be further understood by low wages and high levels of **income inequality**, which hinder social cohesion in Africa.

Murder rates are generally high in African metropolises. **Murder rate** is not related to the size of the metropolitan population or territory, but the trend shows a slight decrease in murder rates as metropolitan density increases.

Beyond physical safety and wellbeing, **literacy** rates in Africa lag behind that of other regions. Literacy rates are impacted upon by, amongst other factors, poverty, inequality and access to educational facilities. In turn, higher literacy rates are generally related to increased employment, lower poverty and longer life expectancy, although there are some exceptions to this trend. There is also a gender difference, with women having lower levels of literacy.



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## environmental sustainability

A key task of local and metropolitan governments is to provide or facilitate the provision of basic services, including water, electricity, sanitation and waste management. Between and within metropolises, levels of access to basic services can vary significantly, with residents of informal settlements and slums having very low levels of access.

Less than half of the population in African metropolises is served by **wastewater collection**. This is significantly lower than the international average and can have significant health implications for residents.

Africa is also highly vulnerable to climate change due to its dependency on climate related activities and low adaptive capacity. The most significant expected changes impacting on Africa's metropolises include water scarcity, the increase in the magnitude and frequency of extreme weather events, sea level rise, lower food security and the rise of climate sensitive diseases such as malaria and cholera. In Africa, the rights and needs of women and girls are disproportionately affected by climate change's disasters, due to the role of care that is socially attributed to them. Providing targeted livelihood and protection support to women in humanitarian settings has a direct effect on the wellbeing and recovery prospects of their families and communities.

The average **carbon emissions** from African metropolises are relatively low. Metropolises with increased levels of **car ownership** and higher GDP levels have increased CO<sub>2</sub> emissions, whereas higher residential densities, and better access to public transportation are associated with lower levels of carbon emissions. Whilst CO<sub>2</sub> levels are relatively low, concentrations are higher in African metropolises than in other world regions.

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## quality of life

Average **life expectancy** in African metropolises is lower than that for other worldwide metropolises. Greater internal inequalities in life expectancy are concentrated, with more than 23 years between the extremes. Life expectancy is highest in North Africa, whereas in all sub-regions of the continent, women have longer life expectancy than men. Moreover, life expectancy is generally higher in urban areas than in more rural areas due to increased access to a range of government services. However, within a metropolis it can differ by significant amounts depending on access to services and quality of the environment.

Regarding **higher education enrolment**, there are almost only national data available; Antananarivo, Nouakchott and Bamako show the lowest values. In general, it is true for all African metropolises that women have a lower value than men. Compared to other world regions, African metropolises have, on average, the lowest level of enrolment of female population not only in higher education, but also in primary and secondary school.

Underdeveloped public transport networks in African metropolises is another factor that increases inequality and reduces accessibility across their territories, discriminating particularly against the poor. The combination of low density living and a lack of **access to public transport** can significantly increase a household's monthly costs. Just 32% of residents of Africa's metropolises have access to a recognized public transport stop, compared to a global average of 53%.

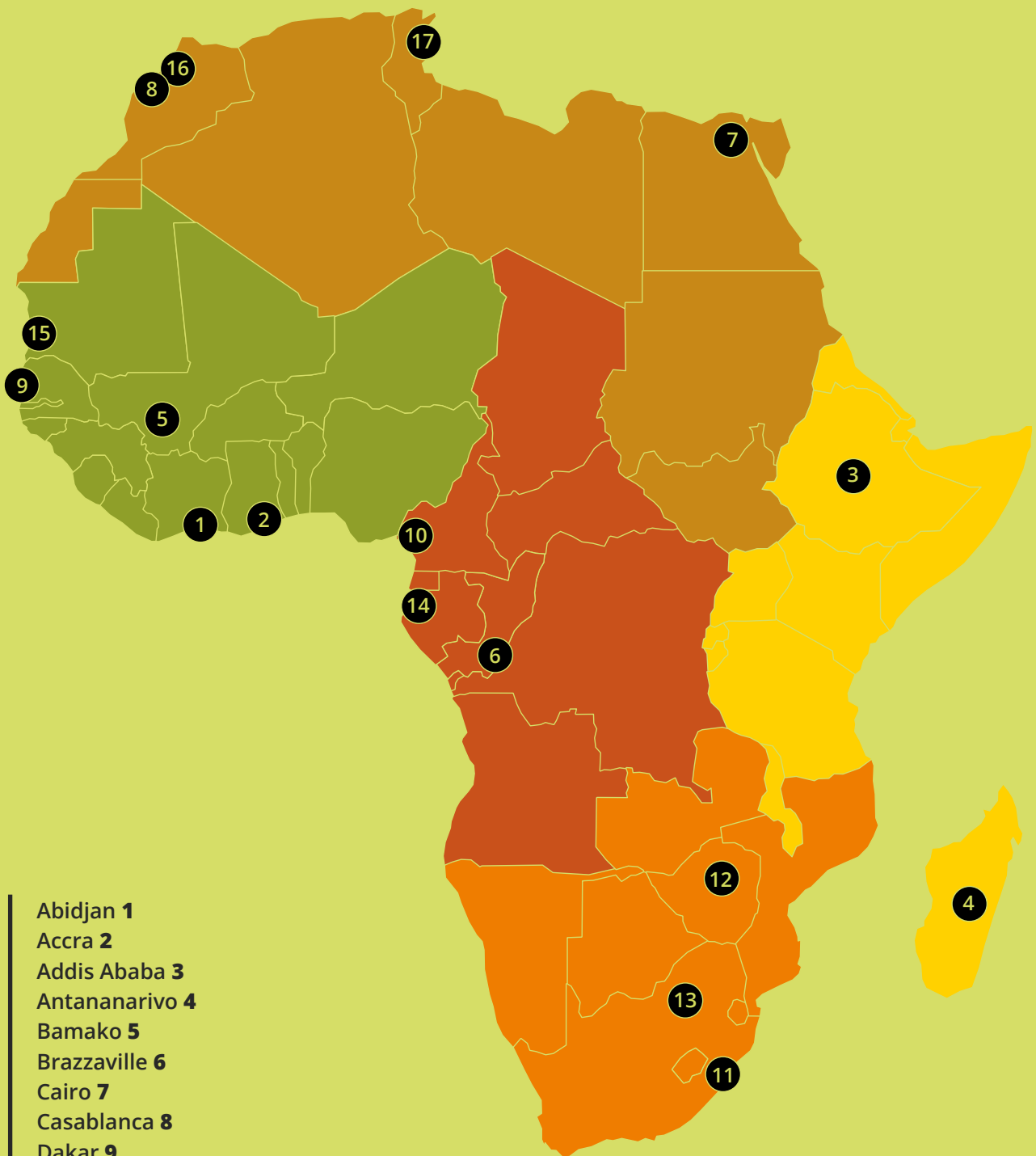
Last but not least, African metropolises rank high on the **Fragile Cities Index**. Key vulnerabilities include fire risks, water scarcity and flooding.

# overview

—————→ based on metropolitan indicators, this report analyses the status of metropolisation of the African territories where 18 of Metropolis members operate, namely:

**Accra Metropolitan Assembly**  
**Cairo - Egypt's Ministry of Housing, Utilities and Urban Communities**  
**City Government of Addis Ababa**  
**City of Harare**  
**City of Johannesburg**  
**Communauté Urbaine de Douala**  
**Commune de Casablanca**  
**Commune de Rabat**  
**Commune de Tunis**  
**Commune Urbaine d'Antananarivo**  
**Conseil Régional de Nouakchott**  
**District d'Abidjan**  
**Ethekwini Municipality (Durban)**  
**Gauteng Provincial Government**  
**Mairie de Brazzaville**  
**Mairie de Libreville**  
**Mairie du District de Bamako**  
**Ville de Dakar**

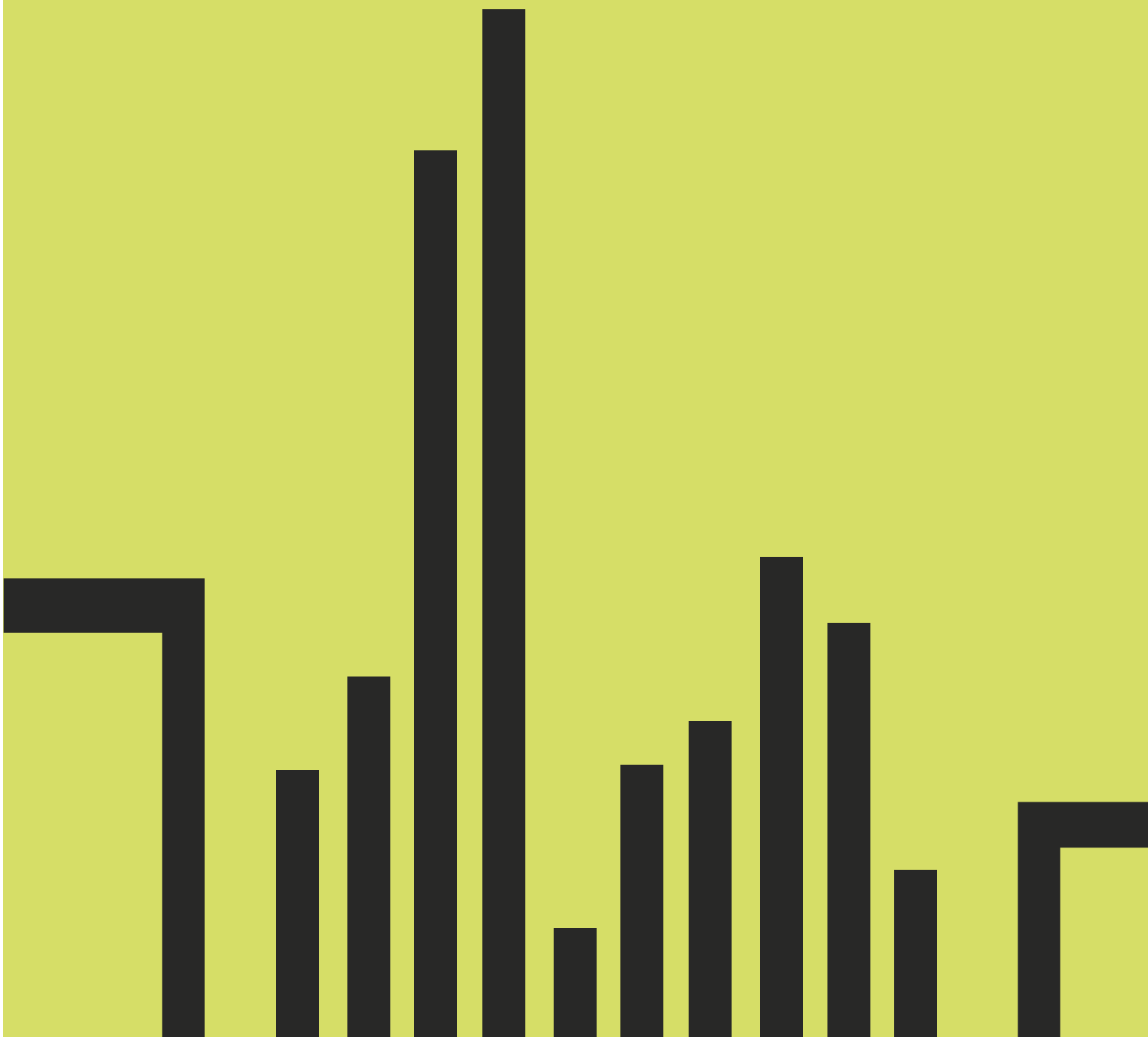
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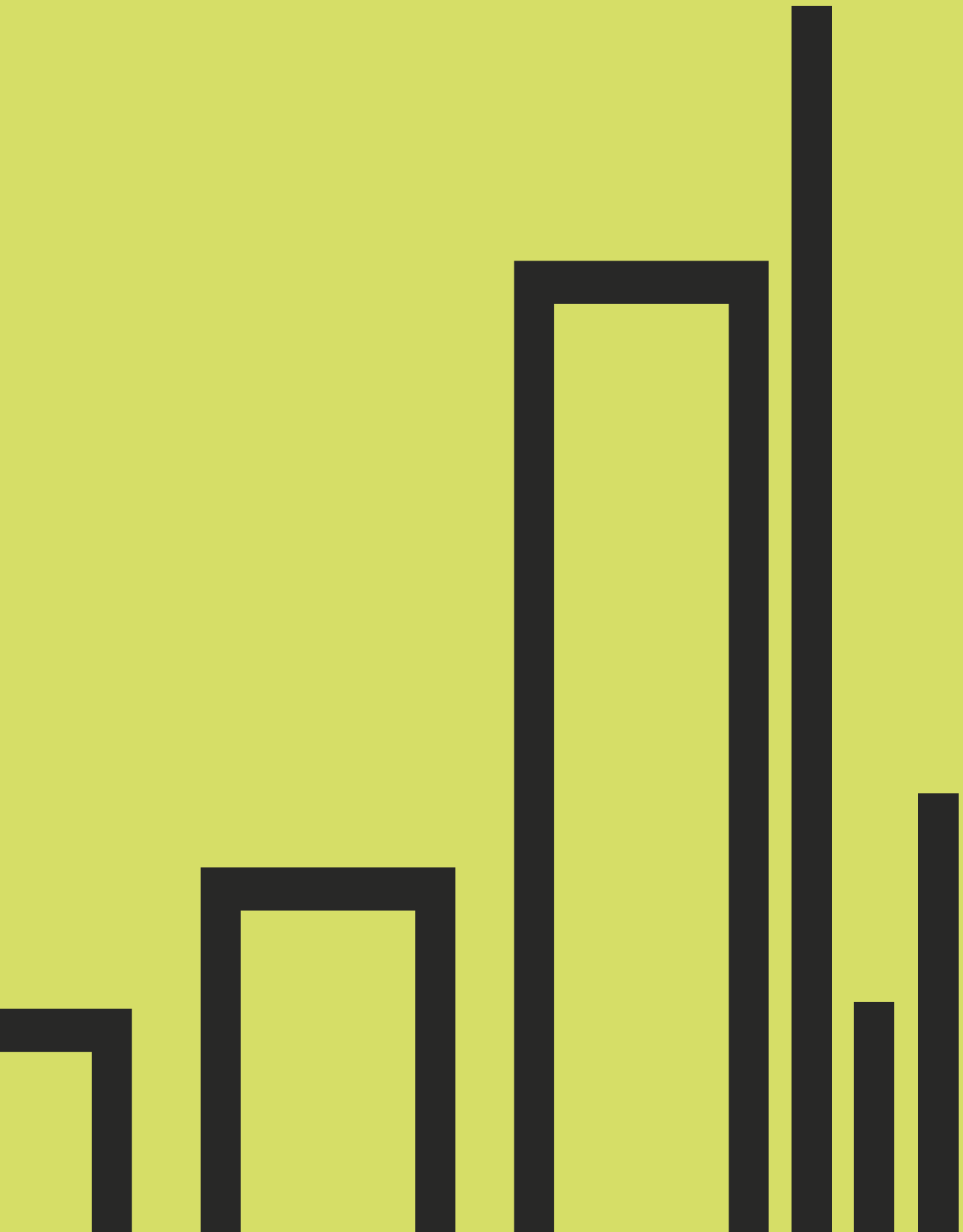


- Abidjan 1
- Accra 2
- Addis Ababa 3
- Antananarivo 4
- Bamako 5
- Brazzaville 6
- Cairo 7
- Casablanca 8
- Dakar 9
- Douala 10
- Durban 11
- Harare 12
- Johannesburg 13
- Libreville 14
- Nouakchott 15
- Rabat 16
- Tunis 17

- North Africa
- Central Africa
- West Africa
- East Africa
- Southern Africa

# background of African metropolisation





There are over 10 000 urban spaces of at least 50 thousand residents across the world, and 2805 of these in Africa.<sup>2</sup>

Although the focus of this report is on African urban metropolises of over one million people, the distribution of the full range of urban settlements across Africa provides an indication of how conurbations and agglomerations of multi-centric settlements are growing in different parts of the continent. For example, the greater Ibadan-Lagos-Accra urban corridor in West Africa, the Cairo Giza region urban growth along the Nile, the Moroccan coastal belt (which includes El Jadida, Casablanca, Rabat, Salé and Kenitra), and the Gauteng region in South Africa which includes the metropolises of Johannesburg and Pretoria.

An important feature of African urban areas is the high level of population growth.<sup>3</sup> Africa has increased its urban population from 32.6 million people in 1950 to 491.5 million in 2015. The projection for 2050 is of almost 1.5 billion urban dwellers in Africa, which will correspond to one-quarter of the world's urban population then.<sup>4</sup>

Although the total number of people living in urban areas is increasing, the rate, tempo or speed, at which it is taking place – the urbanisation rate – has slowed down in both Africa and the world – although Africa's urbanisation rate is still almost double that of the rest of the world. The UN urbanisation prospects show that urbanisation rates worldwide have declined from around 4% in the 1960's to 2.6% in 2015, and these are predicted to decline further to 1.4% in 2050. African urbanisation rates have also declined from 6.4% in 1960 to 4.7% in 2015 and are predicted to further slow to 3.5% by 2050.<sup>5</sup>

However, even with this decline in the rate of urbanisation, African cities will need to accommodate almost an additional one billion people in the next 35 years.<sup>6</sup> It is important too to recognise that whilst the transition to a prominently urban society took 150 years in Europe, it is set to take only 60 years in Africa. By 2035, Africa is expected to be predominantly urban.

The following maps show, for urban areas with populations over 500 000 people, the 2015 average

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→ **the urbanisation rate is the tempo or speed at which this percentage is changing over a particular time period**

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<sup>2</sup> European Union, Global Human Settlement Layer Urban Centre Database (GHS-UCDB)

<sup>3</sup> 2018 Revision of World Urbanization Prospects (UN DESA)

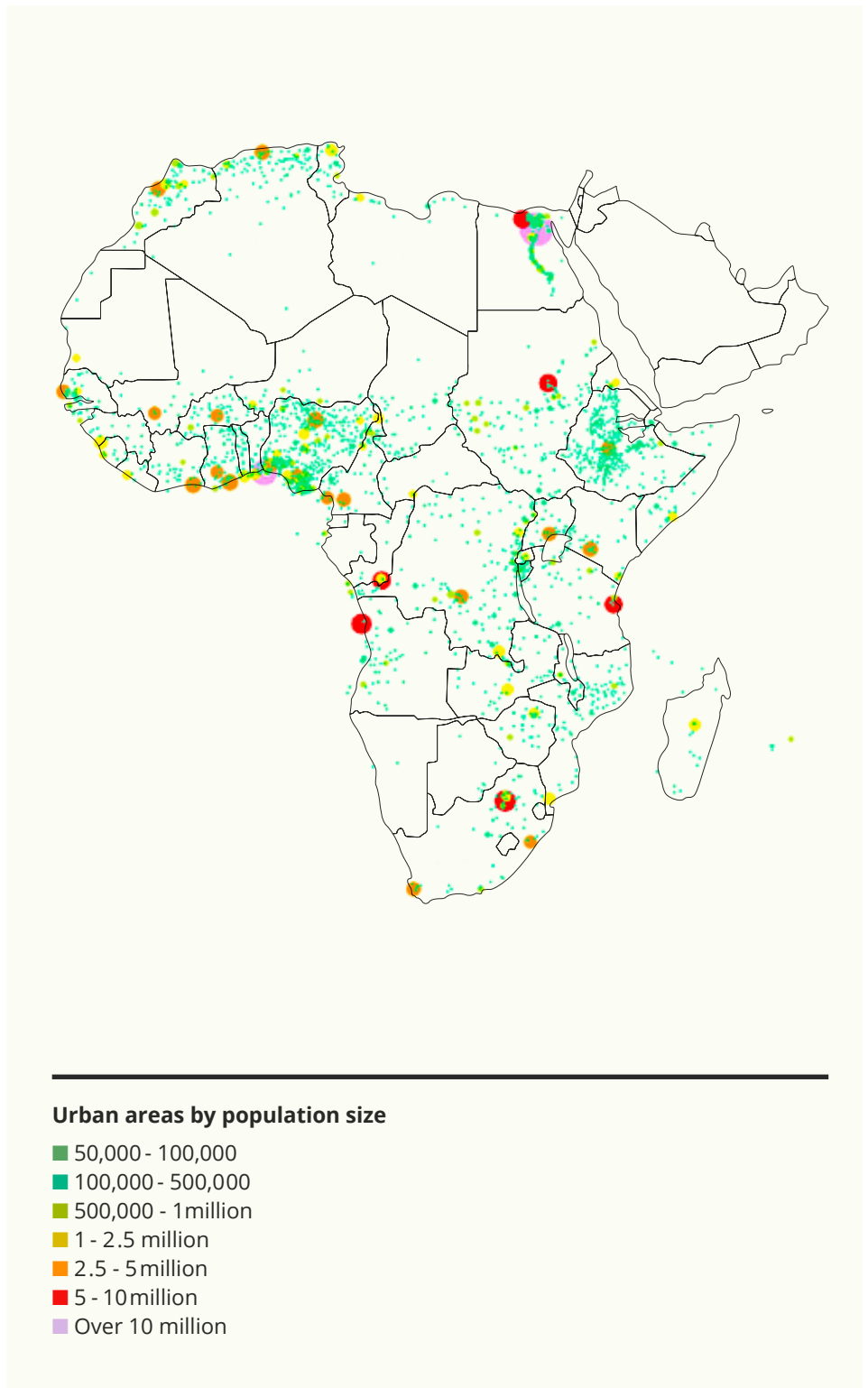
<sup>4</sup> Ibid

<sup>5</sup> Africa's urbanisation rate in 2015 was 4.7% per annum, compared with a global rate of 2.6%. Source: UN DESA (2018)

<sup>6</sup> Source: UN DESA (2018)

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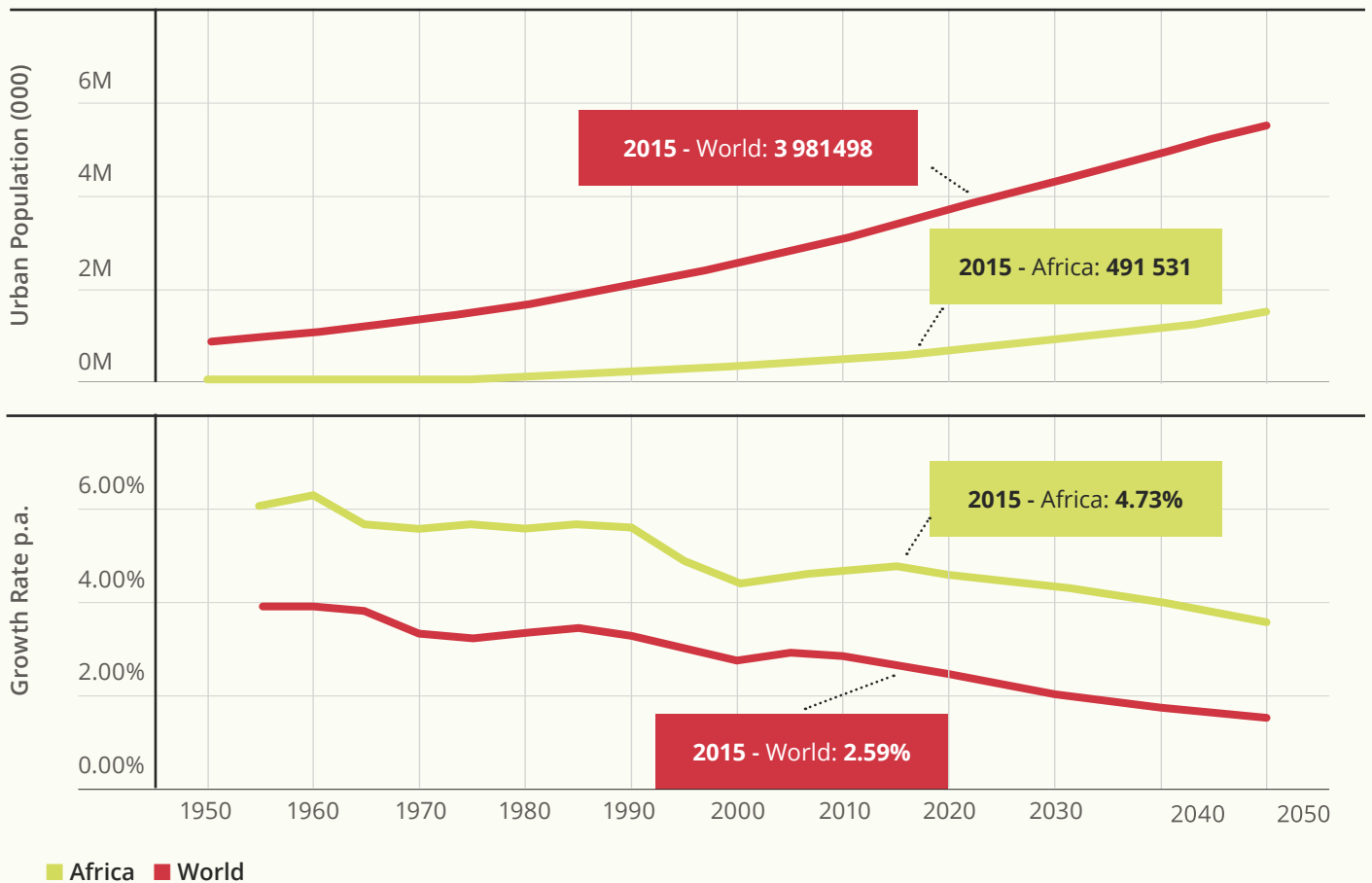
**Figure 1**  
**african urban areas**  
**categorised by population size**  
(source: GHS-UCDB)



density and the density change between the 2000 and 2015 periods.<sup>7</sup> Currently, North Africa has the highest percentage of urban population at 54.9%, and East Africa the lowest, at 26.3%. However, in particularly West and East Africa this figure is growing very rapidly and given that they are relatively large in terms of numbers of people likely to urbanise, the significant growth in urbanisation in Africa will come from these areas.<sup>8</sup>

Overall, this means that over the next 30 years there will be a reconfiguration of the African urban context. Whilst the West African region will remain the region with the largest urban population, the East African region will become the region with the second highest urban population. Between 2000 and 2015, average annual density increased overall on average by 3.41%. There are significant

**Figure 2**  
**size of urban population and urban population growth per annum for Africa and the world 2015 and 2050**  
 (source: UN DESA)



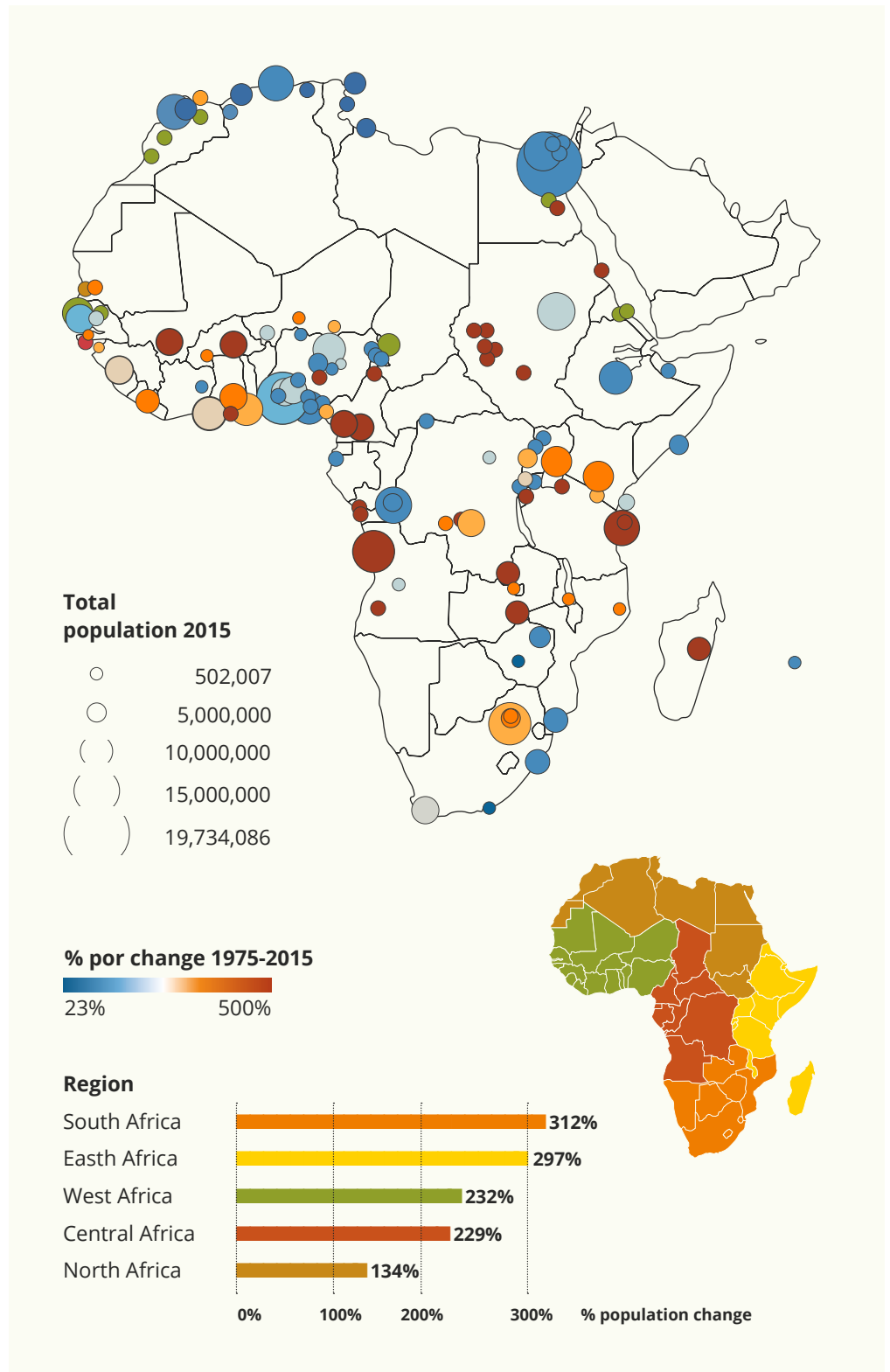
<sup>7</sup> Source of data: European Union, Global Human Settlement Layer Urban Centre Database (GHS-UCDB)

<sup>8</sup> UN's World Urbanization prospects report for 2018



**Figure 3**  
**population growth in large**  
**cities in Africa 1975 - 2015**

(source: GHS-UCDB)

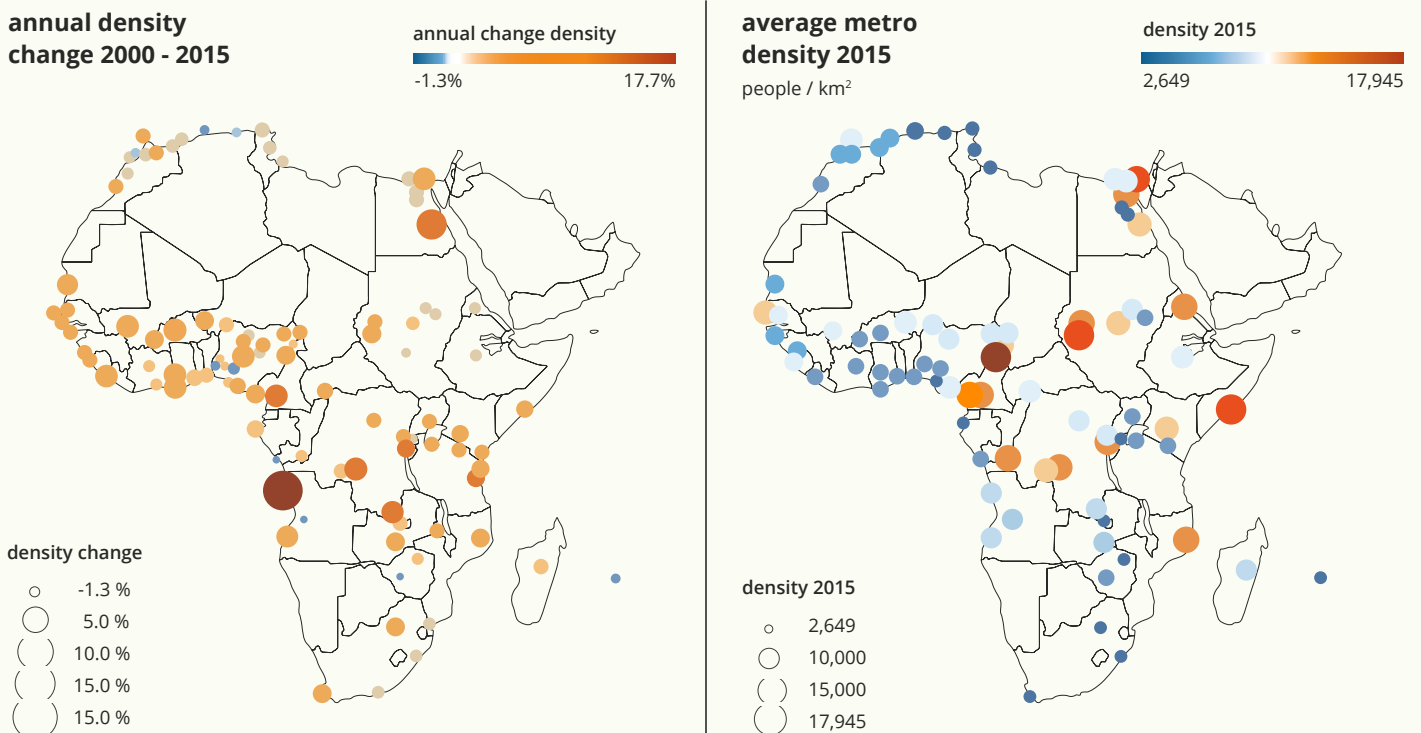


variations within this average, ranging from 17% increase to a decrease of 1.3%.

Urban growth in Africa presents, therefore, significant settlement and governance challenges in order to ensure that the population is accommodated in decent living areas. While these areas are characterized by high population densities, increased employment opportunities and larger labour forces,<sup>9</sup> they must also cater for housing, infrastructure, transportation, energy and employment, as well as for basic services such as education and health care. And, as

this growth mainly occurs in urban conurbations, where adjacent urban areas grow together,<sup>10</sup> outside of formal administrative boundaries, the process results in a blurring of legal boundaries and an increasing interdependency between the component urban units.<sup>11</sup> This requires new approaches to planning, administrative coordination, funding and service provision, to manage cooperation between adjacent administrative bodies and meet the needs of greater metropolitan units.

**Figure 4**  
**map of annual density change for metropolises between 2000 and 2015 and average density in 2015**  
 (source: GHS-UCDB)



<sup>9</sup> United Nations (2015) Montréal Declaration on Metropolitan Areas, October 2015, Montréal

<sup>10</sup> Ibid

<sup>11</sup> Metropolis, (2017) The metropolitan scale of resilience, Issue Paper 03, November 2017, Barcelona



DURBAN. Photo by Firnish Media on Unsplash

# analysis of metropolitan indicators in Africa



# context and governance

The map and chart below indicate the location and population size of each of the seventeen African metropolises analysed.

Cairo is significantly larger than the other metropolises, and Johannesburg is double the size of the next biggest metro. At the other end of the spectrum, Libreville is the only metropolis with a population of under a million.

The average size of the African metropolises is smaller than the international average, where Asian metropolises are the largest on average and European metropolises are on average the smallest.

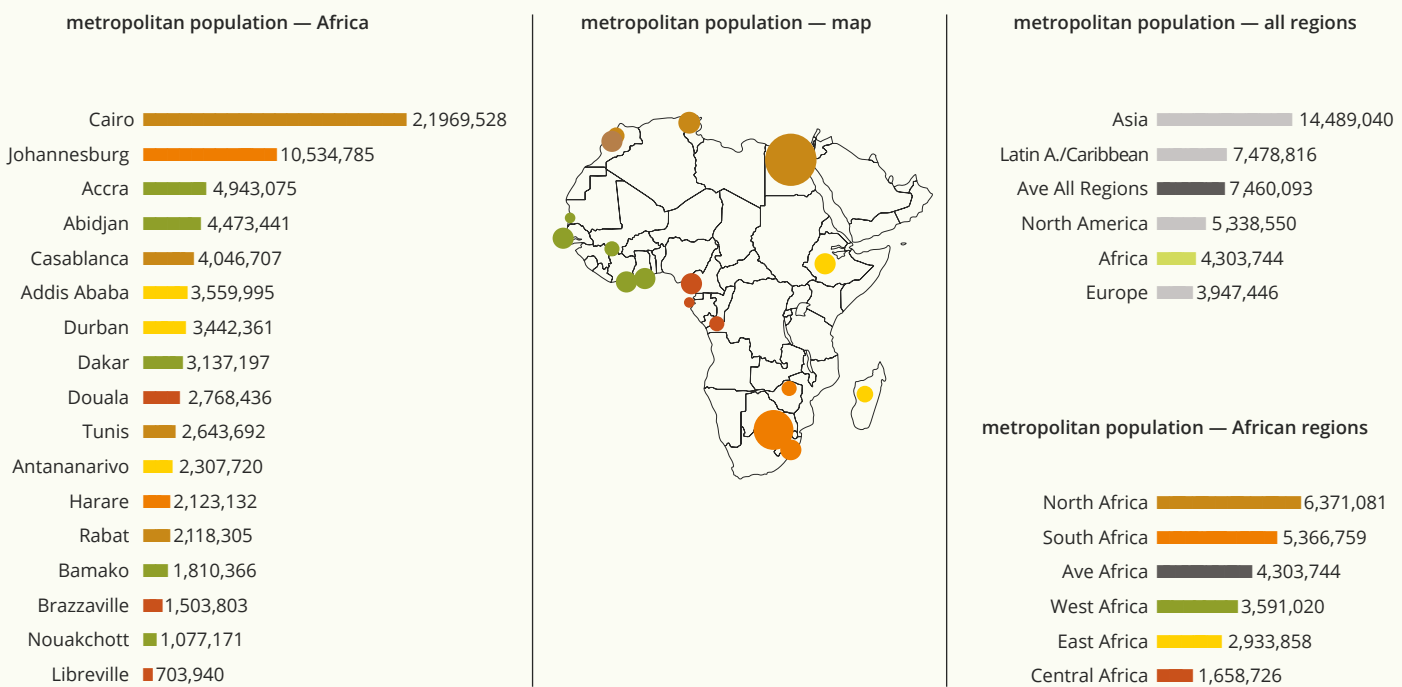
On average, the population density of the African metropolises

is higher than the average densities of the metros in the other world regions. Bamako has the highest density, followed by Addis Ababa. At a regional level, the metros in Central, East and West Africa have densities that are double those in the North and Southern African Regions.

The two biggest metros, Cairo and Johannesburg, both have some of the lowest urban densities, compared to the densities of the relatively smaller cities. Low density settlement patterns are associated with higher costs and lower economic growth patterns.

Population density is a significant factor to be considered in the analysis of a metropolis. It can

**Figure 5**  
population per metropolitan space<sup>12</sup>



<sup>12</sup> Data source for figures 5 to 22: [indicators.metropolis.org](http://indicators.metropolis.org)

be used as a proxy measure for a number of factors which make urban areas attractive places to live.<sup>13</sup> It is also closely linked to how the area is governed. With increasing sprawl and land coverage, the governance of a metropolis becomes more fragmented and complicated.

The emphasis on the role of local government and decentralisation is relatively recent in Africa: prior to the 1980s there was very little emphasis on roles of local government,<sup>14</sup> yet in the decades since then, the prominence of decentralisation has grown significantly. However, implementation has not always seen the anticipated benefits. Part of this has been caused by responsibilities that are shifted downwards, without suf-

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→ **although the prominence of decentralisation in Africa has grown significantly in the last decades, the shift of responsibilities has not been accompanied by sufficient funding or formal delegation frameworks**

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ficient funding and without a formal delegation framework.<sup>15</sup> Processes have also been rushed and insufficient time has been given to building sufficient local capacity to manage devolved functions.<sup>16</sup>

Weak governmental capacity is a commonly discussed concern for metropolitan governments worldwide and particularly developing countries. Capacity gaps include a lack of planning skills, the ability to manage rapid population growth and the skills to manage complex urban functions and relationships.<sup>17</sup> At a

technical level some of the areas in which capacity is missing include water resource management and water supply, sanitation and electrification. The requirements of some of these areas are also changing rapidly with new technology as well as challenges such as climate change.<sup>18</sup>

Managing multi-sector governance is a particular challenge, requiring metropolitan political and administrative staff to manage local development within a regional and national cooperation framework.<sup>19</sup> This requires working across different scales, global, continental, large national interests, regional and of course, local. Working across administrative boundaries and over the jurisdiction of different territories as is required in many metropolises is also highly demanding.<sup>20</sup> This cooperation takes place within very different contexts in each of the seventeen metropolitan regions analysed. In some, there are highly formal systems regulating roles and responsibilities and mechanisms of cooperation, and in others a less formal system has been forged.<sup>21</sup>

This becomes even more difficult where this cooperation must be achieved across political lines. Smit<sup>22</sup> notes that there is a common phenomenon in Africa of large cities being politically led by parties in opposition to national governments, many of whom have their support bases in rural areas.

UCLG and the Cities Alliance have analysed enabling provisions for local governance across a number<sup>23</sup> of African countries.<sup>24</sup> The study finds that there is increasing evidence that governance arrangements are lagging, with most countries not having conducive enabling environments for local government. There are however significant variations across Africa,

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<sup>13</sup> Cohen, in *Steering the Metropolis*

<sup>14</sup> Warren Smit, « Urban Governance in Africa: An Overview », *International Development Policy | Revue internationale de politique de développement* [Online], 10 | 2018,

Online since 01 October 2018, connection on 14 August 2019. URL: <http://journals.openedition.org/poldev/2637> ; DOI : 10.4000/poldev.2637

<sup>15</sup> Katz, p 15 in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel

Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable urban development*. Washington: IDB, 2017. The publication can be downloaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov)

<sup>16</sup> Katz, p 15 in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable urban development*. Washington: IDB, 2017. The publication can be down-

with countries such as the Democratic Republic of Congo, Egypt and Tunisia scoring relatively low and South Africa and Morocco having higher scores.

Governance challenges impact on a wide variety of issues including not only the ability to govern effectively, efficiently and economically through the delivery of services, but also on the degree of participation of the public and private sectors as well

as planning for longer-term impacts such as climate change.

**The metropolitan coordination** indicator assesses the number of sectors where a coordination arrangement exists, and ranges between a score of 5 indicating that there is a formal metropolitan governance structure, to 0 indicating no coordination at all. African metropolises have an average score of 3.9 for



ACCRA. Photo by Virgyl Sowah on Unsplash

loaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov)

Habitat International, Volume 46

urban development. Washington: IDB, 2017. The publication can be downloaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov)

Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable urban development*. Washington: IDB, 2017. The publication can be downloaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov)

<sup>17</sup> Smith, Jenkins (2015) *Trans-disciplinary research and strategic urban expansion planning in a context of weak institutional capacity: Case study of Huambo, Angola*,

<sup>18</sup> Katz, p 15 in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable*

<sup>19</sup> Katz, p 15 in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel

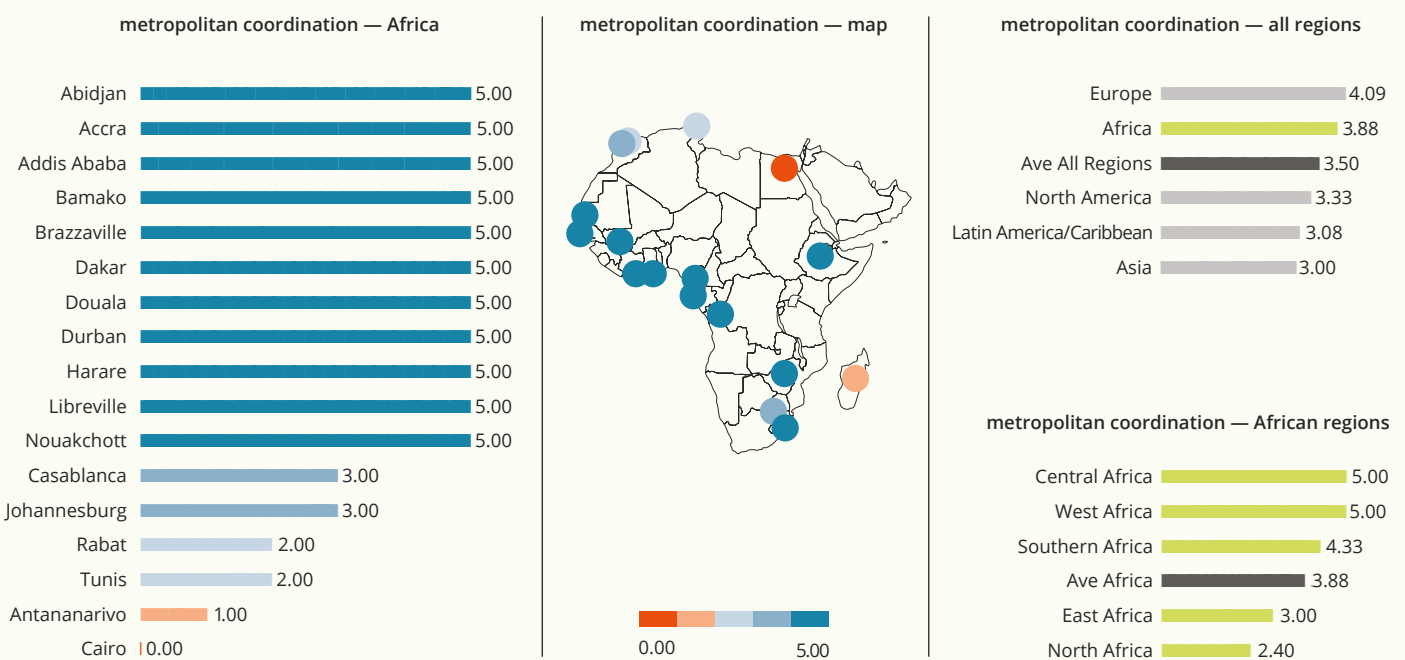
metropolitan coordination, slightly higher than the international average of 3.5. Of the African metropolises, Abidjan, Accra, Addis Ababa, Bamako, Brazzaville, Dakar, Douala, Durban, Harare, Libreville and Nouakchott all have high levels of coordination. The largest metropolis, Cairo, has a score of 0, indicating that there is no coordination at all across the sectors across the metropolis.

Mechanisms to improve horizontal coordination and cooperation between municipal structures have become more common over the past 15 years, with many putting in place legal frameworks and policies to enhance inter-municipal cooperation.<sup>25</sup>

Creating a metropolitan structure or administrative body to enhance this cooperation is an increasing trend, with around two thirds of metropolises having a metropolitan governance body.<sup>26</sup>

The Metropolis indicator on **territorial fragmentation** measures this trend, by providing an indication of whether there is a single administrative structure or a number of administrative structures, across which alignment would need to occur. On average, African metropolises have a lower territorial fragmentation score, compared to the world average. Within Africa, Southern Africa has

**Figure 6**  
**metropolitan coordination**



<sup>20</sup> Katz, p 15 in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable urban development*. Washington: IDB, 2017

The publication can be can be downloaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov).

<sup>21</sup> Kaufmann, D, Sager, F. *How to organize secondary capital city regions: Institutional drivers of locational policy*

coordination. *Governance*. 2019; 32: 63– 81. <https://doi.org/10.1111/gove.12346> Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropolitan gover-*

*nance for sustainable urban development*. Washington: IDB, 2017. The publication can be can be downloaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov)

<sup>22</sup> Smit, 2018



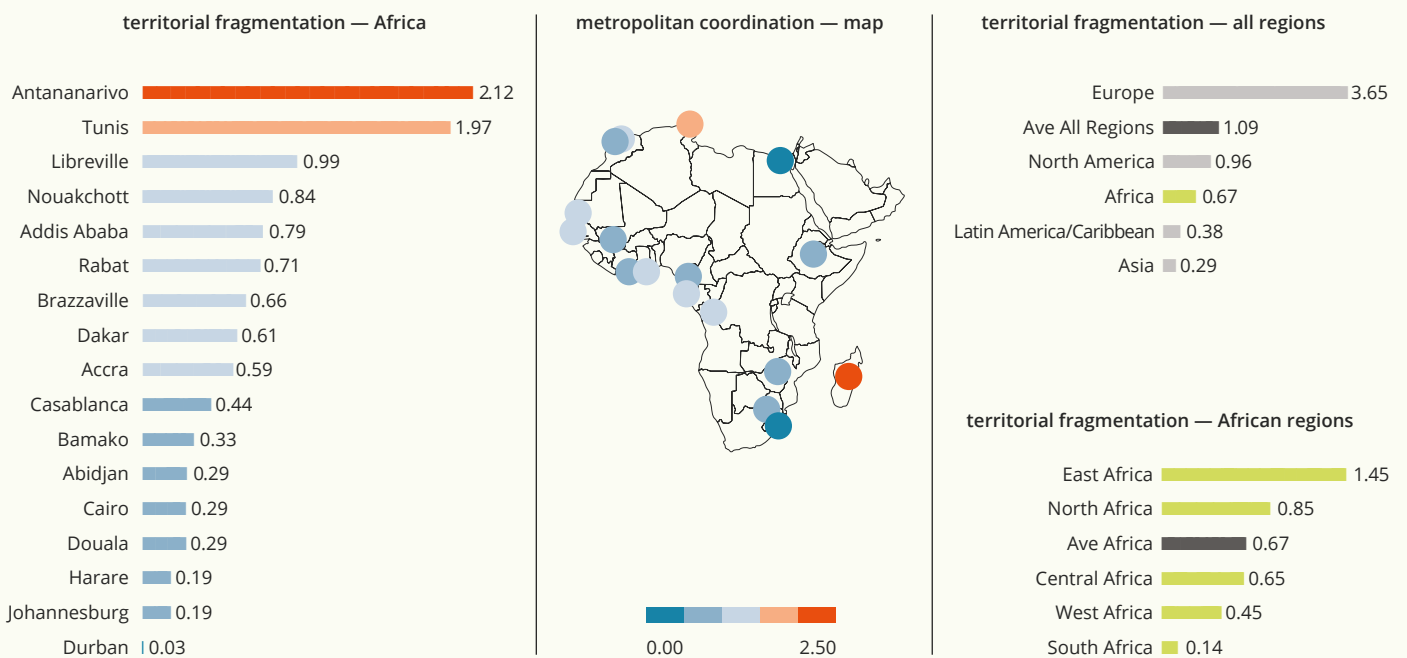
the lowest level of fragmentation.

Beyond the decentralisation, fragmentation and coordination factors, it is important to consider how representative a metropolitan government is of the population it governs. One measure of this is the extent to which women are represented in governance structures. The **share of elected women** indicator measures the gender inclusivity of governance. Given that women make up 50% of the population in Africa's metropolises, if government is to be representative of the population, they should contribute half of the elected representatives. In addition,

women's participation in decision-making within a metropolitan government is an important factor in ensuring responsiveness to the needs of women and children in the urban environment.

Across all the African regions, an average of 24% of locally elected representatives are women. This is slightly higher than the Asian average of 23% but lower than that for the other world regions where the world average is 28.7%. Addis Ababa and Tunis are the metropolises with the highest percentage of women in elected positions.

**Figure 7**  
**territorial fragmentation**



<sup>23</sup> The fourteen countries are those where the 17 Metropolis members are located and for which indicators have been developed and which are discussed in the next section

<sup>24</sup> Assessing the Institutional Environment of Local Governments in Africa 2015, 2nd Edition, The Cities Alliance and United Cities and Local Governments of Africa

<sup>25</sup> OECD/UCLG (2019), 2019 Report of the World Observatory on Subnational Government Finance and Investment – Key Findings

<sup>26</sup> OECD/UCLG (2019), 2019 Report of the World Observatory on Subnational Government Finance and Investment – Key Findings

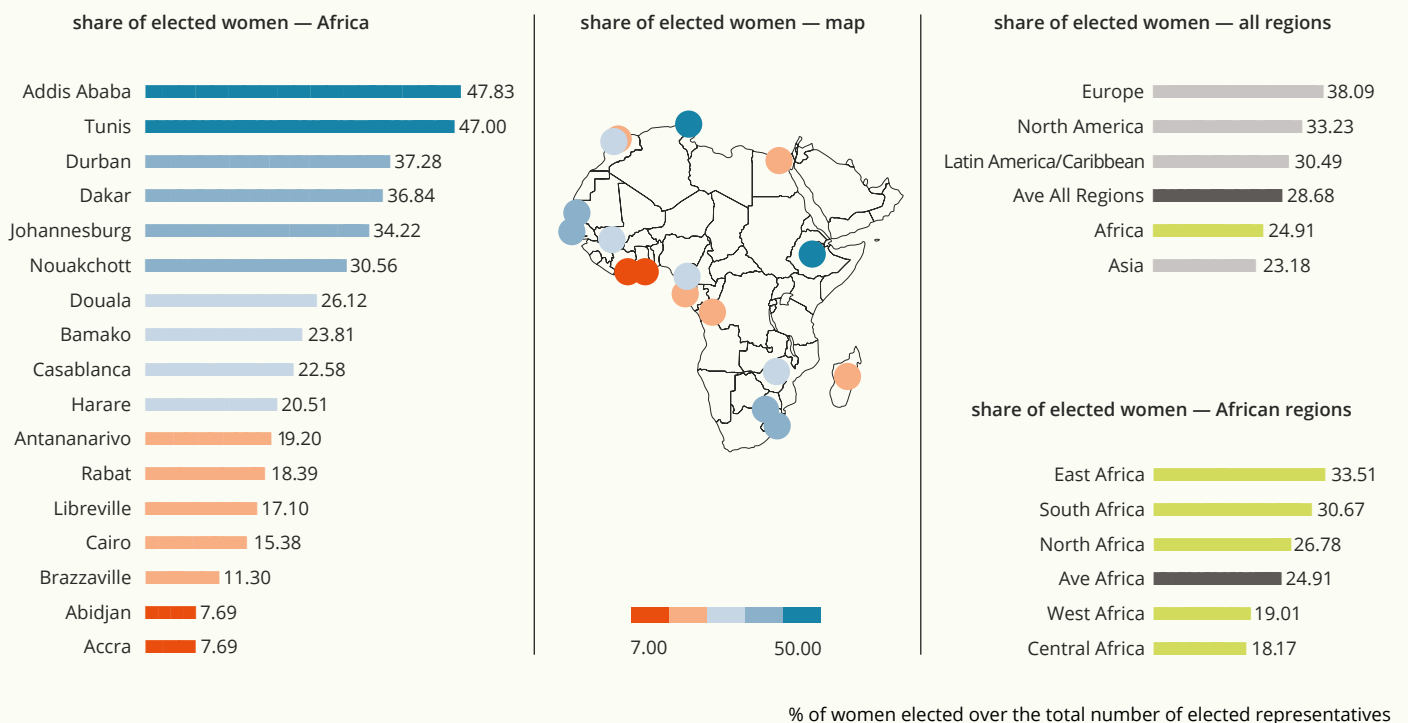
The political empowerment of women is, worldwide, an area of significant disparity.<sup>27</sup> The World Economic Forum Gender Report notes that worldwide there is a 77% gap in women’s political empowerment. Many metropolises have taken measures to actively promote gender equality. Harare has the highest indicator of measures to promote gender equality, followed by Dakar and Johannesburg.

Promoting greater gender equality and accountability is a powerful tool in creating socially sustainable, vibrant and equitable economic urban areas. Whilst many

metropolises have made significant strides in moving towards gender parity, much still remains to be done. Many of the indicators discussed in the following sections are disaggregated by gender – such as education, employment and income – and provide an indication of areas where the gender gap is widening or growing.

Ahrend et al (2018) show that metropolises which have a metropolitan authority tend to have higher densities in built up areas than areas without metropolitan governance.<sup>28</sup> Increasing density requires significant governance challenges, and development

**Figure 8**  
**share of elected women**



<sup>27</sup> WEF\_GGGR\_2018 – World Economic Forum, Global Gender Gap Report 2018, Geneva

<sup>28</sup> Why Metropolitan Governance Matters and How to Achieve It, Rudiger Ahrend (OECD), Soo Jin Kim (OECD), Alexander C. Lembcke

(OECD), and Abel Schumann (OECD) citing Ahrend et al. (2014)



ABIDJAN. Photo by Eva Blue on Unsplash

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→ **increasing density requires significant governance challenges, and development opportunities, in the provision of metropolitan public services and infrastructures**

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opportunities. Managing a population living in higher densities requires a higher level of service provision, urban management must be intensified, and infrastructure maintenance must be completed to a high standard to service the increasing population. In addition, public transport, public amenities, safe open space and recreational facilities become increasingly vital for the well-being of citizens.

Metropolitan governance should be contextualized within the standing of the metropolis in its national context to understand the role it plays in the national financial and political economy. The **national prominence indicator**

shows the weight of the budget for all local governments within the metropolis compared to the national government budget. Unlike the measure of population size, the national prominence indicator is not based on population size, so is not a traditional measure of city primacy, but instead measures its relative financial muscle.

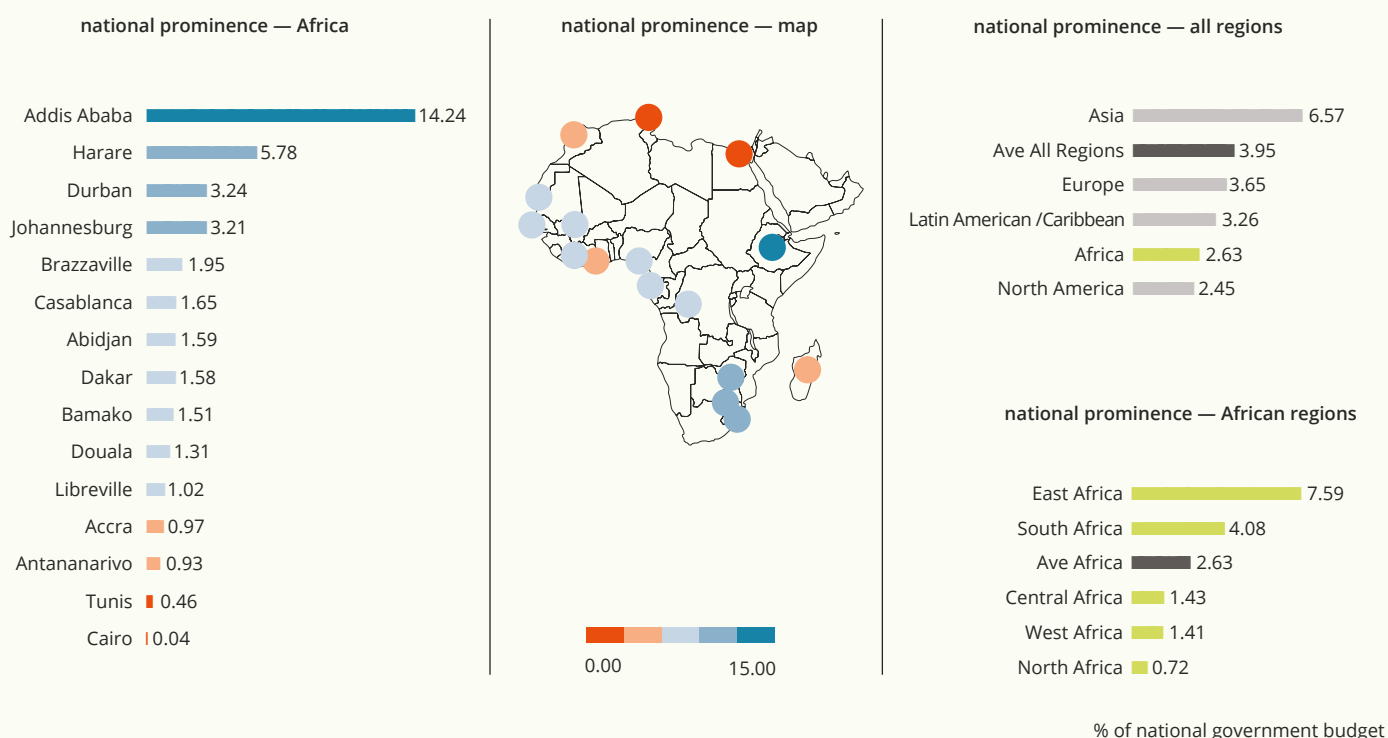
The national prominence indicator ranges between 14% for Addis Ababa to 0.04% in Cairo. Cairo is an interesting case in this regard, as it is the largest metro in Egypt and its primary city (Alexandra is the next biggest city being only 30% of Cairo's size). Yet, because Cairo has a very low ability to raise its own revenue, its financial strength is significantly lower than would be expected, given its prime status. The average across all the African metropolises is comparable to the average of the North American metros but is considerably lower than the average for Asian metropolises.

The **leadership of policy sectors indicator**<sup>29</sup> illustrates that the size of a metropolis's population and budget does not necessarily give it increased weight to guide the development of critical policy. However, this power is an important factor for improving metropolitan governance outcomes. Where metropolises are able to develop, shape or influence the policy for sectors such as urban transport, planning, economic development, social services, health and housing, outcomes are more sustainable, effective and efficient. Leadership of policy is also key element of decentralisation. Generally, African metropolises rank second highest

of all the metropolises in the database for this indicator. Of the African metropolises, Cairo, Africa's largest metropolis, has a policy leadership score of zero, and Johannesburg, the second largest of the metropolises in Africa, has a leadership score of 0.25, while Dakar and Antananarivo have relatively high scores (respectively, 0.67 and 0.58).

A recent report on sub-national government by OECD and UCLG (2019)<sup>30</sup> notes that many sub-national governments "do not have full autonomy and decision-making authority in their fields of responsibility, functioning sometimes more as agencies funded and regulated by

**Figure 9**  
**national prominence**



<sup>29</sup> For this indicator, data is available for seven of the African metropolises and is self-reported.

<sup>30</sup> OECD/UCLG (2019), 2019 Report of the World Observatory on Subnational Government Finance and Investment – Key Findings

the central government rather than as independent policy makers.” (p24). The report finds that the assignment of key responsibilities assigned to local government is essential to decentralisation effectiveness.

In understanding the economic context in which metropolitan governments operate, the total funding available for a metropolitan government to spend per capita provides insight into the amount of resources available. Worldwide, an estimated 24% of total public spending is undertaken by sub-national governments,<sup>31</sup> although this is lower in Africa (15,7%) and Latin America (18,3%) than in other regions.

**The total budget per capita** provides an indication of the budget per person, measured in USD. This indicator does not measure the total amount spent by all spheres of government at a local level, but rather just the amount spent by the local government.

Africa’s average score is significantly lower than that for other regions, where the world average is \$1358 per capita budget. Within Africa, the figures for metropolises such as Antananarivo and Cairo are very low and imply a highly centralized budgeting system and a very limited ability for the municipal government to develop infrastructure. This is



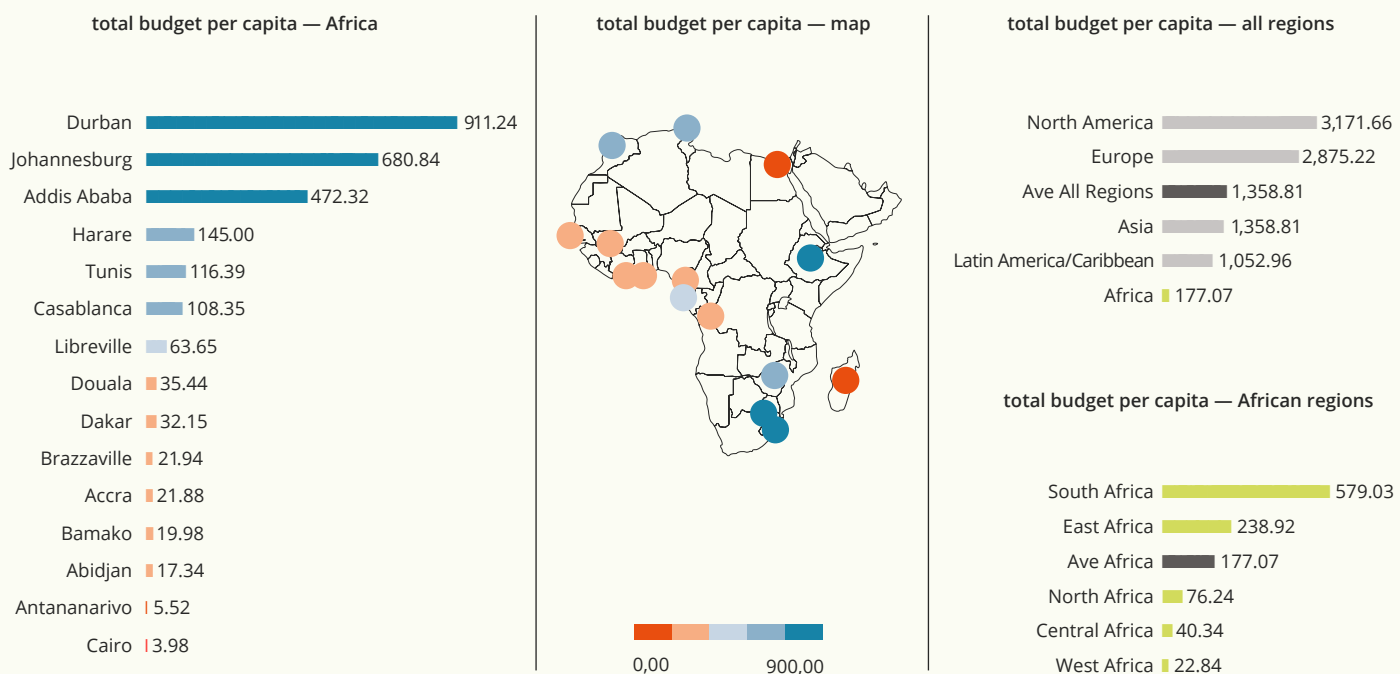
JOHANNESBURG. Photo by Angelo Moleele on Unsplash

<sup>31</sup> 2019\_SNG-WOFI\_REPORT\_Key\_Findings(1).pdf



ADDIS ABABA. Photo by Sami Jsp on Unsplash

**Figure 10**  
**total budget per capita**



US\$ par habitant

especially the case where a metropolis is comprised of a number of different municipal bodies, where base administrative costs take up a significant portion of the budget.

A comparison of territorial fragmentation and the total metropolitan budget per capita shows a correlation between lower fragmentation and increased budget per capita, providing a strong argument for increasing the metropolisation of African cities. This issue is also reflected in the 2019 Report of the World Observatory on Subnational Government Finance and Investment,<sup>32</sup> citing OECD 2017 and 2019<sup>33</sup> research which finds that municipal fragmentation

can increase the costs of service provision and reduce the equity of access to services. However, the authors warn that a balance must be sought between economic efficiency and effective governance, noting that some municipal mergers have not produced the anticipated benefits and, where the resulting municipality is too large, can have resulted in diseconomies of scale and congestion.

The **fiscal autonomy** indicator shows the ability of a metropolitan government to raise and spend its revenue on its own priorities, as opposed to national priorities. The OECD/ UCLG 2019 study discussed above found that worldwide, most

<sup>32</sup> OECD/UCLG (2019), 2019 Report of the World Observatory on Subnational Government Finance and Investment – Key Findings

<sup>33</sup> OECD (2017), Making decentralisation work in Chile: towards stronger municipalities, OECD Publishing, Paris, and OECD (2019), Making Decentralisation Work: A

Handbook for Policy-Makers, OECD Multi-level Governance Studies, OECD Publishing, Paris

<sup>34</sup> OECD/UCLG (2019), 2019 Report of the World Observatory on Subnational Government Finance and Investment – Key Findings

metropolitan governance bodies have less fiscal capacity, autonomy and power than individual municipalities, challenging the effectiveness of metropolitan governance.<sup>34</sup>

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→ **if not channelled through a metropolitan structure, fiscal decentralisation may lead to increased fragmentation, higher costs and decreased efficiency**

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The level of fiscal autonomy is very dependent on how local government can raise its own revenue and the mechanism through which transfers are made from national government. Unconditional transfers would give a metropolis greater autonomy, whilst conditional transfers would reduce its autonomy. Worldwide, across all the metropolises in the database, an average of 66% of metropolitan revenue is self-generated. Africa's average is slightly lower than the world average.

Southern Africa and East Africa both have relatively high scores and West Africa has the lowest. Harare, Addis Ababa, Douala and Tunis receive very little funding from other spheres of government. The Cairo metropolis has the lowest level of own-source funding of any other metro in the Metropolis Observatory worldwide database.

The fiscal autonomy indicator is closely linked to the fiscal decentralisation indicator, which measures local government expenditure as a percentage of the total country's

GDP. The African metropolises have the lowest score of all the world regions.

This indicator must also be understood in the context of the responsibilities that a local government has and, as discussed above, the powers and responsibilities of the metro and the conditionality of the grant system.

Birch<sup>35</sup> notes that, in some countries, increased fiscal decentralisation can lead to increased fragmentation, higher costs and decreased efficiency, where not channelled through a metropolitan structure.<sup>36</sup> This is particularly important to show that better coordination has the potential to improve equity and cohesion.

The indicators above show that African metropolises have a slightly higher policy leadership score than the worldwide average, but with a lower fiscal decentralisation average, effectively allowing metropolises to have a greater say over what gets done, but often without the necessary fiscal power to implement it. The growth of urban populations has added to this challenge, requiring more sophisticated and effective service delivery methods, transport and communication networks and a greater focus on improving the quality of life of urban dwellers. Ensuring that this is achieved across the metropolis requires a significant degree of coordination across the urban area.

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<sup>35</sup> 2017, in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable*

*urban development*. Washington: IDB, 2017. The publication can be downloaded from: [www.iadb.org/metrogov](http://www.iadb.org/metrogov)

<sup>36</sup> Peters, BG. 1998.

<sup>37</sup> EU. (2011). *Governance of metropolitan regions European and global experiences*. Workshop on the Governan-

ce of Metropolitan Regions in Federal Systems, Forum of Federations, Brussels, 20-21 June, cited in Ortiz and Kamiya in Gómez-Álvarez, David, Robin Rajack, Eduardo



# economic development

The **GDP per capita** per African metropolis are the lowest for any of the world regions in the database. Regionally, West Africa has the lowest GDP per capita levels compared to metropolises in central and southern Africa which are significantly higher.

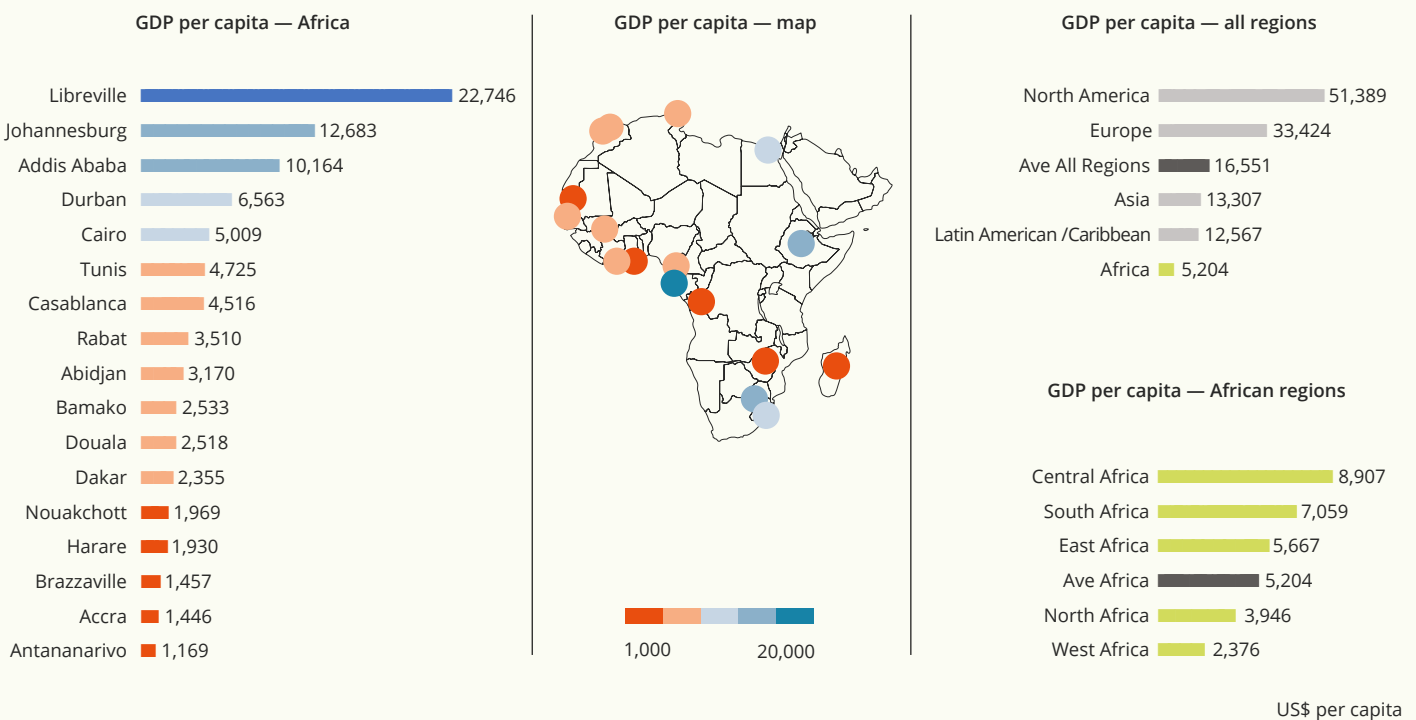
There is a correlation between higher levels of urbanisation, increasing economic density and economic growth, with metropolises seen as the “engines of innovation, economic growth, and development.”<sup>37</sup> (P22). In the period since 1990, metropolises within Africa have on average doubled their GDP (PPP). This increase brings significant benefit to metropolitan dwellers and the country as a whole, but it is vital that it is accompanied by increasing

governance systems and investment in infrastructure.

The opportunities of increased urban density mean that service provision can become more cost effective and efficient.<sup>38</sup> Public transport systems, for instance, become more viable if sufficient densities are achieved. In addition, increasing density increases proximity and the agglomeration effect, playing a fundamental role in economic development.<sup>39</sup>

In understanding the economic development context of the metropolises, the issues such as the total amount of financial resources and employment must be understood in the context of how evenly these resources are distributed across the population.

**Figure 11**  
**GDP per capita**



López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropolitan governance for sustainable urban development*. Washington: IDB, 2017

<sup>38</sup> United Nations (2015) Montreal declaration outcome document of the Habitat III thematic meeting on metropolitan areas, October 2015, Montreal

<sup>39</sup> See, for example Ortiz and Kamiya in Gómez-Álvarez, David, Robin Rajack, Eduardo López-Moreno and Gabriel Lanfranchi, eds. *Steering the metropolis: metropoli-*

*tan governance for sustainable urban development*. Washington: IDB, 2017

Whilst the prominence (GDP) indicator measures the concentration of economic growth in metropolises by comparing their GDP to that of the country, larger metropolises are likely to have larger GDP's. To provide a comparable measure between small and large municipalities, the economic density indicator allows for comparison of smaller metropolises to larger ones. The indicator shows the total metropolitan GDP divided by the land area.

African metropolises in the database have an average economic density of \$15.9m/Km<sup>2</sup>. This is the lowest density of all worldwide regions in the database. European economic densities are five times higher and the worldwide average is twice this

The 2019 African Economic Outlook notes that economic growth on the continent continues to strengthen, increasing to 3.5% in 2017 and 2018, up from 2.1% in 2016.<sup>41</sup>

Unemployment in African metropolises is significantly higher than that for other world regions. Across African regions, Southern Africa stands out with, on average, unemployment of 23%. Johannesburg and Durban have the highest total unemployment levels for any metropolis in the database. In aiming to address unemployment, a randomized experiment in Addis Ababa in 2015 provided unemployed participants with a transport subsidy to allow them to travel to seek work in the central city. The results saw increased levels of employment and improved quality of employment (with higher salary levels and increased full-time employment) amongst the target group.<sup>42</sup> This demonstrates the impact that accessible public transport and the active role a metropolitan government can play in addressing unemployment.

Disaggregating the levels of unemployment by age and gender provides further insight into levels of inequality and wasted potential. In the African metropolises, youth unemployment is, on average, 9% more than total unemployment levels, and women's unemployment is on average 7% greater than that for men. These inequalities, together with the income inequalities discussed above mean that women and the youth are increasingly marginalized. The African Union's most recent strategic framework recognises these inequalities as an area requiring intervention, calling for "an Africa where development is people-driven, unleashing the potential of women and youth"<sup>43</sup>.

Youth unemployment rates range between 13% in Abidjan to 49% in

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**→ increasingly marginalized, women and the youth face unemployment rates which are, respectively, 7% higher than that for men, and 9% higher than total levels**

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amount. Libreville and Addis Ababa have significantly higher economic densities than the other metropolises. In comparison, Rabat, Nouakchott and Accra have the lowest economic densities. There is a positive correlation between population and economic density.

African cities provide both challenges and opportunities to address poverty. The 2018 UN State of African Cities report calls for African cities to "seize a more prominent position in the world economy, by enhancing their accessibility, connectivity, markets and urban attractiveness"<sup>40</sup>.

<sup>40</sup> UN-Habitat and IHS-Erasmus University Rotterdam (2018) "The State of African Cities 2018: The geography of African investment." (Wall R.S., Maseland J., Rochell K. and

Spaliviero M). United Nations Human Settlements Programme (UN-Habitat)

<sup>41</sup> African Development Bank Group, 2019, "African Econo-

mic Outlook; AFDB: Abidjan: Cote d'Ivoire.

<sup>42</sup> Franklin 2015

<sup>43</sup> African Union, Agenda 2063: the Africa we want

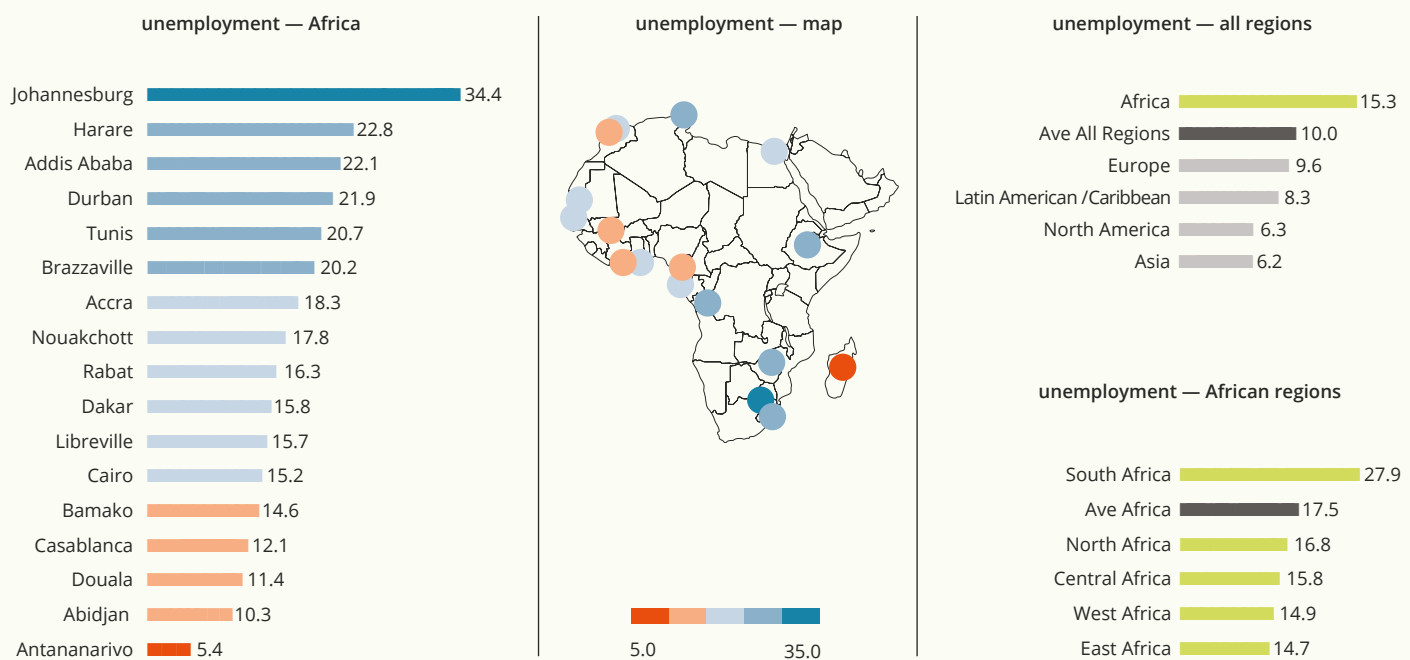
## → gender inequality jeopardises the continent's efforts for inclusive human development and economic growth

Johannesburg. With the exception of Abidjan, youth unemployment in all countries, is greater than total unemployment. The greatest difference between youth and total unemployment is in Tunisia, where youth unemployment is almost double the total unemployment rate. The differences between youth unemployment and total unemployment are a feature

in all world regions in the database. Europe has 13% more youth unemployment than total employment. In Latin America it is 9% greater.

Many declarations have been made by the African Union and other bodies that gender equality must be a priority.<sup>44</sup> Women's high unemployment levels and lower levels of remuneration have a significantly negative impact on the economy, lowering the region's GDP by an estimated average 6% of GDP. The Africa Human Development Report of 2016 notes that gender inequality jeopardises the continent's efforts for inclusive human development and economic growth.<sup>45</sup>

**Figure 12**  
**Total Unemployment**



Units in %

<sup>44</sup> See the 2004 African Union "Solemn declaration on gender equality in Africa"

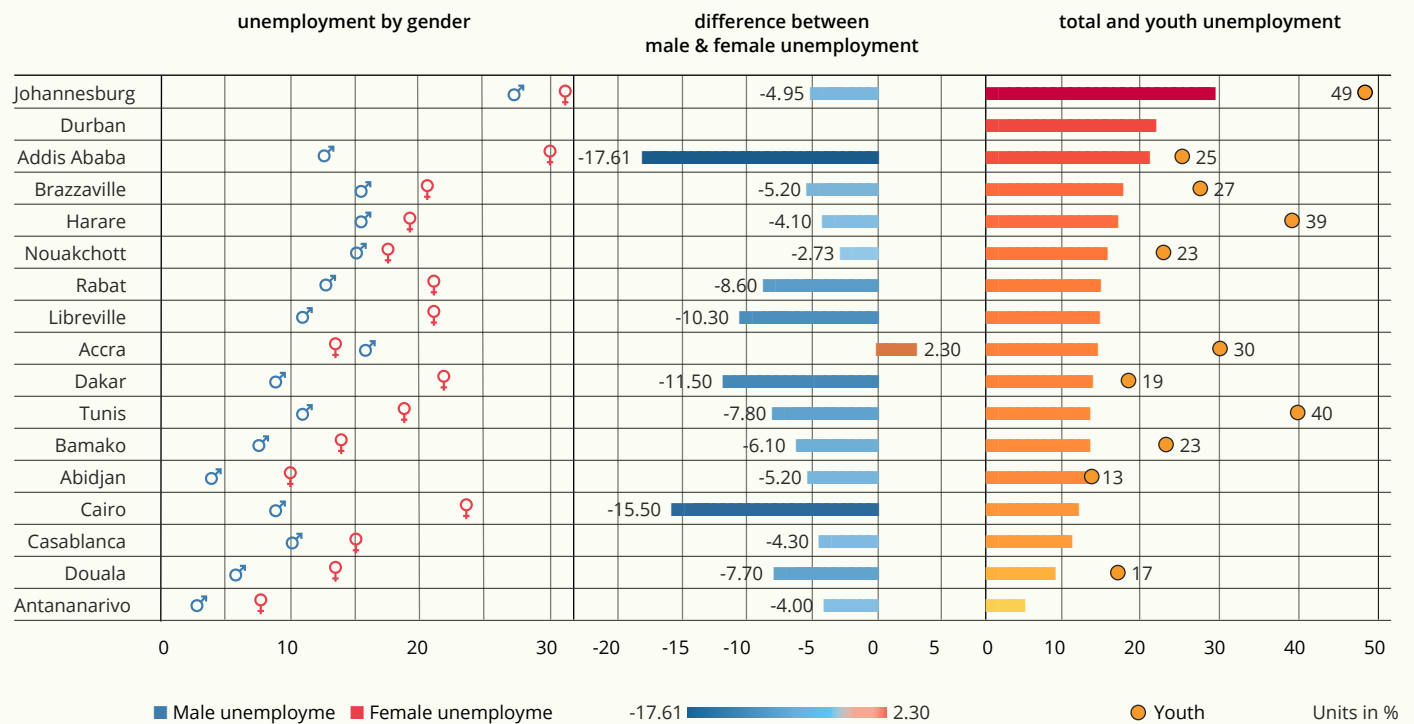
<sup>45</sup> Africa Human development report: Accelerating Gender Equality and Women's Empowerment in Africa

The majority of the countries in the worldwide Metropolis database have higher levels of unemployment for women, compared to men. Africa's average of 7% difference between male and female employment is the highest average difference for all regions. In Europe, unemployment for women is on average 1% lower than that for males and in Asia it is 2% lower. In Africa, Cairo has the highest discrepancy, with a 15% difference between the employment levels of males compared to females. Only Accra has a higher level of unemployment in males as compared to females.

Yet, despite lower levels of formal employment, the African Development Bank<sup>46</sup> notes that women are more active as economic agents in Africa than anywhere else in the world. They perform the majority of agricultural activities, and, over and above their income-earning activities, are central to the household economy and the welfare of their families. These activities are generally not fully acknowledged nor formally counted in measures such as GDP or formal employment figures.

The **women in the workforce** indicator measures the number of

**Figure 13**  
**unemployment disaggregated by gender and youth**



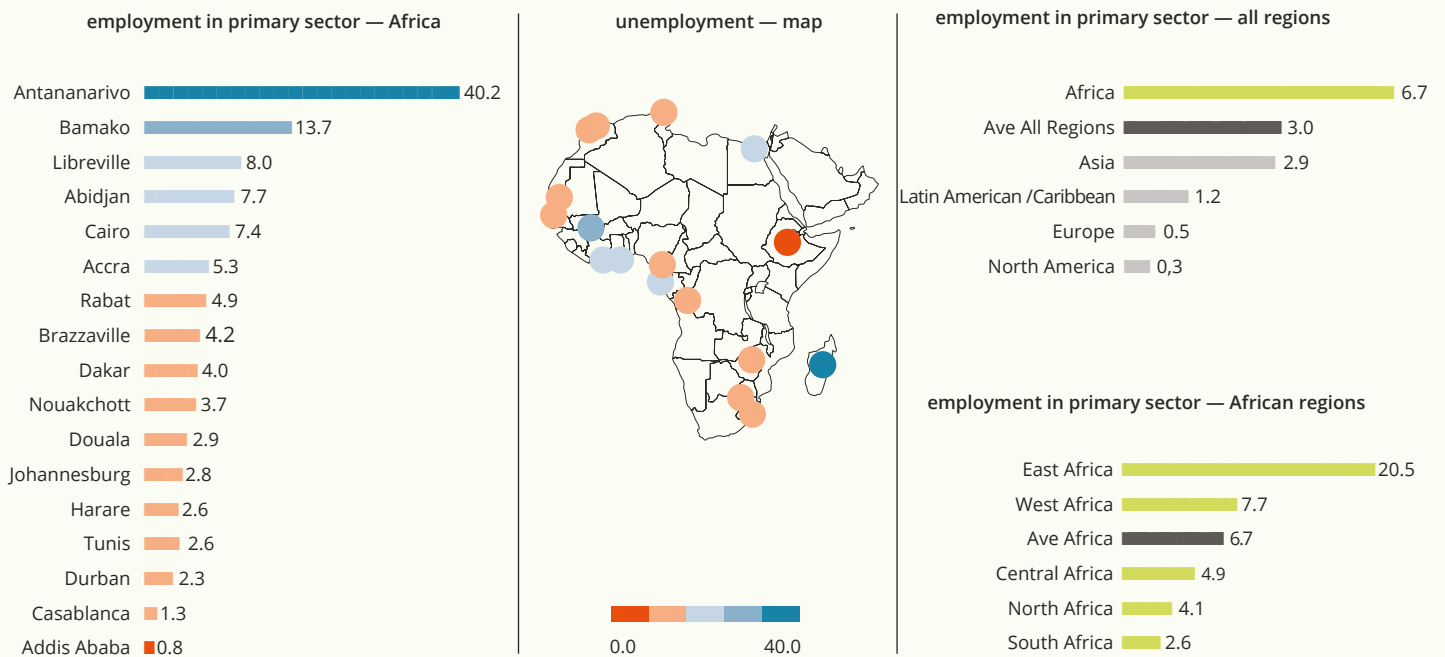
<sup>46</sup> Empowering African Women: An Agenda for Action, The Africa Gender Equality Index 2015, African Development Bank group, Cote d'Ivoire

women who are either working or actively looking for work. Africa's ratio of women in the workforce is, at 0.7, lower than the world average of 0.8. Within Africa, generally East Africa has the highest proportion of women in the workforce, and North Africa the lowest. Accra has the highest proportion with 1.1 women employed for each man employed. Antananarivo, Addis Ababa and Brazzaville all have relatively high proportions of women employed. At the other end of the spectrum, in Cairo, Rabat and Casablanca women make up less than one third of the workforce.<sup>47</sup>

The World Bank<sup>48</sup> notes that the growth of urbanisation is linked to the shift in the dominating type of employment in urban centres, with a change away from primary sector employment, such as agriculture, towards increasing tertiary sector employment, such as the services sector.

Regarding **employment share by sector**, although lower than the international averages, the tertiary sector dominates employment in African metropolises, except for in Dakar and Antananarivo. Antananarivo has the largest share of employment in the primary sector compared to any other metropolis.

**Figure 14**  
**employment by sector - Primary sector**



Units in %

<sup>47</sup> It should be noted that the data for some metropolises including Cairo, Rabat and Casablanca is national level data. Generally where metropolitan level figures are

given, it shows a higher level of women in the workforce

<sup>48</sup> Lall, Somik Vinay; Henderson, J. Vernon; Venables, Anthony J. 2017. *Africa's Cities : Opening Doors to the World*. Washington, DC: World Bank. © World Bank

Compared to other regions, employment in Africa's metropolises shows a significantly higher proportion of people working in the primary sector compared to other regions. Primary sector employment is characterized by relatively low wages and high levels of inequality.

Metropolitan governments can play a significant role in supporting a move towards secondary and tertiary sectoral employment through, for example, improved provision of transport and network infrastructure. However, the economic strategy of metropolitan governments must be carefully developed to ensure that they lead to decreased levels of inequality, and factors such as congestion and pollution must be carefully managed. Increasingly, new entrants to African urban areas are not

adequately accommodated in formal employment, but instead can only find opportunities in the informal sector. The State of African Cities 2018 report notes that the agricultural and informal sectors show a higher degree of participation by women than do the secondary and tertiary sectors.<sup>49</sup>

Employment in the informal sector is a significant source of employment in African cities. The informal economy is also responsible for the generation of between 25% and 50% total value in the urban economy. Formal estimates of total employment in the informal sector in African cities range between 66%<sup>50</sup> and 76%<sup>51</sup>. In Douala, Antananarivo and Harare, 70 to 80% of the jobs are held in the informal sector.



DOUALA. Photo by Edouard Tamba on Unsplash

<sup>49</sup> The State of African Cities 2018

<sup>50</sup> Estimates by ILO, cited on <https://blogs.worldbank.org/african/>

[understanding-the-informal-economy-in-african-cities-recent-evidence-from-greater-kampala](#)

<sup>51</sup> <https://www.brookings.edu/blog/africa-in-focus/2018/06/01/figures-of-the-week-informal-employment-in-african-cities/>

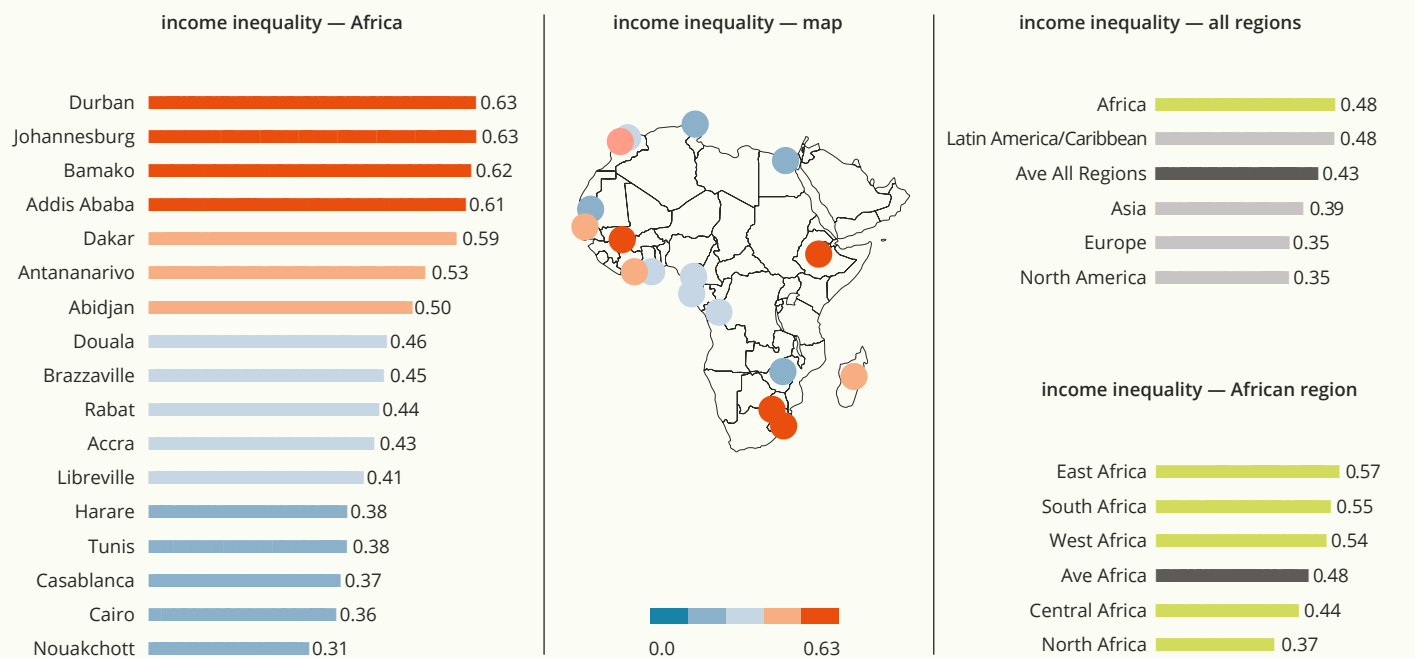
# social cohesion

The previous section provided details on the economic context of African metropolises, whilst this section provides information on the social context within which residents live. Economic development must serve to build social inclusion and capital and to support sustainable social development, cities should know when to invest and in which sectors. However, not all metropolises, and the sub-national governments within them, take responsibility for education, basic services, social support and social protection services, healthcare, cultural and sporting facilities, safety and housing. This means that the ability for metropolises to strengthen and develop a more

symbiotic relationship between economic and social development is challenged, particularly as social spending is, worldwide the biggest area of government spending.

Across the metropolises in Africa, poverty rates decrease with increasing GDP per capita, and **income inequality** increases. The income inequality trend is opposite to that of the world trend, where income inequality decreases with increasing GDP.

**Figure 15**  
**income inequality**



Gini coefficient (score 0-1)



Johannesburg and Addis Ababa stand out as metropolises where the GDP per capita is relatively high, and there are very high levels of income inequality. This pattern of increasing inequality is a concern within Africa's metropolises where the role of metropolitan government in promoting greater equity should not be underestimated. African metropolises are under great pressure to perform their duties and provide services within severe economic constraints. These financial constraints in turn perpetuate poverty, social exclusion and inequality.

Lanfranchi and Contin (2018) note that inequality is one of the greatest challenges facing metropolises this century. Levels of inequality as measured by the Gini Coefficient of income inequality, show that, together with Latin American metropolises, African metropolises have the highest levels of inequality in the

worldwide metropolitan database. Within the African metropolises database, the scores range between 0.63 for Durban and Johannesburg, (South Africa being the most unequal country on the database) to 0.3 for Nouakchott.

Metropolitan governments can play a significant role in addressing some of the drivers of inequality and build greater equity, gender equality and inclusion. This includes improving an equal access to housing, social infrastructure, basic services and public transport.

Across gender lines, income inequality is measured by the **gender pay gap** indicator measured by the ratio of female earning divided by the income of males. A higher score indicates more equality and a lower score indicates lower gender equality. The data is all at a national level, so does not provide a reflection of the situation at a metropolis scale.



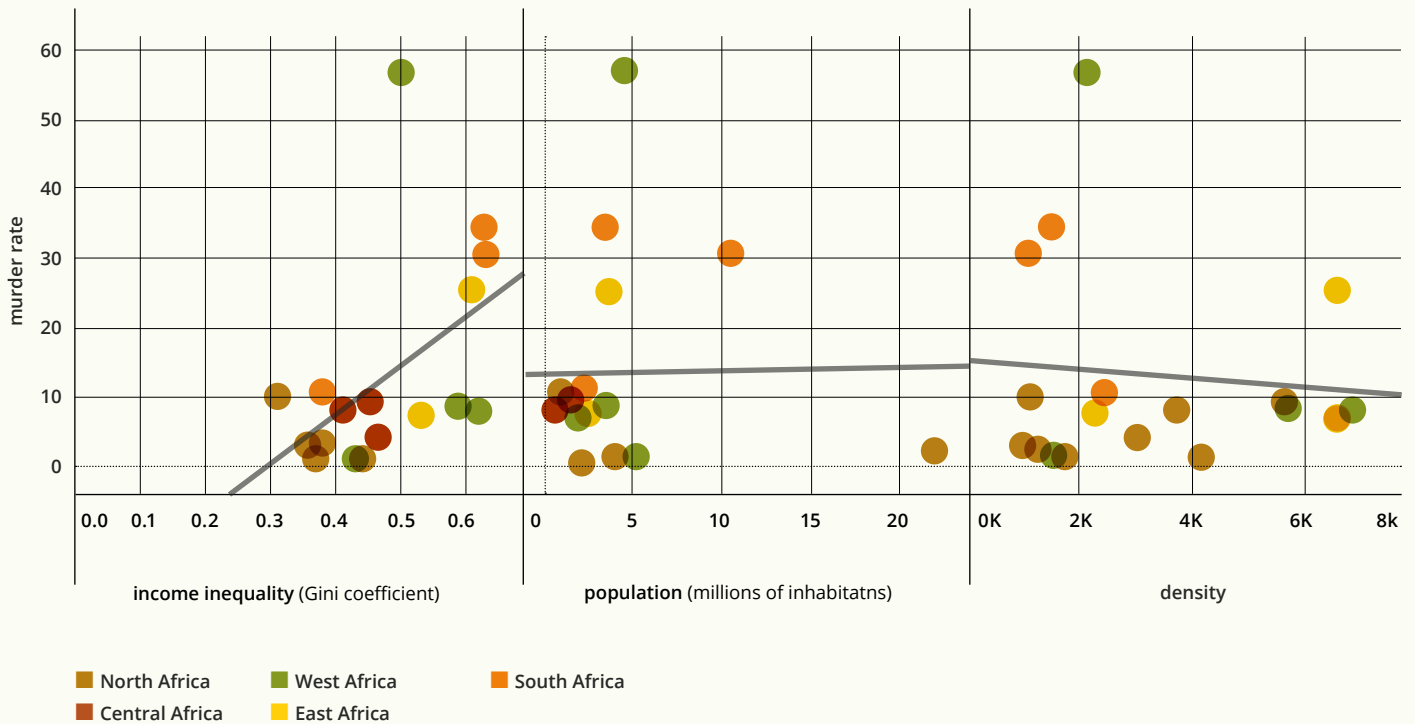
Data shows there are significant differences between the metropolises, with women in Harare having the greatest parity with males. In Douala, women earn a third of that earned by men. The African average is the same as the international average and is more equitable than that for Europe and North America.

Another social cohesion indicator is **murder rate**. This is measured as the number of murders per 100 000 people. African metropolises have on average the second highest murder rate compared to other world regions, with North Africa having the lowest rate and Southern Africa

the highest. Abidjan has the highest rate which is four times the African average. This is followed by Durban, Johannesburg and Addis Ababa. Casablanca, Accra and Rabat all have significantly lower murder rates.

In examining the relationship between murder rates and other indicators, the charts below show that murder rates tend to increase with income inequality but are not necessarily dependent on city size. Cairo has a very large population and very low murder rate. As metropolis density increases, murder rates tend to decrease slightly.

**Figure 16**  
murder rate and inequality/population and density



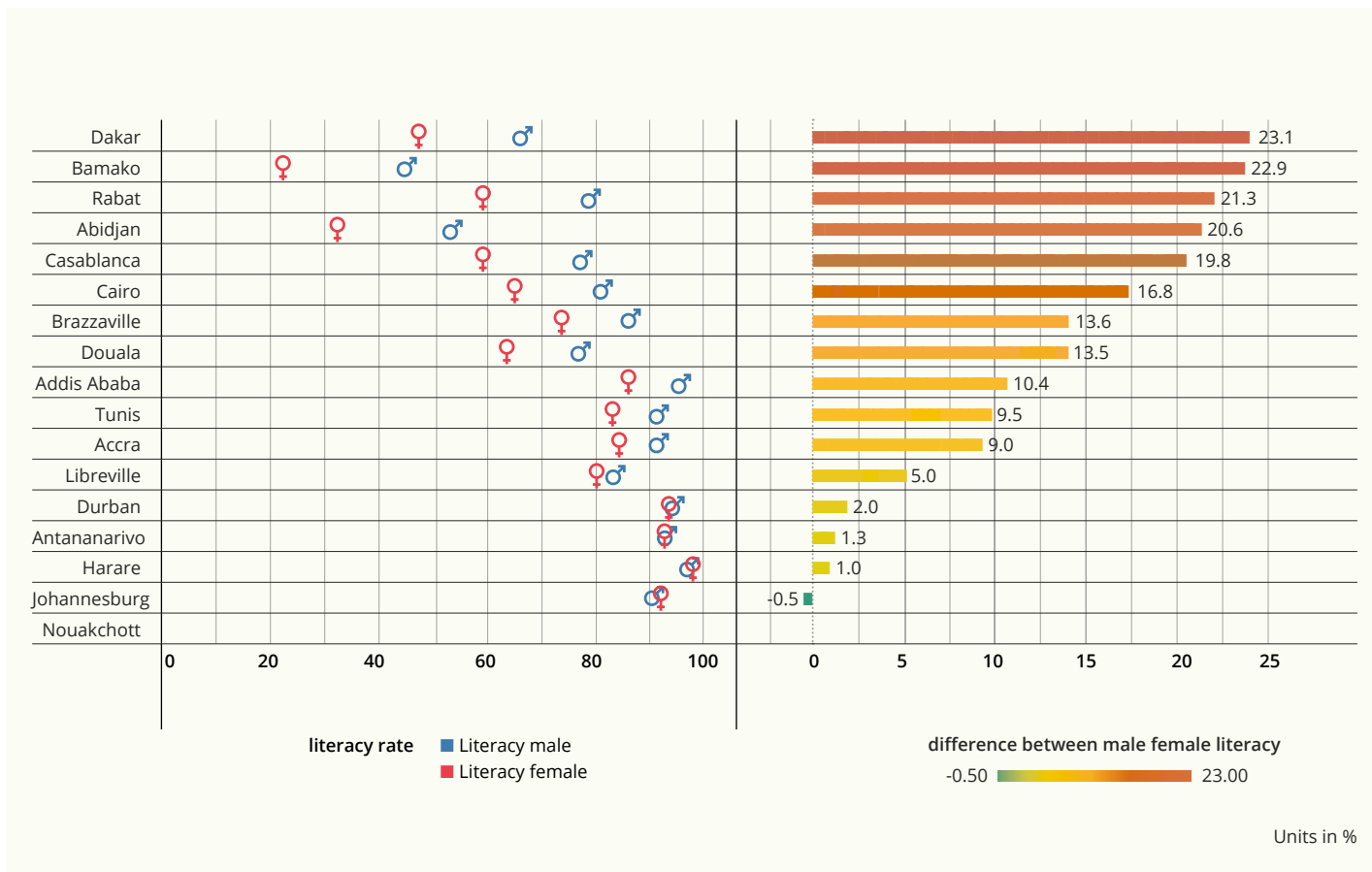
Beyond physical safety and well-being, **literacy rates** in Africa lag behind that of other regions. Literacy rates are impacted upon by, amongst other factors, poverty, gender inequalities and access to educational facilities. In turn, literacy rates are highly predictive of factors such as employment levels, poverty and life expectancy.

Africa's average literacy rate is 77%. This is lower than any of the world regions, where the global average is 88.2%. Only three metropolises in the African database have literacy rates of above 90%: Harare,

Johannesburg and Antananarivo. Bamako and Abidjan have extremely low literacy rates. Generally, metropolises with higher literacy rates also have lower poverty rates. Antananarivo and Harare are both exceptions to this, both with high literacy and poverty rates.

The gender inequalities in literacy rates are illustrated in the chart below. Only Johannesburg has a higher literacy level for women than it does for men. Metropolises such as Dakar, Bamako and Abidjan have over 20% lower literacy rates for women, compared to men.

**Figure 17**  
**difference between male and female literacy rates**





RABAT. Photo by Idriss Meliani on Unsplash

According to the 2016 African Gender Scorecard,<sup>52</sup> there has been remarkable progress in implementing global and regional gender equality and women’s empowerment commitments across Africa. However, in many cases these interventions are relatively limited.<sup>53</sup> Moreover, in spite of the high proportion of youth in populations

across the African continent, youth participation in formal civic and political processes remains low, especially amongst young women.<sup>54</sup> The rights of citizens identifying as Lesbian, Gay, Bisexual, Transgender (LGBT) to fully participate in civic life are not protected in most African countries and in some cases still criminalized.

<sup>52</sup> African Union Commission, (2017) African Gender Scorecard 2016, Addis Ababa

<sup>53</sup> UCLG Africa and Cities Alliance (2018) Assessing the Institutional Environment

of Local Governments in Africa, 3rd edition, Country profiles, criteria 12 on Climate Change

<sup>54</sup> RorisangLekalake and E. Gyimah-Boadi (2016),

‘Does less engaged mean less empowered? Political participation lags among African youth, especially women’. Afrobarometer Policy Paper No. 34

# environmental sustainability

African governments at a range of levels have adopted a number of global development policy commitments such as the 2030 Agenda for Sustainable Development, the Paris Agreement, the Addis Ababa Action, the Sendai Framework for Disaster Risk Reduction and the New Urban Agenda. All of these require sustainable urbanisation and for our purposes sustainable metropolisation.

Africa's significant renewable and non-renewable natural resources also present both challenges and opportunities to its sustainable development. Over 70% of Africa's exports are in the oil, gas and mineral sectors, and these make up a significant amount of the continent's GDP and government revenues.<sup>55</sup> However, the exploitation of these natural resources has in many instances come at the cost of sustainable and equitable economic growth and has resulted in significant environmental degradation. In addition, the challenges of climate change have required African cities to implement strategies to deal with factors such as land degradation, drought, flooding and increased heat.<sup>56</sup>

The Intergovernmental Panel on Climate Change's<sup>57</sup> (IPCC) measure of vulnerability to climate change considers the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. The IPCC note that Africa is highly vulnerable to climate change due to its dependency on climate related activities and low adaptive capacity. The most significant expected changes impacting on Africa's metropolises include water scarcity, the increase in the magnitude and frequency of extreme weather events, sea level

rise, lower food security and the rise of climate sensitive diseases such as malaria and cholera.<sup>58</sup>

**Carbon Dioxide (CO<sub>2</sub>) emissions** are a significant contributor to global warming and climate change. The average emissions from African metropolises are relatively low, at half of the world average, 2.3 metric tons per capita.

The charts below show the relationship between Carbon Dioxide (CO<sub>2</sub>) emissions and car ownership, residential density and the metro population size. Metropolises with increased levels of car ownership and higher GDP levels have increased CO<sub>2</sub> emissions, whereas higher residential densities and better access to public transportation are associated with lower levels of CO<sub>2</sub> emissions.

The PM2.5 concentration is a measure of **air quality** showing the annual mean concentration of particulate matter of less than 2.5 microns. Research has shown that long term exposure to high levels of PM2.5 can have serious adverse health implications. Increased levels of PM2.5 concentration have been found to be associated with higher population densities and increased road densities.<sup>59</sup> The data shows that on average, metropolises in the African region have higher levels of PM 2.5 than the other regions. Within Africa, Nouakchott has the highest levels, at 124, followed by Cairo and Douala. Abidjan, Durban, Libreville and Rabat all have significantly lower levels.

Vehicle emissions contribute significantly to increased CO<sub>2</sub> and PM2.5 and higher levels of emissions are associated with low levels of public transport and higher levels of motor car ownership. Africa has, on average, the lowest levels of **car ownership** of any of the world regions, with on average just seven

→ **Africa is highly vulnerable to climate change due to its dependency on climate related activities and low adaptive capacity**

<sup>55</sup> Economic Commission for Africa, 2018, African Governance Report V, UNECA, Addis Ababa

for Africa, 2018, African Governance Report V, UNECA, Addis Ababa

the United Nations body for assessing the science related to climate change.

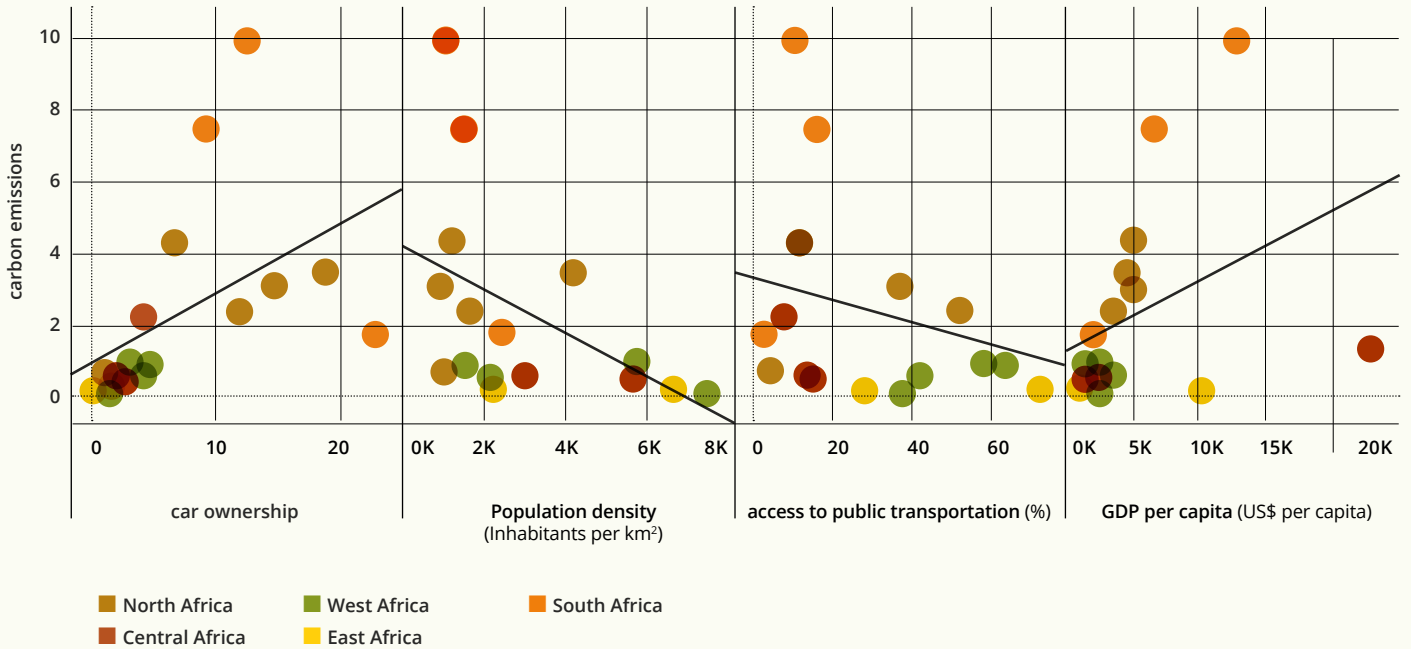
Change in Africa: Challenges and Recommendations for Africa

<sup>56</sup> Economic Commission

<sup>57</sup> The Intergovernmental Panel on Climate Change (IPCC) is

<sup>58</sup> IPCC, 2013, Policy Brief: Vulnerability to Climate

**Figure 18**  
**relationship between carbon emissions and car ownership; population density;**  
**access to public transport and GDP per capita**



passenger motor vehicles per 100 population. Europe, in comparison has 48 passenger vehicles per 100 population. Within Africa, Harare has the highest levels of motor car ownership and Douala, Antananarivo, Bamako, Nouakchott and Addis Ababa the lowest.

There are a number of measures that metropolitan governments can employ to reduce the amount and harmful impacts of air pollution and CO<sub>2</sub> emissions as well as to improve the general health of their residents. These include increased provision of public transport, better land use planning which reduces commuting distances and the provision of accessible green space.

The provision of open **green space**, such as parks and recreational facilities within an urban environment has numerous environmental and social benefits<sup>60</sup> and is an essential component of the broader social support system and climate change mitigation measures.<sup>61</sup> Authors López-Moreno and Murguía<sup>62</sup> found that the most important factors associated with increased levels of prosperity relate to the availability of public space, in particular green open areas.

In African metropolises, the measure of accessible green space per inhabitant is significantly lower than other world regions. Metropolises such as Douala,

<sup>59</sup> Han, Shuaishuai & Sun, Bindong. (2019). Impact of Population Density on PM2.5 Concentrations: A Case Study in Shanghai, China. Sustainability. 11. 1968. 10.3390/su11071968

<sup>60</sup> Le Texier, M., Schiel, K., & Caruso, G. (2018). The provision of urban green space and its accessibility: Spatial data effects in Brussels. PloS one, 13(10), e0204684. doi:10.1371/journal.pone.0204684

<sup>61</sup> Steering the Metropolis

<sup>62</sup> In Steering the Metropolis



Brazzaville and Dakar have particularly low levels of access to green space. These average scores also do not provide a full picture of how access varies spatially across a metropolis and across income groups. Residents living in lower income residential areas are in greatest need of recreational facilities. It is concerning that in the African metropolises with higher population densities there are generally lower levels of accessible green space.

One of the most important tasks of local and metropolitan government is to provide or facilitate the provision of basic services, including water, electricity, sanitation and waste management. Yet, deficiencies in service provision negatively impact on residents living in urban areas throughout the world.<sup>63</sup> The GOLD IV study notes that there has been a decline in access to basic services in urban areas of sub-Saharan Africa.

The provision of **wastewater** collection or sanitation services

is significantly higher in urban areas, compared to rural areas. Within metropolises access can vary significantly, with residents of informal settlements and slums having very low levels of access and even where services are provided, it may not be safe or easy to access such facilities. This is particularly an issue for women who may not be able to safely access sanitation facilities at night.<sup>64</sup>

The average population served by wastewater collection across Africa is 43%, significantly lower than the international average. This varies between almost 100% access in Cairo, Casablanca and Rabat, to less than 1% in Antananarivo. North Africa has significantly higher levels of access, compared to West, Central and East Africa. In Antananarivo a shortage of treatment facilities and the necessary infrastructure means that water is discharged without being treated. Together with flood risks, this has significant health implications for residents.<sup>65</sup>

<sup>63</sup> GOLD IV Co Creating the Urban Future, United Cities and Local Governments (UCLG) 2017, Barcelona

<sup>64</sup> Amnesty International (2010)

<sup>65</sup> AFD, Protecting the population from flood risks in Antananarivo <https://www.afd.fr/en/protecting-population-flood-risks-antananarivo>

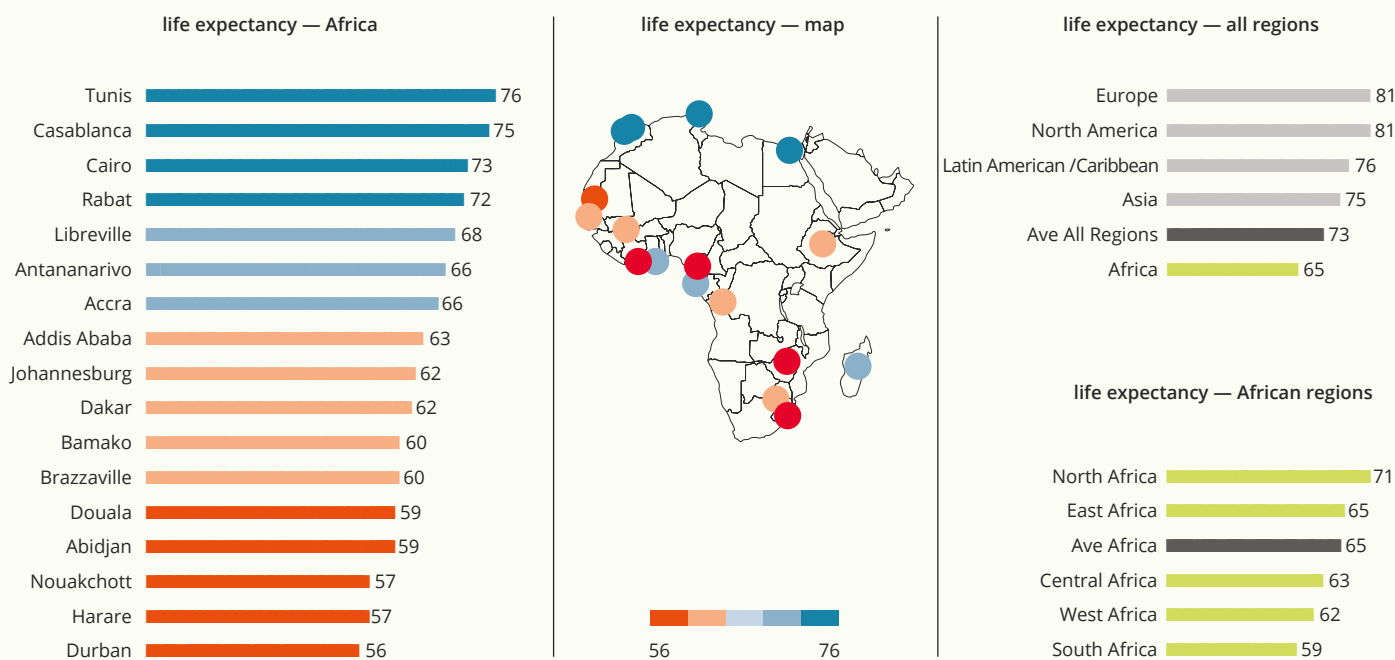
# quality of life

The **life expectancy at birth** indicator measures the number of years that a person can expect to live. On average, across all the metropolises in Africa, the life expectancy is 65 years. This is significantly lower than that for all other regions in the world, where life expectancy is on average ten years more. Average life expect-

tancy in Europe and North America is over 80 years. Across the African regions, life expectancy in Southern Africa tends to be lower than for the other regions, with Harare having the lowest life expectancy. The north African metros of Casablanca, Tunis, Rabat and Cairo, all have an average life expectancy of above 70 years.

on average, across all the metropolises in Africa, life expectancy is lower than that for all other regions in the world

**Figure 19**  
life expectancy



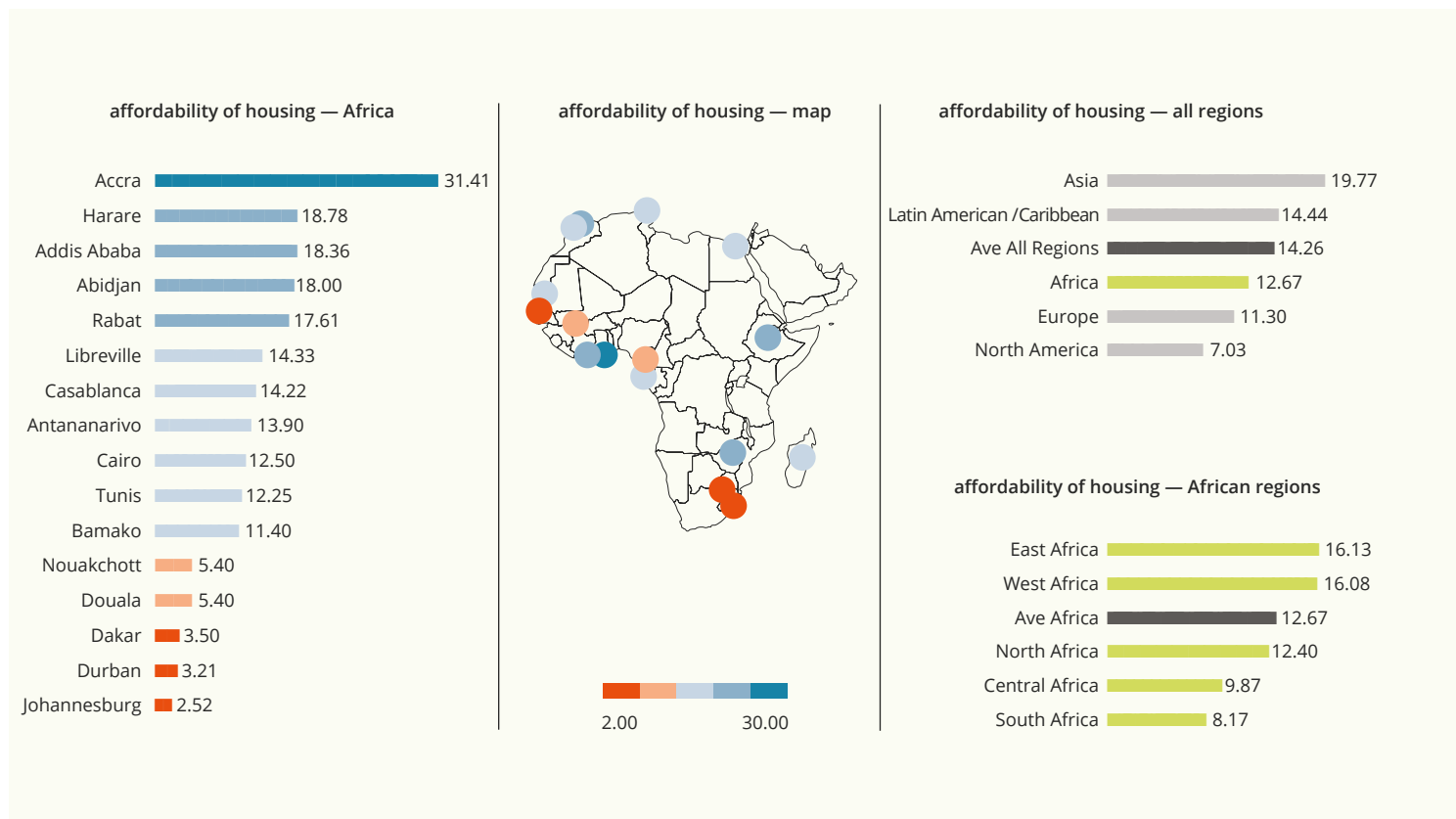
These findings must be understood in the context of other factors, such as poverty rates, gender equality and basic service provision. These factors differ widely between and within metropolises. Life expectancy is higher in urban areas than in more rural areas due to increased access to a range of government services. But within a metropolis it can differ by significant amounts.

The data from Africa demonstrates that gender inequities and exclusion remain high, and gender parity in secondary and tertiary education is particularly low. African

metropolises have, on average, the lowest level of **enrolment of female school-aged population** (primary and secondary school), compared to other world regions.

The World Bank's African Region Gender Action Plan 2018-22<sup>66</sup> emphasized previous interventions to encourage girls to stay in school and engage in skills training in order to break intergenerational cycles of gender inequality. It demonstrates the significant gains that have been made in improving gender parity in school enrolment and the impact that these have had on fertility

**Figure 20**  
**affordability of housing**



<sup>66</sup> World Bank, African Region Gender Action Plan 2018-22, World Bank Group



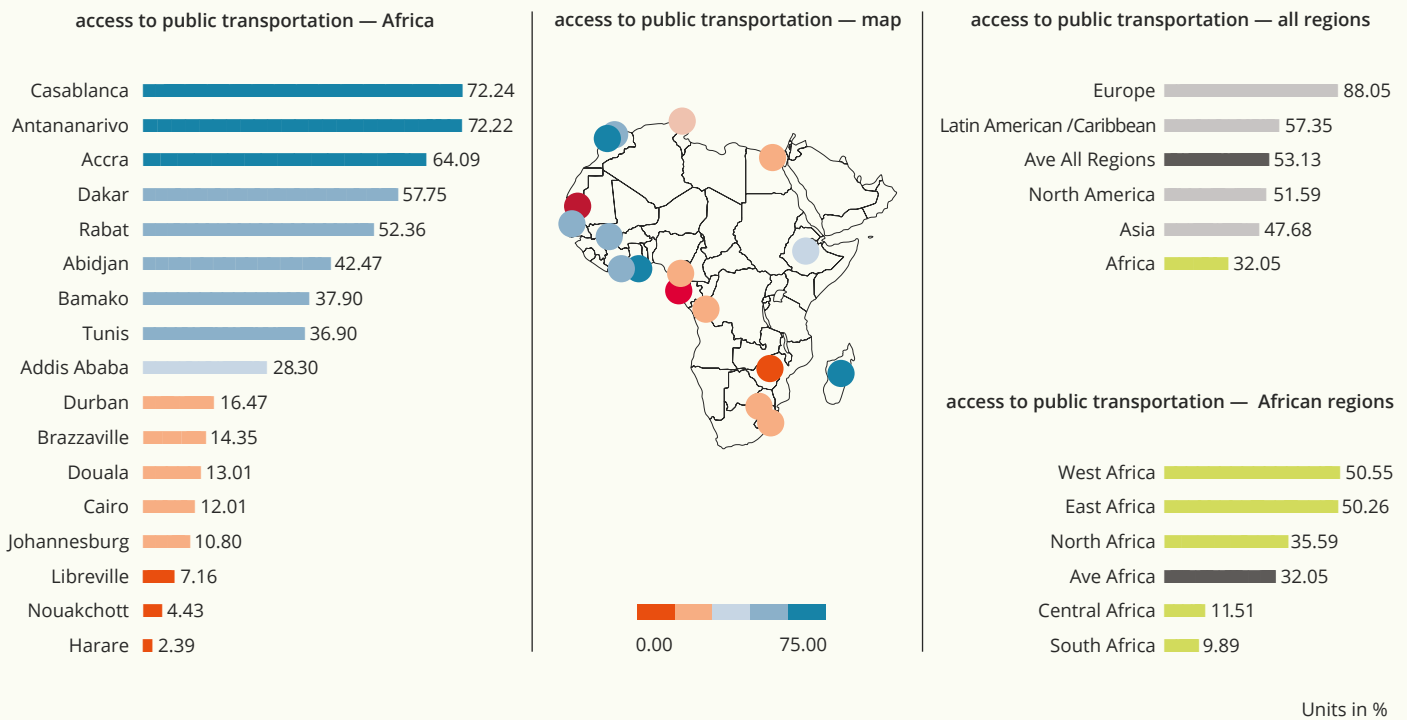
levels, income generation as well as changing social norms about gender roles and women’s empowerment.

The percentage of the population who are within the target age group enrolled in **higher education** ranges from 35% of the population in Cairo, down to 5% in Antananarivo, Nouakchott and Bamako. Most North African countries have significantly higher enrolment levels than other regions.

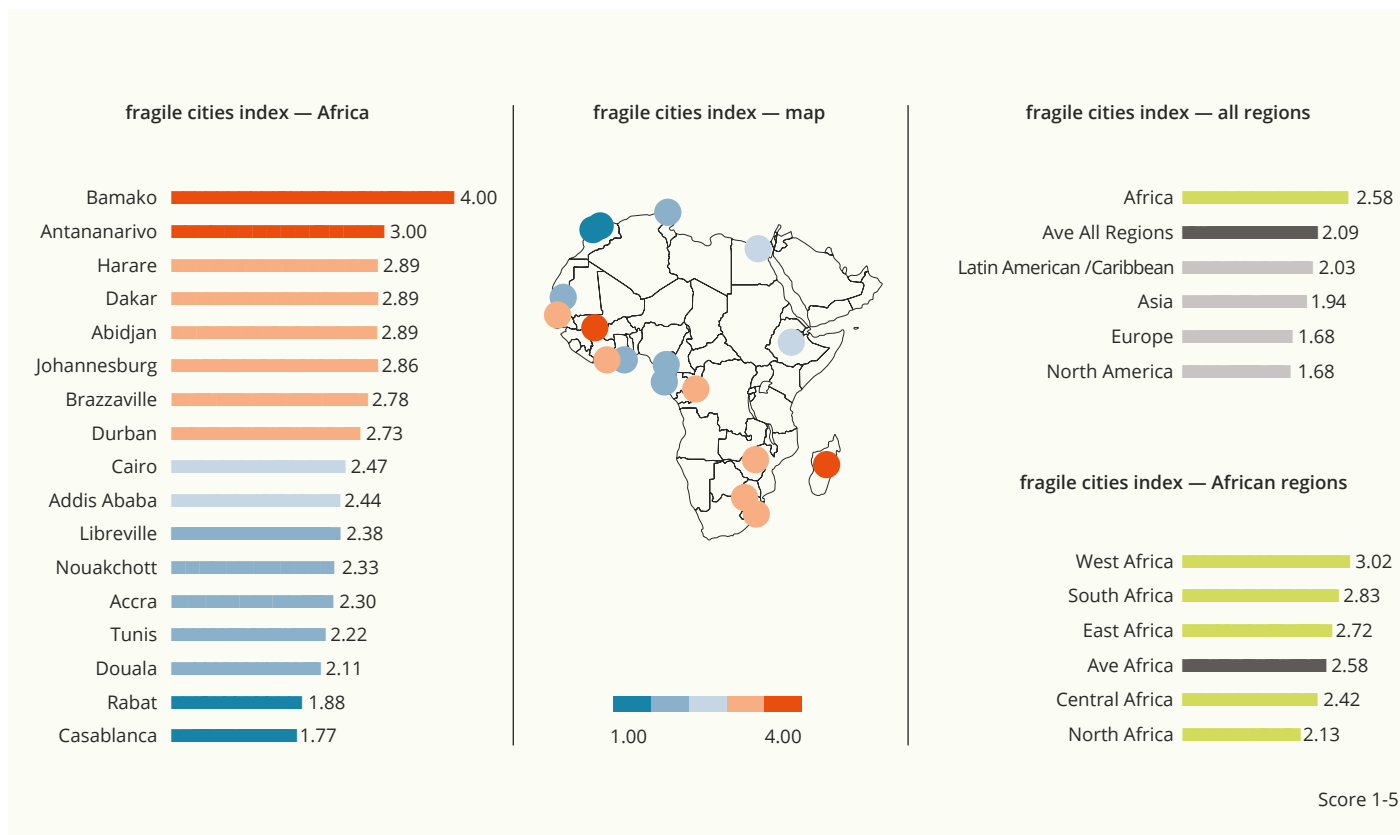
Access to housing is another very important human rights and human safety indicator. The **affordability of housing** indicator measures the

ratio of house price to household income, but does not measure the government provision of housing. Instead, it measures the relative cost of housing in different metropolises. If formal housing is unaffordable, many metropolitan residents have no choice but to live in informal settlements and in temporary structures or to find accommodation on the metropolis outskirts. One of the targets for SDG 11 is to address access to affordable housing. In this regard the Montréal Declaration on Metropolitan Areas calls for an inclusive approach to metropolitan

**Figure 21**  
**access to public transportation**



**Figure 22**  
**fragile cities index**



Score 1-5

development and human settlements which provides affordable and adequate housing.<sup>67</sup> Accra has a significantly higher score than other metropolises on this indicator. Dakar, Durban and Johannesburg have a significantly better level of housing affordability.

Ideally, people should be able to reside and carry out their daily lives in similar areas, and reducing physical distances has been the focus of initiatives such as increasing density and changing land use mixes. As this may not be fully achievable in sprawled territories, reducing commuting times through the provision of improved public transport systems is another stated

goal of many urban governments. Improving accessibility within a metropolis is a function of reducing physical distances which need to be travelled and reducing the time it takes to commute across the metropolitan territory.

Lall et al (2017)<sup>68</sup> note that the majority of African cities have underdeveloped transport networks. The State of African Cities, 2018 report confirms this, stating that: "African cities are generally internally fragmented and composed of small and disconnected neighbourhoods."<sup>69</sup>

Regarding **access to public transportation**, the lack of efficient and effective systems is evident in that just 32% of Africa's metropolitan

<sup>67</sup> Montréal Declaration on Metropolitan Areas, 2015

<sup>68</sup> Lall, Somik Vinay; Henderson, J. Vernon; Venables, Anthony J. 2017. Africa's Cities :

Opening Doors to the World. Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/25896>

<sup>69</sup> State of African Cities, 2018, p30

citizens have access to a recognized public transport stop, compared to 88% in European metropolises. This is lower than the averages for any other part of the world represented in the Metropolis database. Access is highest in Casablanca and Antananarivo, where, in each metropolis 72% of the population have access to public transport. In Accra, Dakar and Rabat, over half of the population have access to public transport, yet in Harare, Nouakchott and Libreville, less than 10% of the population have such access. It should be noted however that a recognized public transport stop does not necessarily take into account stops made by the informal transport sector, in the form of mini-bus taxi's and motorbike taxis, but is a useful indicator of access to a more reliable and formal transport system.

The combination of low density living and a lack of access to public

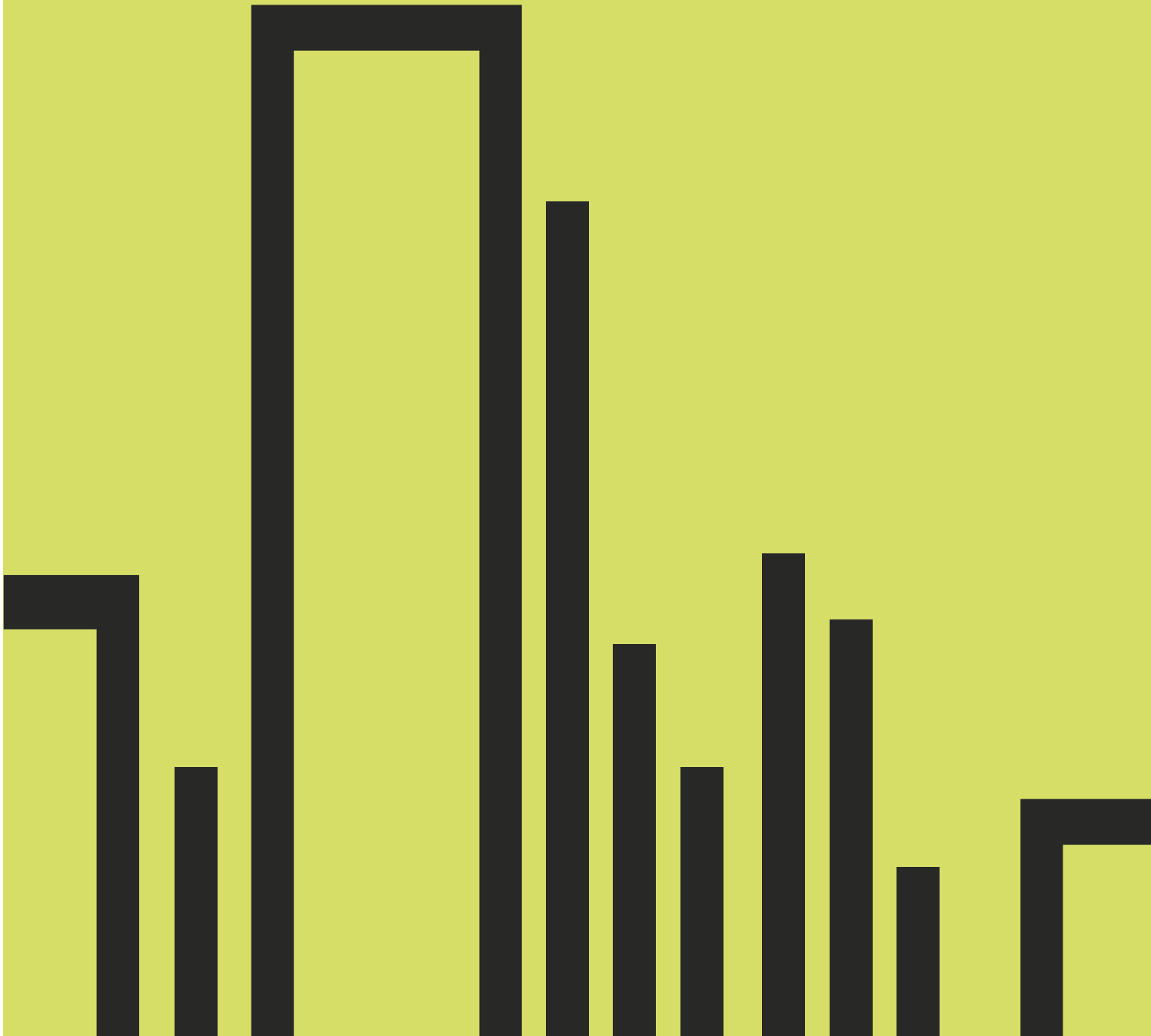
transport can significantly increase a household's monthly costs. The **urban fragility index** measures the vulnerability of cities, focusing on issues such as rapid and unregulated urbanisation, income inequality, poverty, unemployment and natural hazard exposure, and scores cities based on a number of metrics. Scores between 1 and 5 are allocated to each city. Generally, African metropolises have higher scores than those in the rest of the world. Bamako scores the highest on this index and Antananarivo the second highest. Rabat and Casablanca have relatively low scores.


All the metropolises for which there is data indicate a vulnerability to fire. This is exacerbated by the high levels of informal dwellings and a lack of water infrastructure. Water scarcity is also a common problem and requires a greater focus on the management of water supply and water resources.



TUNIS: Photo by Chermi Mohamed on Unsplash

# conclusions





**Metropolises perform a major role in Africa's evolving structural transformation given the massive growth that urban environments can facilitate in critical economic sectors. Major urban areas can accommodate industries that have already demonstrated sustained economic growth and the role of African cities and urbanisation must reverberate in the long-term economic, spatial and demographic planning of the continent.**

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## Metropolitan Africa in a nutshell

- 1** The average size of the 17 African metropolises studied is 4.3 million, smaller than the international average of 7.5 million.
- 2** Population density is relatively high compared to world averages, but varies significantly across cities and, is not always aligned to economic density.
- 3** Whilst rates of growth are slowly declining amongst African metropolises, they are still significantly higher than those in urban areas in the rest of the world, providing serious governance and service delivery challenges.
- 4** African metropolises have a slightly higher degree of metropolitan coordination compared to other world regions, and a lower level of fragmentation.
- 5** Urban growth is leading to higher residential densities across the continent.
- 6** On average, across Africa, the sum of the budgets for metropolises is around 2.6% of that of national government, significantly lower than the international average of 4%.
- 7** African metropolises have a slightly higher policy leadership score than the worldwide average, but with a lower fiscal decentralisation average, effectively allowing metropolises to have a greater say over what gets done, but often without the necessary fiscal power to implement it.
- 8** In terms of gender equality, African metropolises have a lower percentage of women in local government than the world average.
- 9** African metropolises have significantly lower levels of GDP per capita compared to all other regions, and African poverty rates are more than double the world average.
- 10** In African metropolises with higher levels of GDP, there are lower levels of poverty, but higher levels of inequality.
- 11** The gender pay gap indicator shows that in most of the African metropolises for which the data is available have lower levels of gender pay inequality than the world average.

- 
- 12** **Generally, there are high levels of unemployment in African metropolises,** where unemployment levels are almost twice that of the international average.
- 
- 13** **There is also a significant gap between total unemployment and youth unemployment,** which is also a feature in other world regions.
- 
- 14** **Economic growth is compromised by the relatively high dependency on work in the primary sector,** where employment is characterized by relatively low wages and high levels of inequality.
- 
- 15** **Life expectancy is generally higher in urban areas than in more rural areas** due to increased access to a range of government services. Average life expectancy in African metropolises is on average 65 years, seven years less than for other worldwide metropolises.
- 
- 16** **Murder rates vary significantly between metropolises,** but are generally high in African metropolises.
- 
- 17** **Literacy rates in Africa lag** behind that of other regions.
- 
- 18** **Africa is highly vulnerable to climate change due to its dependency on climate related activities and low adaptive capacity.** The most significant expected changes impacting on Africa's metropolises include water scarcity, extreme weather events, sea level rise, lower food security and the rise of climate sensitive diseases such as malaria and cholera. African metropolises rank high on the Fragile Cities Index.
- 
- 19** **The average Carbon Dioxide (CO<sub>2</sub>) emissions from African metropolises are relatively low,** at half of the world average, 2.3 metric tons per capita. Whilst CO<sub>2</sub> levels are relatively low, PM2.5 concentrations are higher in African metropolises than in other world regions.
- 
- 20** **Underdeveloped public transport networks in African metropolises increases inequality,** and reduces accessibility across the metropolitan spaces, discriminating particularly against the poor.



To a certain extent the lag is due can be attributed to the fact that colonialism and its effects are still writ large across African metropolitan areas. Colonialism often inhibited or distorted the economic-, social and infrastructural-growth of African urban spaces.

At the same time, though, these data draw an important conclusion: that metropolisation does lead to improvements in governance, economy, social development, gender disparities and the ability to address climate change and improve environmental sustainability. Given that African metropolisation rates are higher than global rates, as these spaces develop it is expected that in time the disparities between African metropolitan spaces and the rest of the world will reduce.

However, this is only likely to happen if the trends towards the decentralisation of developmental powers and functions to sub-national and particularly metropolitan levels of governance continue. In particular, the provision or facilitation of basic services, including water, electricity, sanitation and waste removal, reduction of disparities and the like should all contribute to this process of improved governance.

The Metropolis database and studies using these data will hopefully lead to a wide variety of discussions comparing regions, explaining differences and more importantly learning across these metropolitan spaces as each strives to develop its own norms and standards. Clearly, further and ongoing work will need to be undertaken to improve both the reliability, validity and representativeness of these data as the intention it be to ensure that comparisons are meaningful and able to be contextualised. This is particularly given the crucial importance of metropolitan spaces in the environmental, infrastructural, economic and social challenges facing the world today.

Taken as a whole, African metropolitan spaces generally lag behind the global averages and the other regions of the world. To a certain extent this is to be expected, given that African urbanisation rates have lagged behind those of the rest of the world.

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→ **the disparities between African metropolitan spaces and the rest of the world is only likely to be reduced if the trends towards the decentralisation of developmental powers and functions to sub-national and particularly metropolitan levels of governance continue**

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# metropolitan indicators

definitions, units and sources

## context and governance

### metropolitan population (disaggregated by sex and age)

definition	metric	method	reference
Population of metropolitan area	#	The detailed method to calculate the metropolitan area is described in <a href="http://www.indicators.metropolis.org/methodology">www.indicators.metropolis.org/methodology</a>	(-)
			<b>sources</b> Various (most notably the census)

### metropolitan area

definition	metric	method	reference
Size of the Metropolitan Area	km <sup>2</sup>	Please refer to <a href="http://www.indicators.metropolis.org">www.indicators.metropolis.org</a>	LSE Cities
			<b>sources</b> Various

### population density

definition	metric	method	reference
Population Divided by the Metropolitan Area	Inhabitants per km <sup>2</sup>	Population Size of Metropolitan area	(-)
			<b>sources</b> Various

### leadership of policy sectors

definition	metric	method	reference
Leadership of different policy sectors in the metropolitan area	Score	Online survey. The members of Metropolis were asked to respond to the following prompt: 'Please rate the level of influence that different tiers of government have over decision-making in your metropolis for the following policy sectors (0 = no influence; 1 = limited influence; 2 = moderate influence; 3 = significant influence).' The following policy sectors were listed: Urban transport, Spatial planning, Economic development, Social services, Environment, Utilities, Health, Education, Housing, Policing and security, Gender equality, Culture.	LSE Cities
			<b>sources</b> Survey

### fiscal decentralisation (country-level)

definition	metric	method	reference
Subnational government expenditure as a % of GDP	% of GDP	Subnational Government $100 \times \frac{\text{Subnational Government}}{\text{GDP}}$	<b>OECD</b> <a href="http://www.oecd.org/cfe/regional-policy/sngs-around-the-world.htm">www.oecd.org/cfe/regional-policy/sngs-around-the-world.htm</a> <b>World Bank</b> <a href="http://www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm">www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm</a>
			<b>sources</b> Various (most notably the census)

### territorial fragmentation

definition	metric	method	reference
Number of Local Governments per 100,000 inhabitants of the Metropolitan Area	#	Number of Local Government $\frac{\text{Number of Local Government}}{100\,000 \text{ Inhabitants of the metropolitan area}}$	OECD (2016); CIPPEC (2017)
			<b>sources</b> National Statistics Bureau; Regional and Local Authorities

\*Only general-purpose local governments are included (specific function governments are excluded, e.g. school districts, health agencies).

\*\*Only the local level of government has been included (the 'lowest' tiers) as a measure of the horizontal fragmentation (the administrative structure of a country may include more than one level of government with relevant responsibilities over the same territory covered by the metropolitan area).

### metropolitan coordination

definition	metric	method	reference
This indicator aims at assessing the level of coordination across policy sectors at the metropolitan area. It assesses the number of sectors under some formal arrangement of metropolitan coordination and the coverage of that institutional arrangement	Score (0 – 5)	5 = There is a metropolitan government/supra municipal structure 4 = There is a multi-purpose/strategic mechanism for formal cooperation and all jurisdictions participate on it 3 = There is a multi-purpose/strategic mechanism for formal cooperation but not all jurisdictions participate on it 2 = There is a sectoral/single purpose mechanism for formal cooperation and all jurisdictions participate 1 = There is a sectoral/single purpose mechanism for formal cooperation but not all jurisdictions participate on it 0 = No coordination at all	LSE Cities Metropolis Issue Paper 1, OECD (2015), GIZ and UN-Habitat (2015), CIPPEC (2017)
			<b>sources</b> Various

### national prominence (budget)

definition	metric	method	reference
Ratio between the aggregated budget for all jurisdictions within the metropolitan area and the national government budget	% of nationale government budget	$\frac{\text{metro jurisdictions budget}}{\sum \text{National government budget}}$	LSE Cities <hr/> <b>sources</b> Local authorities

### fiscal autonomy

definition	metric	method	reference
Own Source Revenue as Percentage of the Total Metro Revenue	%	$100 \times \frac{\text{Own Source Revenue}}{\text{Total metropolitan revenue}}$	CPI-UN (2016: 121) <hr/> <b>sources</b> Various

\*We will consider weighting different municipalities within a metropolitan area by their GDP or population

\*\* When revenue data is not accessible, we used expenditure data instead

### total metropolitan budget per capita

definition	metric	method	reference
Sum of Metropolitan Government Budget per capita	US\$ per inhabitant	$\frac{\text{Total metropolitan budget}}{\text{Metropolitan population}}$	LSE Cities <hr/> <b>sources</b> Local authorities

### legislation enforcing gender equality

definition	metric	method	reference
Legislation Enforcing Gender Equality	Score	Online survey. The members of Metropolis were asked to respond to the following prompt: 'Is your city/ metropolitan government implementing any of these tools and measures for promoting equal opportunities for women? Please select 'yes' if you are aware of any similar practice, 'no' if no similar practice has been implemented or 'don't know' if you cannot be certain about it.'	LSE Cities <hr/> <b>sources</b> Survey

### share of elected women in local government (head of departments if no elections)

definition	metric	method	reference
Percentage of Women Elected to City Council Legislative Branch. If Inexistent, Percentage of Women in Executive/ Managerial Positions	%	$100 * \frac{\text{Number of elected Women}}{\text{(Number of elected representatives)}}$	United Nations (2007), CPI - UN-Habitat (2016), UNESCO
			<b>sources</b> Various

\*In case of multiple jurisdictions (most of the cases) we will calculate the median

## economic development

### GDP per capita in the metropolitan area (or GVA if available)

definition	metric	method	reference
Sum of Metropolitan Government Budget per capita	US\$ per inhabitant	(-)	OECD Metropolitan eXplorer, CPI - UN-Habitat
			<b>sources</b> Primary: National Statistics Bureau Other: Subnational Statistics Bureau, Oxford Economics

### employment share by sector

definition	metric	method	reference
% of the Metropolitan Area Employment by sector	%	$\frac{\text{People employed sector}}{\text{Total of people employed metropolitan area}}$	LSE Cities
			<b>sources</b> National Statistics Bureau, Regional employment agencies

### economic prominence (GDP)

definition	metric	method	reference
% of Country GDP Produced by the Metropolitan Area (at Current Prices)	% of national government budget	$\frac{\text{Metropolitan GDP}}{\text{National GDP}}$	OECD Metropolitan eXplorer
			<b>sources</b> National Statistics Bureau

## women in work force

definition	metric	method	reference
Ratio of female to male of proportion of a metropolitan area working-age population (ages 15 and older) that engages in the labour market, either by working or actively looking for work	Ratio	$\frac{\text{Employed Women}}{\text{Employed Men}}$	<p>WEF – GGGI ILO, <a href="https://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS">https://data.worldbank.org/indicator/SL.TLF.CACT.FM.ZS</a> UN – HDR, <a href="http://hdr.undp.org/en/content/labour-force-participation-rate-female-male-ratio">http://hdr.undp.org/en/content/labour-force-participation-rate-female-male-ratio</a></p>
			<p><b>sources</b> National Statistics Bureau</p>

\*Whenever feasible, we will use the employment rate disaggregated by sex from Unemployment indicator.

## unemployment (disaggregated by sex and age)

definition	metric	method	reference
Share of metropolitan unemployment over total labour force in a metropolitan area	%	$100 \times \frac{\text{Metropolitan Unemployment}}{\text{Total metropolitan Labour Force}}$	<p>OECD Metropolitan eXplorer / ISO 37120</p>
			<p><b>sources</b> National Statistic Bureau</p>

\*The unemployment rate will be calculated as the number of working-age city residents who during the survey reference period were not in paid employment or self-employment, but available for work, and seeking work (numerator) divided by the total labour force (denominator).

\*\*Labour Force refers to the sum of the total persons employed and unemployed who are legally eligible to work

\*\*\*Youth employment will be calculated based on the definition of youth labour force of each metropolitan area

## economic density

definition	metric	method	reference
Metropolitan GDP Divided by Size of the Metropolitan Area	US\$/km <sup>2</sup>	$\frac{\text{Metropolitan GDP}}{\text{Size of Metropolitan area}}$	<p>CPI – UN-Habitat</p>
			<p><b>sources</b> Various</p>

## gender pay gap

definition	metric	method	reference
Female estimated earned income over male value	Ratio	$\frac{\text{Income by female (PPP, US\$)}}{\text{Income by male (PPP, US\$)}}$	UN HDI (2015: 5) <b>WEF Global Gender Gap Report</b> <a href="http://www3.weforum.org/docs/WEF_GGGR_2017.pdf">http://www3.weforum.org/docs/WEF_GGGR_2017.pdf</a> HDR (2008) <a href="http://hdr.undp.org/sites/default/files/reports/268/hdr_20072008_en_complete.pdf">http://hdr.undp.org/sites/default/files/reports/268/hdr_20072008_en_complete.pdf</a>
Mean Nominal Monthly Earnings by Female over male value (this can be hourly earnings as calculated by the UK Government)	Ratio	$\frac{\text{Monthly earnings by female}}{\text{Monthly earnings by male}}$	<b>ILO</b> <a href="https://www.gov.uk/guidance/gender-pay-gap-reporting-overview">https://www.gov.uk/guidance/gender-pay-gap-reporting-overview</a>
			<b>sources</b> Various

\* Most of the metro areas did not have any metro-level data.

## informal economy (as % of jobs)

definition	metric	method	sources
Share of informal jobs over total jobs in the metropolitan area	%	Online survey. The members of Metropolis were asked to respond to the following prompt: 'What is the estimated percentage of the informal economy in your city/metropolitan area? Please indicate as a percentage of total jobs and/or as a percentage of total GDP.'	Survey
			<b>reference</b> LSE Cities

## social cohesion

### literacy rate (disaggregated by sex)

definition	metric	method	sources
The percentage of population aged 15 years and older that is literate i.e. can read and write a short simple statement (usually a paragraph) related to his/her everyday life	%	$100 \times \frac{\text{Number of literate population 15 y Over}}{\text{Population (15 y Over)}}$	Various
			<b>reference</b> United Nations (2007), CPI – UN-Habitat (2016), UNESCO

\* The definition of an adult population is based on age 15 or older, but may vary among some metro areas



## income inequality

definition	metric	method	reference
Gini coefficient	Score (0 – 1)	(-)	UN CPI (2016), UN HDI
			<b>sources</b> UN-Habitat – available for 1769 cities

## poverty rate (disaggregated by sex)

definition	metric	method	reference
Proportion of population below the international poverty line (defined as the percentage of the population living on less than \$1.90 a day at 2011 international prices).	%	Number of population Living below \$1.90 PPP a day 100x $\frac{\text{Total Population}}$	UN SDG Framework, World Bank
			<b>sources</b> National Statistics Bureau, UN-Habitat Urban Data

\* The definition of the poverty line varies among some metro areas. This is especially related to the raise of the international poverty line from \$1.25 to \$1.90 in 2015 and the availability of local-level data. Thus, the result should not be used for comparison between two metros but be used to get a general overview only.

## foreign born population (disaggregated by sex)

definition	metric	method	reference
Percentage of Foreign Born population	%	Foreign born population $\frac{\text{Metropolitan area population}}$	<a href="http://data.un.org/Glossary.aspx?q=foreign%20born%20population">http://data.un.org/Glossary.aspx?q=foreign%20born%20population</a>
			<b>sources</b> National Statistics Bureau

\*According to UN Data, the foreign-born population of a country is defined as “All persons who have that country as the country of usual residence and whose place of birth is located in another country.”

## murder rate (disaggregated by sex)

definition	metric	method	reference
Number of murders (intentional and unlawful deaths purposefully inflicted on a person by another person) per 100,000 inhabitants disaggregated by sex	Murders per 100,000 inhabitants	10,000x $\frac{\text{Murders Metropolitan Area population}}{\text{Area population}}$	UN CPI (2016: 77)
			<b>sources</b> Various

\* Most of the metro areas did not have any information disaggregated by sex.

air quality (PM 2.5 concentration)

definition	metric	method	reference
Annual Mean Concentration of Particulate Matter of Less than 2.5 Microns (PM2.5) in the Metropolitan Area	Micrograms per cubic meter (µg/m³)	$100 \left\{ 1 - \left( \frac{\text{concentration}}{10} \right) \right\}$ PM 2.5 – 10	UN CPI (2016) <hr/> <b>sources</b> WHO – available for 1883 cities, Environmental Authorities

\*PM 2.5 is used because of its greater health impacts. The estimates represent the average annual exposure level of the average urban resident to outdoor particulate matter. High-quality measurements of PM 2.5 concentration from all the monitors in the urban area can be averaged to develop a single estimate.

CO<sub>2</sub> emissions

definition	metric	method	reference
CO <sub>2</sub> emissions (metric tonnes per capita)	Tonnes per inhabitant	$\frac{\text{Annual CO}_2 \text{ emission}}{\text{Metropolitan population}}$	World Bank World Development Indicators, ID: EN.ATM.CO2E.PC <a href="https://data.worldbank.org/indicator/EN.ATM.CO2E.PC">https://data.worldbank.org/indicator/EN.ATM.CO2E.PC</a> <hr/> <b>sources</b> Energy authority, providers

car ownership

definition	metric	method	reference
Number of passenger cars registered in the metropolitan area per 100 inhabitants	#	$100 \times \frac{\text{Total registered cars in the metropolitan area}}{\text{Metropolitan area population}}$	Eurostat (reg_tran) <hr/> <b>sources</b> Eurostat, Latin American Green City Index, National Statistics

\* Passenger cars mean road motor vehicle, other than a moped or a motor cycle, intended for the carriage of passengers and designed to seat no more than nine persons (including the driver). Included are Passenger cars, Vans designed and used primarily for transport of passengers, Taxis, Hire cars, Ambulances, Motor homes, and Micro-cars (needing no permit to be driven). Excluded are light goods road vehicles, as well as motor-coaches and buses, and mini-buses/mini-coaches.

green space

definition	metric	method	reference
Accessible green space within the metropolitan area per inhabitant	m <sup>2</sup> per inhabitant	$\frac{\text{Total accessible green area within metropolitan region}}{\text{Metropolitan area population}}$	UN CPI (2016), ISO 37120 <hr/> <b>sources</b> OpenStreetMap

\*OpenStreetMap defines a park as an area of open space provided for recreational use, usually designed and in semi-natural state with grassy areas, trees and bushes. A Garden is defined as a distinguishable planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of plants and other forms of nature. Thus, green space located in a rural or isolated location has been excluded from calculating green space in this indicator.

### waste generated per capita

definition	metric	method	reference
Solid or semi-solid waste generated in population centres including domestic and commercial wastes, as well as those originated by the small-scale industries and institutions (including hospital and clinics), markets, street sweeping, and from street cleaning	Generation Rate (kg / capita / day)	Total waste generated within metropolitan region per day $\frac{\text{Metropolitan area population}}{\text{Metropolitan area population}}$	World Bank <a href="http://documents.world-bank.org/curated/en/302341468126264791/pdf/68135-REVISED-What-a-Waste-2012-Final-updated.pdf">http://documents.world-bank.org/curated/en/302341468126264791/pdf/68135-REVISED-What-a-Waste-2012-Final-updated.pdf</a>
			<b>sources</b> Waste collection authorities, UN-Habitat Urban Data

### population served by wastewater collection

definition	metric	method	reference
Metropolitan population connected to wastewater collecting systems as part of a public or community owned system of discharge of served waters and other residues through a pipe or similar duct that is connected to a network that takes it to a facility where it is treated	%	Total metropolitan population served by wastewater collection $100 \times \frac{\text{Metropolitan area population}}{\text{Metropolitan area population}}$	WCCD - ISO 37120
			<b>sources</b> Wastewater collection authorities, Eurostat, Latin American Green City Index

### renewable energy use

definition	metric	method	reference
Share of a metropolitan area's total energy consumption derived from renewable sources	%	Total consumption of electricity generated from renewable sources $100 \times \frac{\text{Total energy consumption population}}{\text{Total energy consumption population}}$	WCCD - ISO 37120 (p. 28)
			<b>sources</b> WCCD; CDP; Eurostat; National Statistics

\*Renewable sources include geothermal, solar, wind, tide and wave energy, and combustibles, such as biomass, but do not include hydro source as suggested by the World Bank.

## quality of life

### life expectancy at birth (disaggregated by sex)

<b>definition</b> Life expectancy at birth is defined as how long, on average, a newborn can expect to live, if current death rates do not change	<b>metric</b> #	<b>method</b> (-)	<b>reference</b> OECD (doi: 10.1787/27e0f-c9d-en)
			<b>sources</b> National and metropolitan statistics

### affordability of housing

<b>definition</b> Housing Price-to-Income Ratio is the nominal house price divided by the nominal disposable income per head (Net household disposable income is used)	<b>metric</b> Ratio	<b>method</b> Nominal house price of metropolitan region <hr/> Nominal household disposable income per head of metropolitan area population	<b>reference</b> OECD doi: 10.1787/cbcc2905-en
			<b>sources</b> Real Estate Trade Associations, Households surveys

\*'Affordability' refers to the extent to which the financial cost of journeys require an individual or household to make sacrifices to travel or the extent to which they can afford to travel when they want to. Therefore, affordability indicates the ability to make necessary journeys to work, school, health and other social services; to visit family members; or to make other urgent journeys without having to curtail other essential activities" (World Bank, 2009)

### enrolment of female school-aged population

<b>definition</b> The number of female school-aged population enrolled at primary and secondary levels in public and private schools (numerator) divided by the total number of female school-aged population (denominator)	<b>metric</b> %	<b>method</b> Number of female school aged Population enrolled at primary an secondary levels in public and private schools <hr/> 100x $\frac{\text{Total number of female shoos aged population}}{\text{Total number of female shoos aged population}}$	<b>reference</b> WCCD - ISO 37120
			<b>sources</b> National Ministries of Education, Regional/Local Departments of Education

## fragile cities index

<p><b>definition</b> Measures vulnerability of cities focusing on: rapid and unregulated urbanization, income and social inequality, concentrated poverty, youth unemployment, policing and justice deficits, real and perceived insecurity, and natural hazard exposure</p>	<p><b>metric</b> Score (1 – 5)</p>	<p><b>method</b> Instituto Igarapé analysed at least 7 of 11 metrics to formulate 5-point scale scores of 2,100 cities having more than 250,000 inhabitants</p>	<p><b>reference</b> Instituto Igarapé</p> <hr/> <p><b>sources</b> Instituto Igarapé</p>
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## gross enrolment rate in higher education (disaggregated by sex)

<p><b>definition</b> Enrolled students divided by corresponding population. Enrolled students - Number of individuals of official tertiary school going age (usually between 18 to 23 years old) who are enrolled in tertiary education. Corresponding population - total individuals of official tertiary school going age</p>	<p><b>metric</b> %</p>	<p><b>method</b> <math>100x \frac{\text{Population enrolled that belongs in tertiary education}}{\text{People that belong to the tertiary education age range}}</math></p>	<p><b>sources</b> Various</p> <hr/> <p><b>reference</b> UN CPI (2016:76)</p>
<p>Total metropolitan population enrolled in tertiary educational institutes per 10,000 inhabitants</p>	<p><b>metric</b> #</p>	<p><b>method</b> <math>10.000x \frac{\text{Population enrolled that belongs in tertiary education}}{\text{Total metropolitan population}}</math></p>	<p><b>sources</b> (-)</p> <hr/> <p><b>reference</b> National and metropolitan statistics</p>

\* Most data used in this indicator is national-level ones.

## access to public transportation

definition	metric	method	reference
Proportion of population that has convenient access to public transport	%	Proportion of the population who has access to an officially recognized transport stop within 0.5km from a reference point. Metadata for SDG 11 indicator 11.2.1 describes a four step method: 1. Spatial Analysis to delimit the built-up area of the urban agglomeration 2. Inventory of the public transport stops in the city or service area 3. Estimate of urban area with access to public transport 4. Estimation of the proportion of the population with convenient access out of the total population	UN-Habitat, UN SDG's Framework Metadata Indicator 11.2.1
			<b>sources</b> OSM and LandScan



HARARE. Photo by Trust Tru. Katsande on Unsplash



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**african  
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