

# DATA

The information on the following pages summarises some of the research that is currently being developed by LSE Cities as part of its urban governance workstream. It brings together data and evidence from the Urban Age research programme and LSE Cities' recently launched 'New Urban Governance' project, supported by the MacArthur Foundation. It provides a global overview of contemporary urban development and illustrates critical urban governance dynamics cutting across the differences in urban settlement patterns, urban governance geographies and governance indicators. More detailed city-specific analysis is presented for four case study cities which, over the last decades, have been particularly relevant cases for understanding institutional arrangements and change at the city and metropolitan level. These case study cities are Delhi, Tokyo, London and Bogotá, and the analysis cuts across the cities' systems of government, their urban expansion and the evolution of their administrative areas, and the governance of their transport infrastructures.

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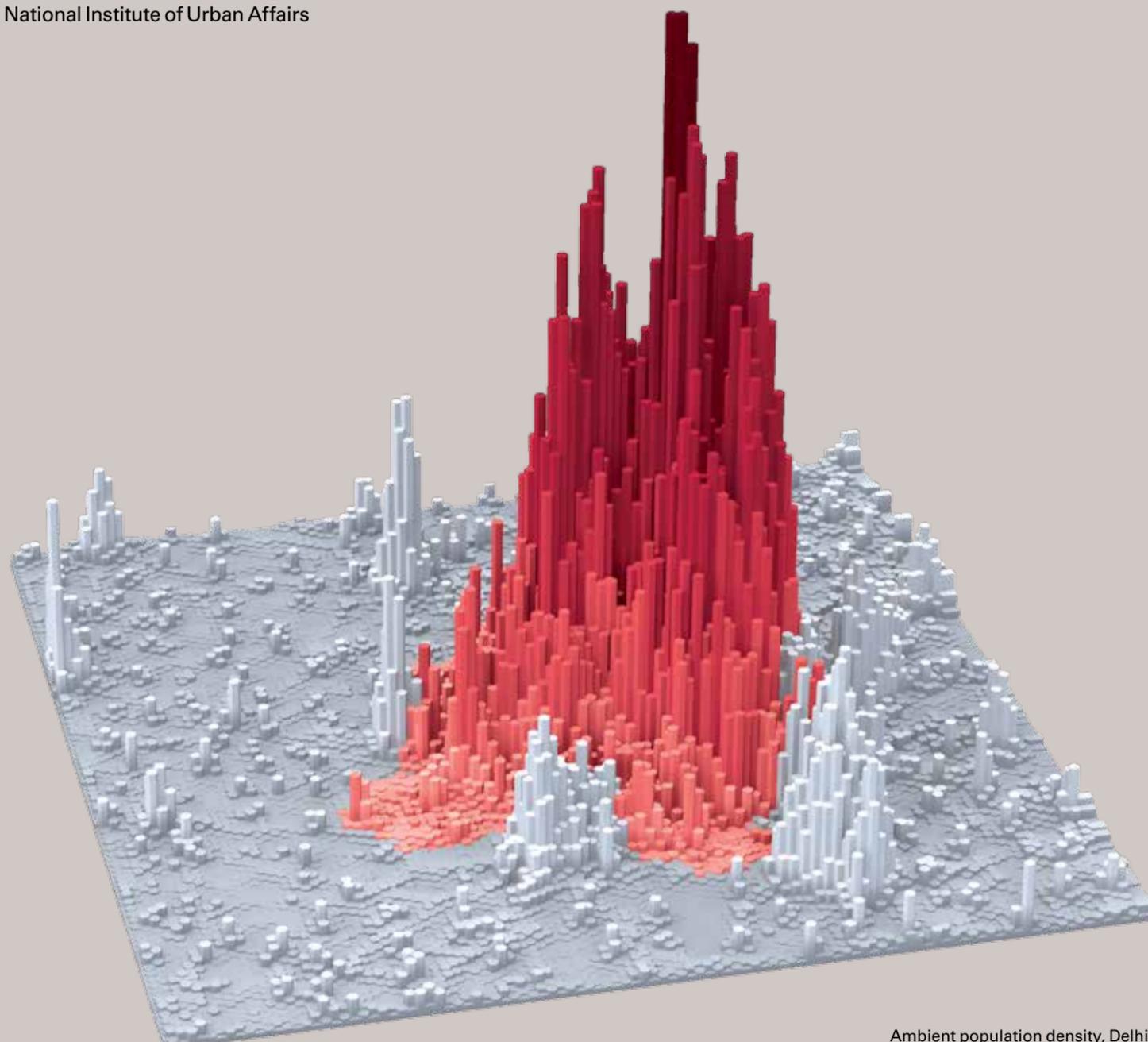
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Mori Foundation  
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Planning & Engineering Centre, India  
World Bank



Ambient population density, Delhi

# GOVERNING CITY POPULATIONS

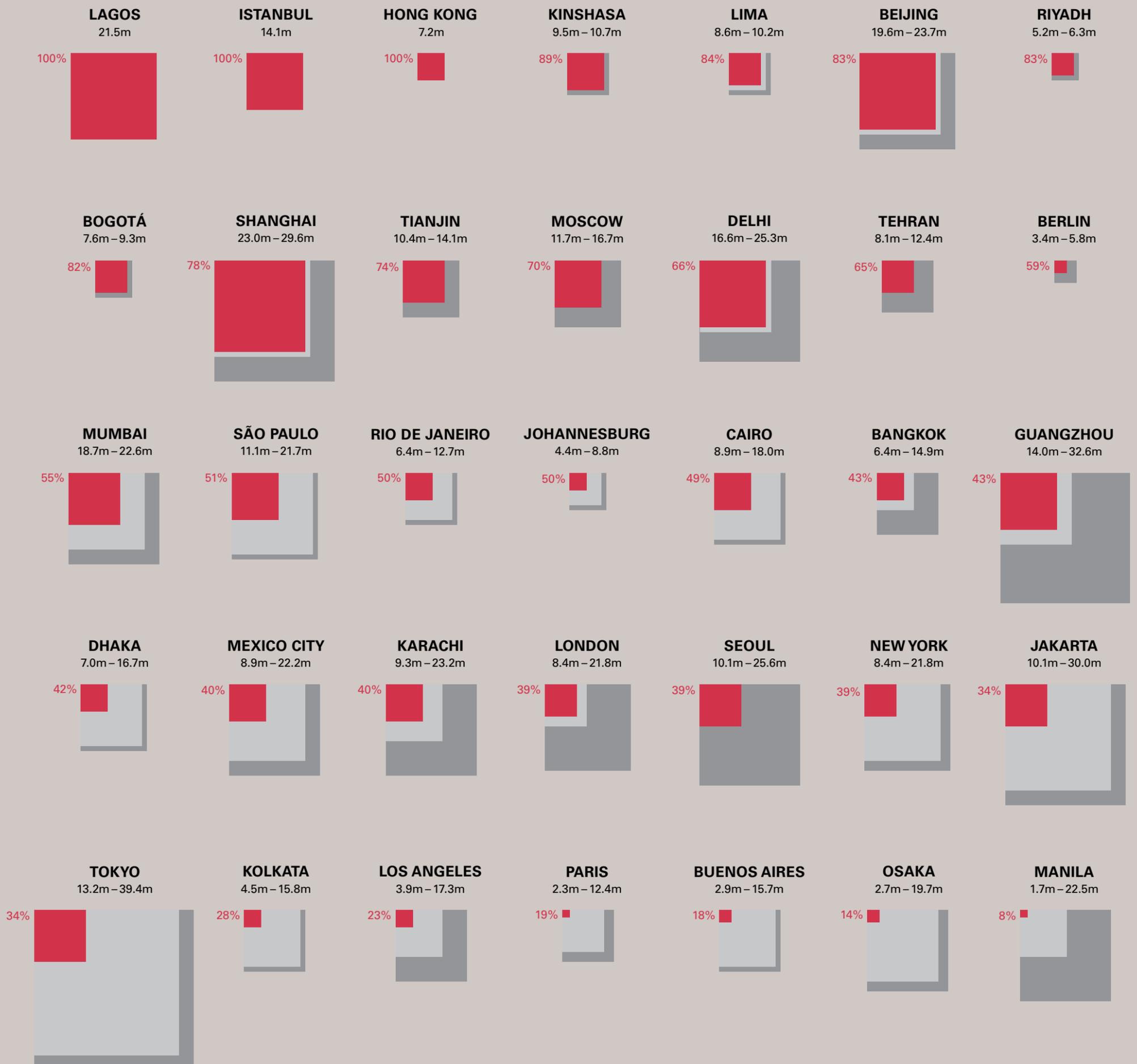
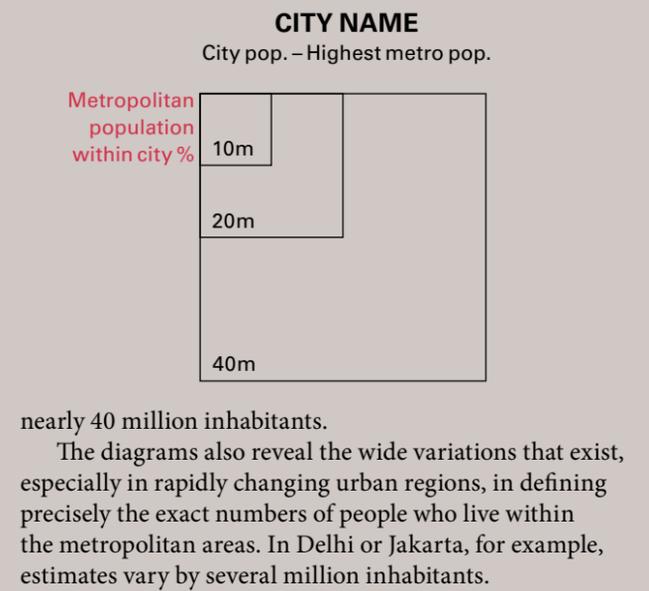
■ City population  
 Lowest estimate of metropolitan population  
 Highest estimate of metropolitan population

Current debates about the efficiency of urban governance gravitate around the 'fit' between the size of the administrative boundary controlled by a city mayor or governor, and the extent of the 'wider functional metropolitan' area. On balance, the closer the 'fit' between the number of people living within the administrative boundaries of the city and the overall metropolitan population, the more likely it is that the governance of the metropolitan region will be more effectively managed.

The diagrams on this page compare the number of people who live within the administrative boundaries of 35 selected cities to the population of the wider metropolitan areas, or 'functional regions'. Since the estimates for these metropolitan populations can vary considerably, the lowest and highest estimates have been included alongside the number of people living within the city boundary. The percentage expresses the proportion of the metropolitan population who live within the jurisdiction of the city

authorities. At one extreme, only 8% of Manila's estimated 22.5 million metropolitan dwellers live under the control of the Mayor of Manila, while at the other, 100% of the estimated 21.5 million people living in Lagos fall under the jurisdiction of the Governor of Lagos. In fact Lagos, Istanbul and Shanghai have adjusted their administrative boundaries to bring the entire metropolitan population under a single jurisdiction. By contrast, the Mayor of Tehran has jurisdiction over 65% of the 12.4m inhabitants living in the metropolitan hinterland around the capital of Iran.

While 8.4m Londoners have been governed by a directly elected mayor since 2000, they still only represent 39% of the number of people who make up the more extensive economic region of the South-East of England, which contains 21.8 million. Similarly, the Governor of Tokyo is responsible for only 34% of what today is still one of the largest metropolitan agglomerations on the world with



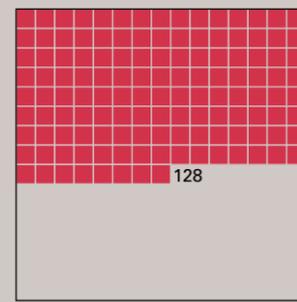
# WHERE WE LIVE

Patterns of urbanisation are usually captured by a key demographic indicator – the Urbanisation Index – that tells us, for example, that Europe, South and North America are the most urbanised continents on the globe, with 73%, 83% and 82% of people respectively living in cities, towns and other urban settlements; while Africa is around 40% and Asia 48%, and growing. What these figures disguise is an inconsistency in methodology as to what is considered urban and what is considered rural by the public authorities that collect data in the different nations and regions of the world.

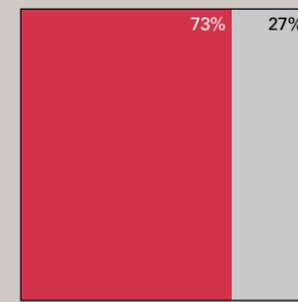
LSE Cities has developed a simple yet innovative methodology to try to capture the subtle variations in patterns of urban and rural habitats amongst four regions of the world: Europe, India, Sub-Saharan Africa and China. The maps displayed on the following pages are based on the combination of two datasets: the urbanisation level for each world region/country published in the UN DESA World Urbanisation Prospect, and the ambient population density drawn from LandScan 2010 data, which assigns for each square kilometre of the world's land surface a figure which is equivalent to its average population over a 24-hour period.

## EUROPE

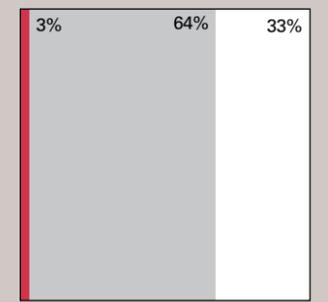
Cities over 500,000



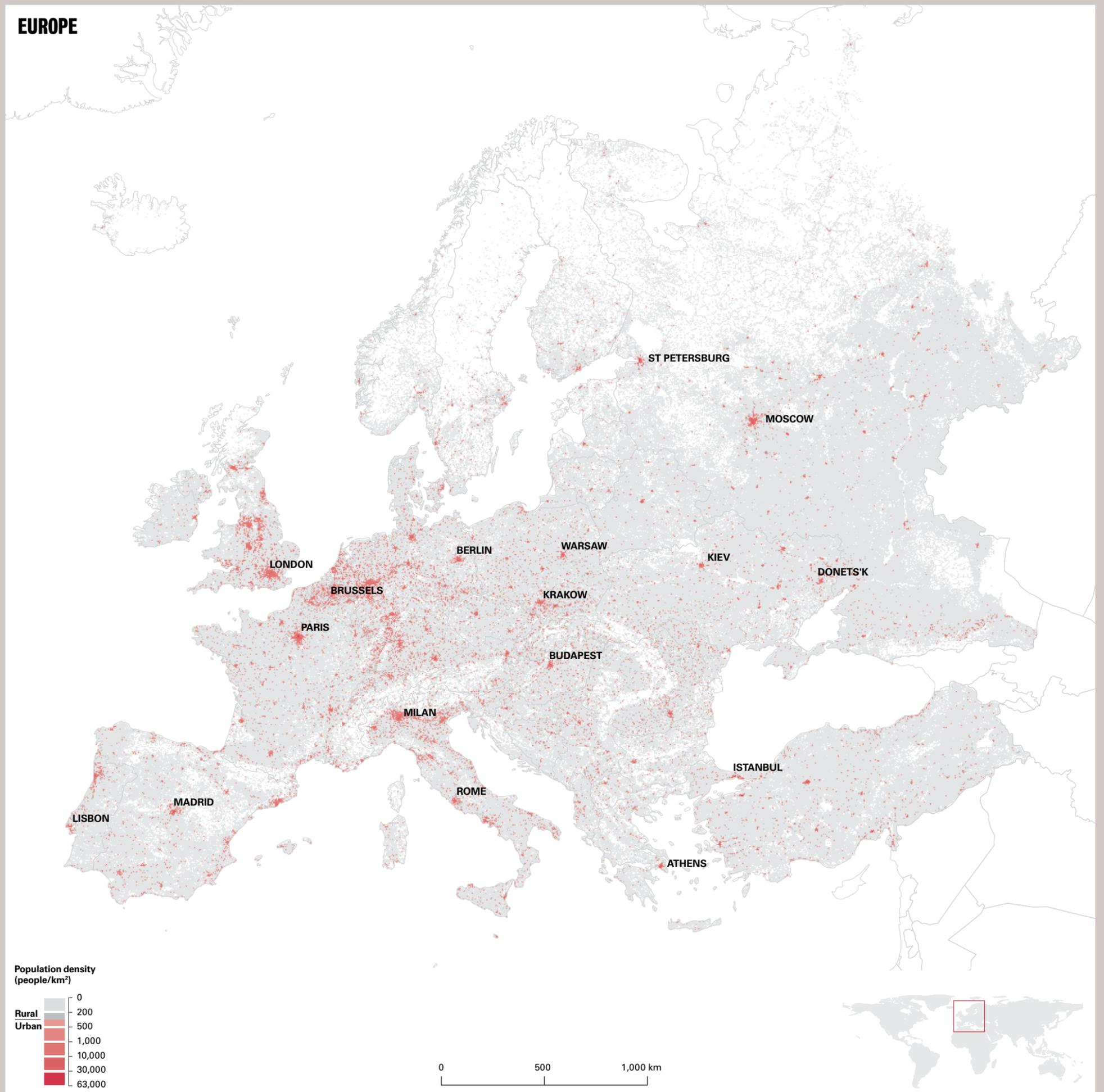
Population



Urban land cover



Urban Rural Other



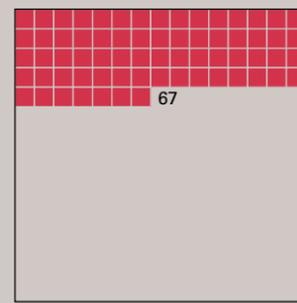
In these maps, different land 'parcels' are assigned the 'urban' (red) or 'rural' (grey) category on the basis of the threshold level of ambient population density – which differs from region to region, and nation to nation – for which the total population of all land parcels above that density equates to the total urban population in each region. For example, while the density threshold in Europe is relatively low at 314 people/km<sup>2</sup>, in India the threshold is much higher at 4,128 people/km<sup>2</sup>. The innovative dimension of the mapping technique is to base the distribution of rural/urban areas on ambient population density (rather than local or regional designations), providing a

more universal parameter to compare the distinct distribution of urban and rural settlements while taking account of regional differences in urbanisation levels.

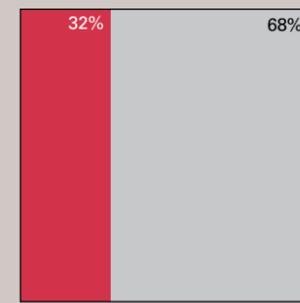
In Europe, there is a more decentralised form of urbanisation that reflects the culture, history and geography of the region. Even though 73% of Europeans live in urban areas – the most urbanised of the four global regions – the urbanisation density threshold is low, meaning that areas with more than 314 people/km<sup>2</sup> are considered urban, contrasting with India where this threshold is over ten times higher. Europe's urban residents occupy just 3% of the total land area of the geographic

## INDIA

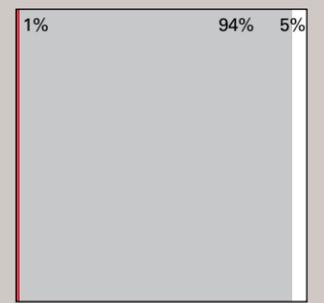
### Cities over 500,000



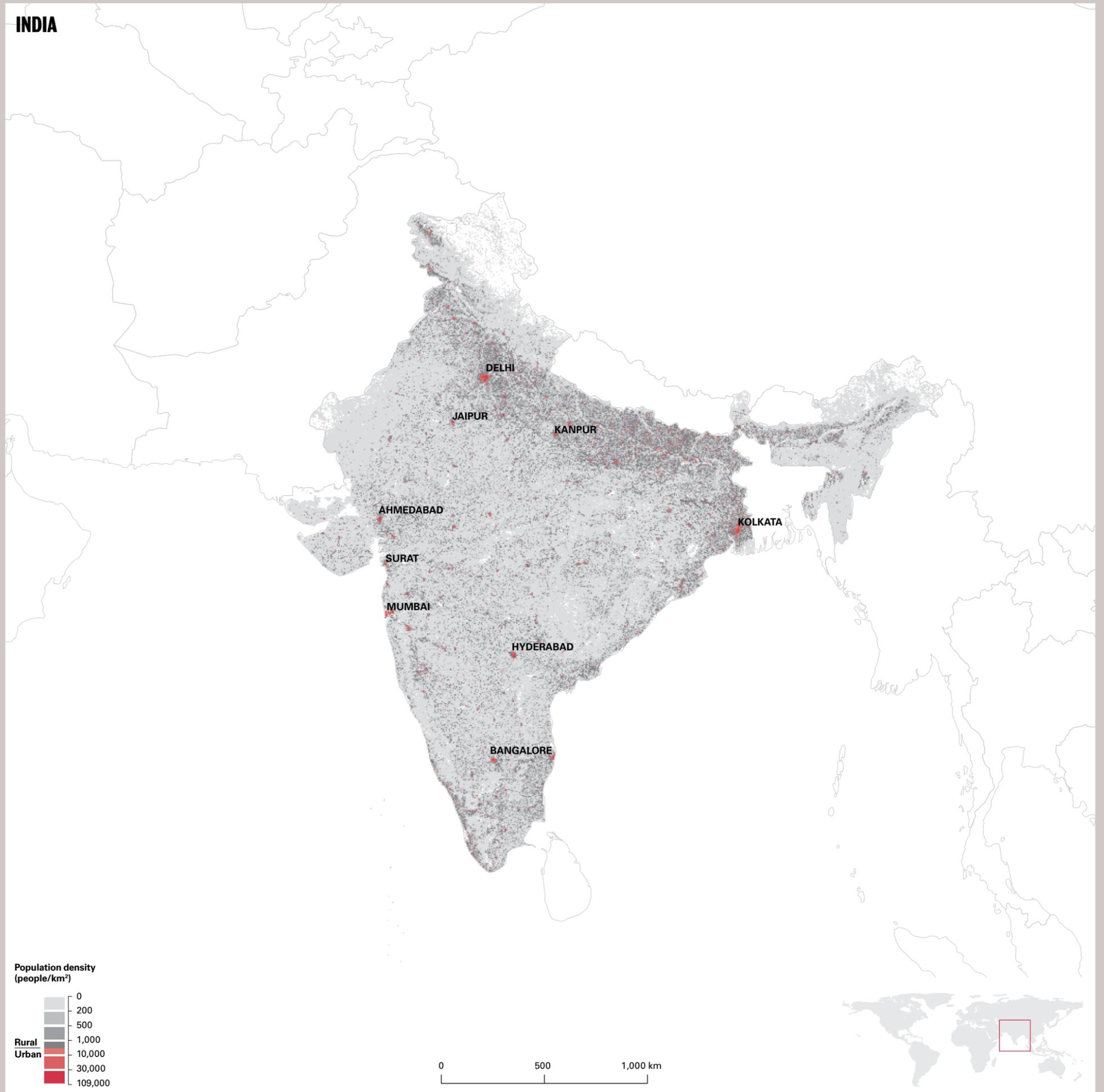
### Population



### Urban land cover



Urban Rural Other



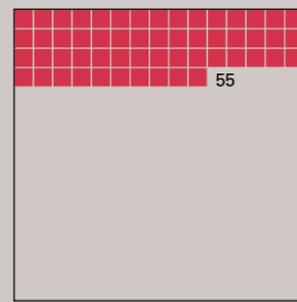
# WHERE WE LIVE

region, and a third of the total land area remains unpopulated (shown in white on the maps) consisting mostly of large bodies of water and mountains. It also contains a greater number of cities with over 500,000 people (128) with a very large number of highly-connected smaller cities and towns across parts of Germany, the Netherlands and Benelux countries, and Northern Italy. India stands out for the far higher population densities in rural areas across vast territories such as the Ganga valley, as well as the emerging presence of large cities like Calcutta, Hyderabad, Bangalore Mumbai and Delhi. The dark grey areas in Northern India reflect the preponderance

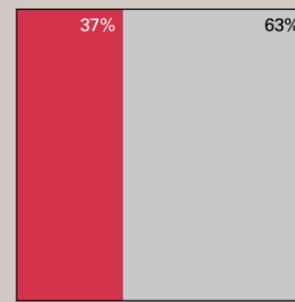
of high-density rural areas which, by European standards, would be considered urban. While India has an urbanisation level of 32%, its urban areas represent only 1% of the total land surface of the country, but only 5% of the country is unpopulated – a much lower percentage than the other three global regions. In India, the urbanisation density threshold is by far the highest of the four regions, at 4,128 people/km<sup>2</sup>. Sub-Saharan Africa is by far the largest of the four regions and is experiencing a period of intense demographic growth. While only 37% of the population live in urban areas today, that percentage is set to rise dramatically, much of it through

## SUB-SAHARAN AFRICA

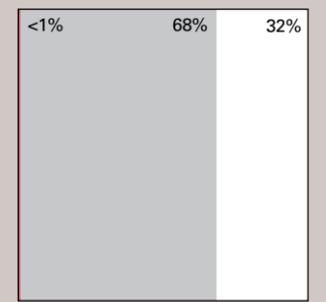
Cities over 500,000



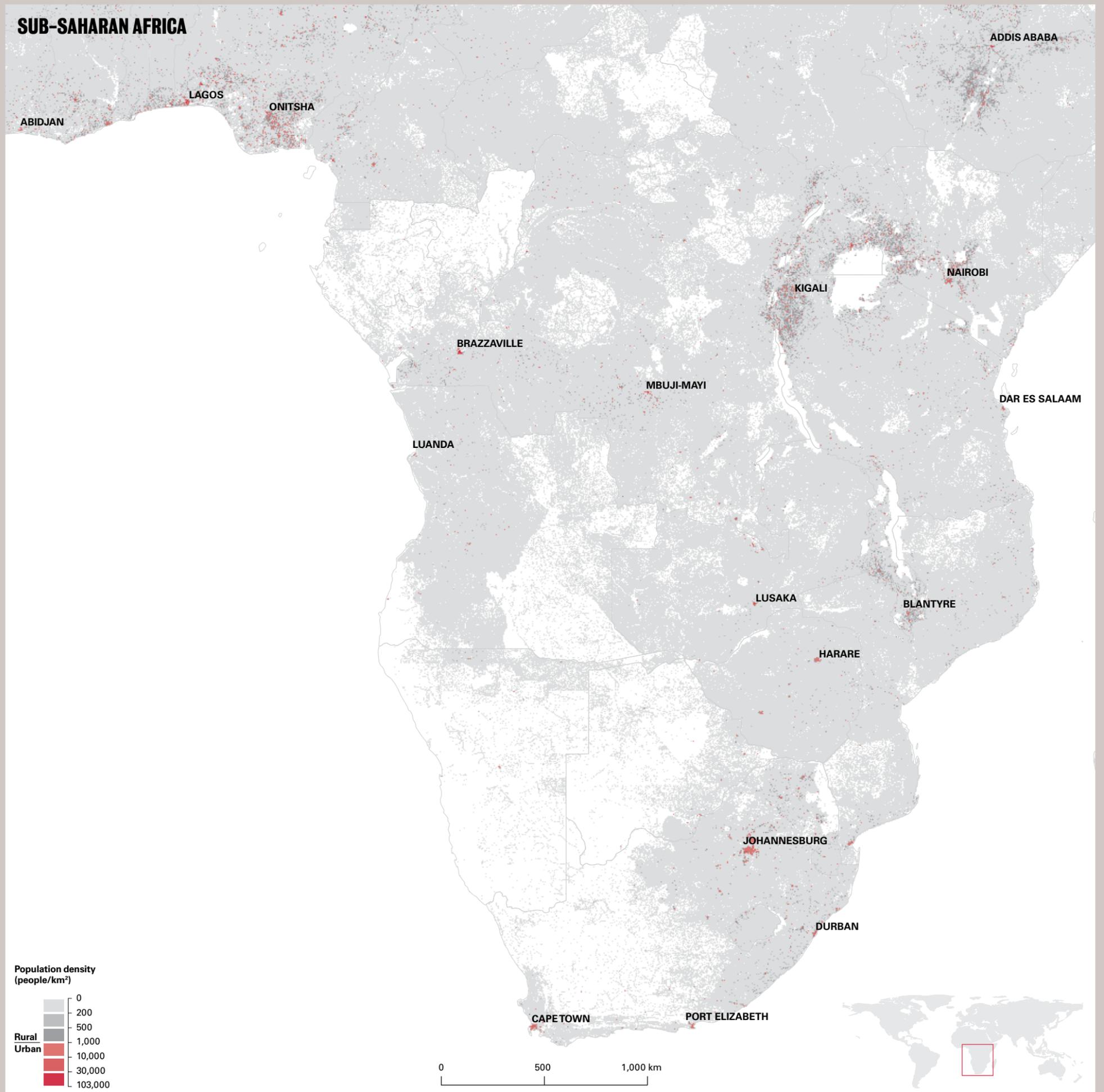
Population



Urban land cover



Urban Rural Other



Based on LandScan 2010™ High Resolution Global Population Data Set

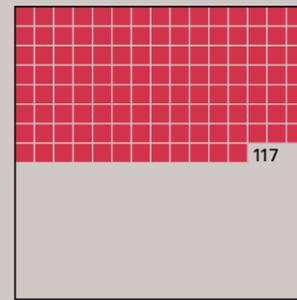
informal growth. While urbanisation levels are below that of the other global regions, just 0.4% of the total land area in this part of the continent is urban, while just over a third of the total land area (32%) remains unpopulated. There are fewer, higher density rural areas than in China or Asia, with concentrations around Lagos, Kigali, Nairobi and Addis Ababa. The urbanisation density threshold is 1,019 people/km<sup>2</sup>.

Just over half China's population (54%) live in urban areas, which represent just 2% of the total geographic footprint of the nation, with largely unpopulated regions making up 39% of the total land surface area. With its rapid demographic and

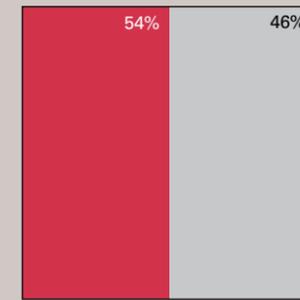
economic growth, urbanisation levels are approximately two-thirds that of Europe. As in India, there are extensive concentrations of higher density rural areas in the regions stretching from Beijing to Shanghai, and around the Chongqing, Chengdu and Nanchong districts, all areas which are experiencing a rapid transformation from agricultural to urban economies. China has an urbanisation density threshold of 1,433 people/km<sup>2</sup>.

## CHINA

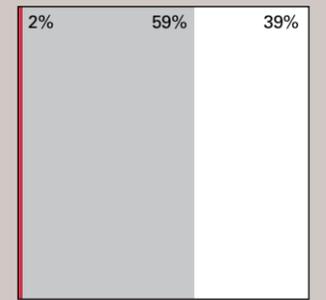
### Cities over 500,000



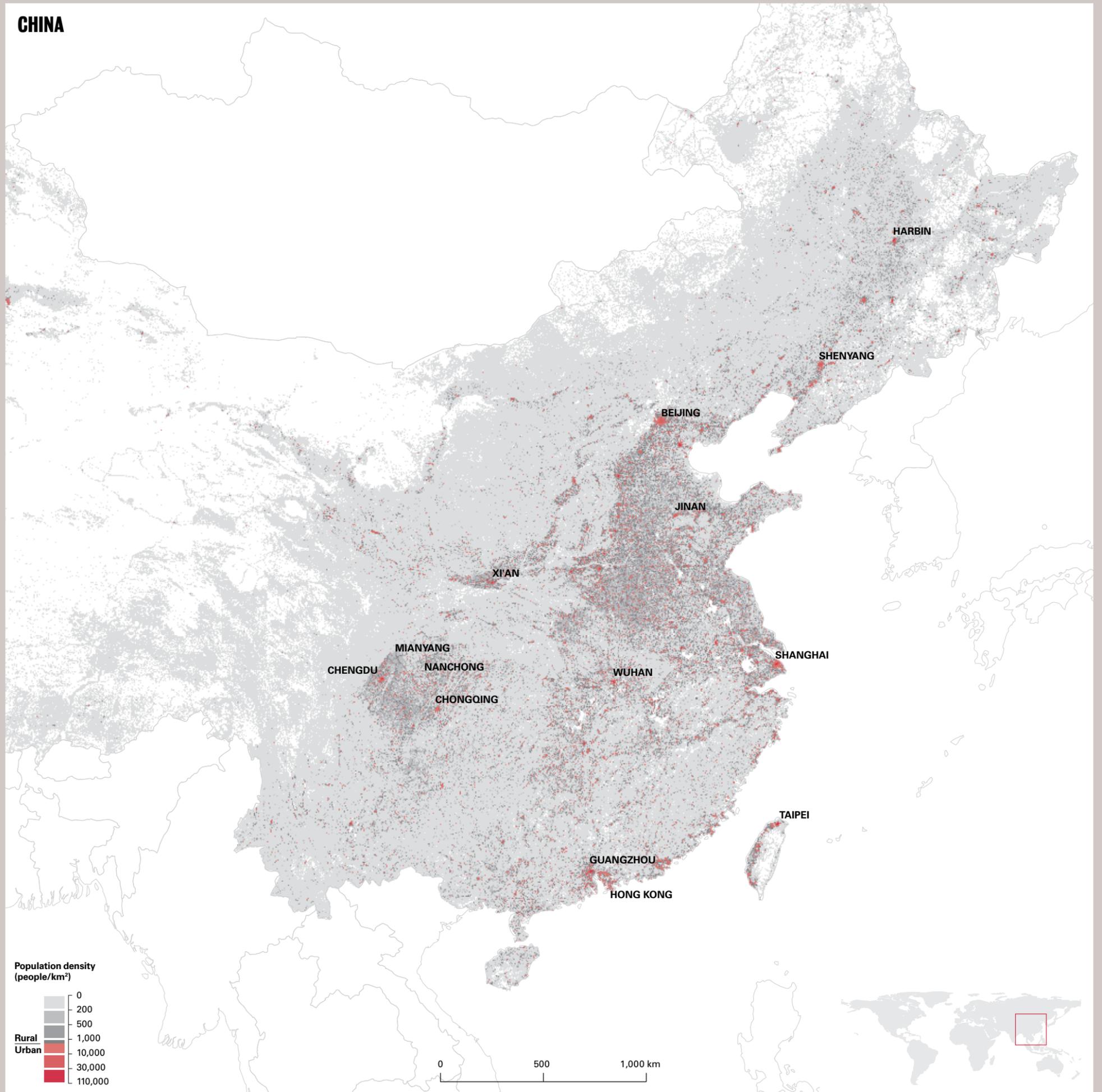
### Population



### Urban land cover

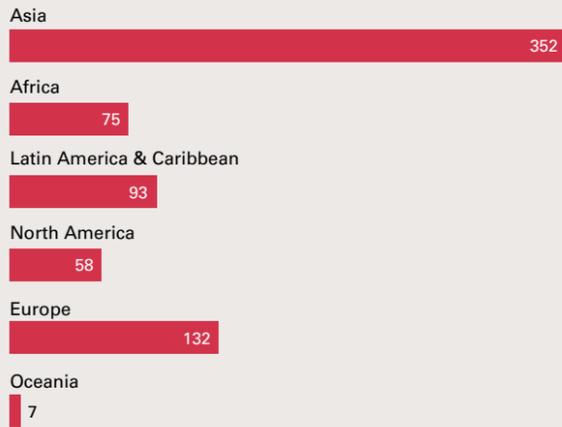


Urban Rural Other

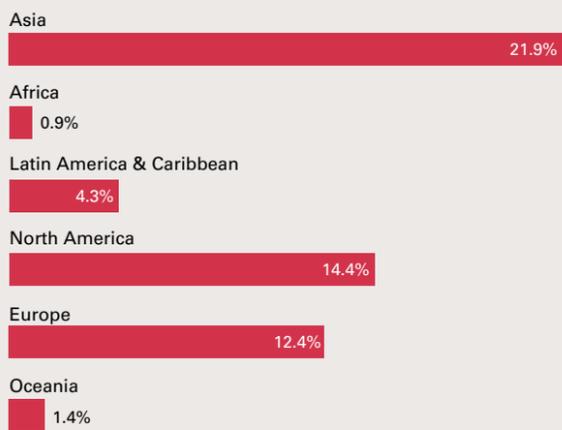


# DYNAMICS OF LARGE CITIES

## Number of large metro areas by region (2012)



## Contribution of large metro areas to global GDP by region (2012)



Statistics on global urbanisation patterns mask significant differences in the dynamics of cities of different sizes and in different parts of the world. Here, LSE Cities explores the demographic and economic performances of larger metropolitan regions over the next 15 years (based on UN Desa projections), focusing on 700 cities with over 500,000 people. As the chart above confirms, the reason for focusing on cities of this size is because they punch well above their weight in economic terms: in 2012, large cities made up 33% of the world's global population, but they produced more than 55% of all global economic output.

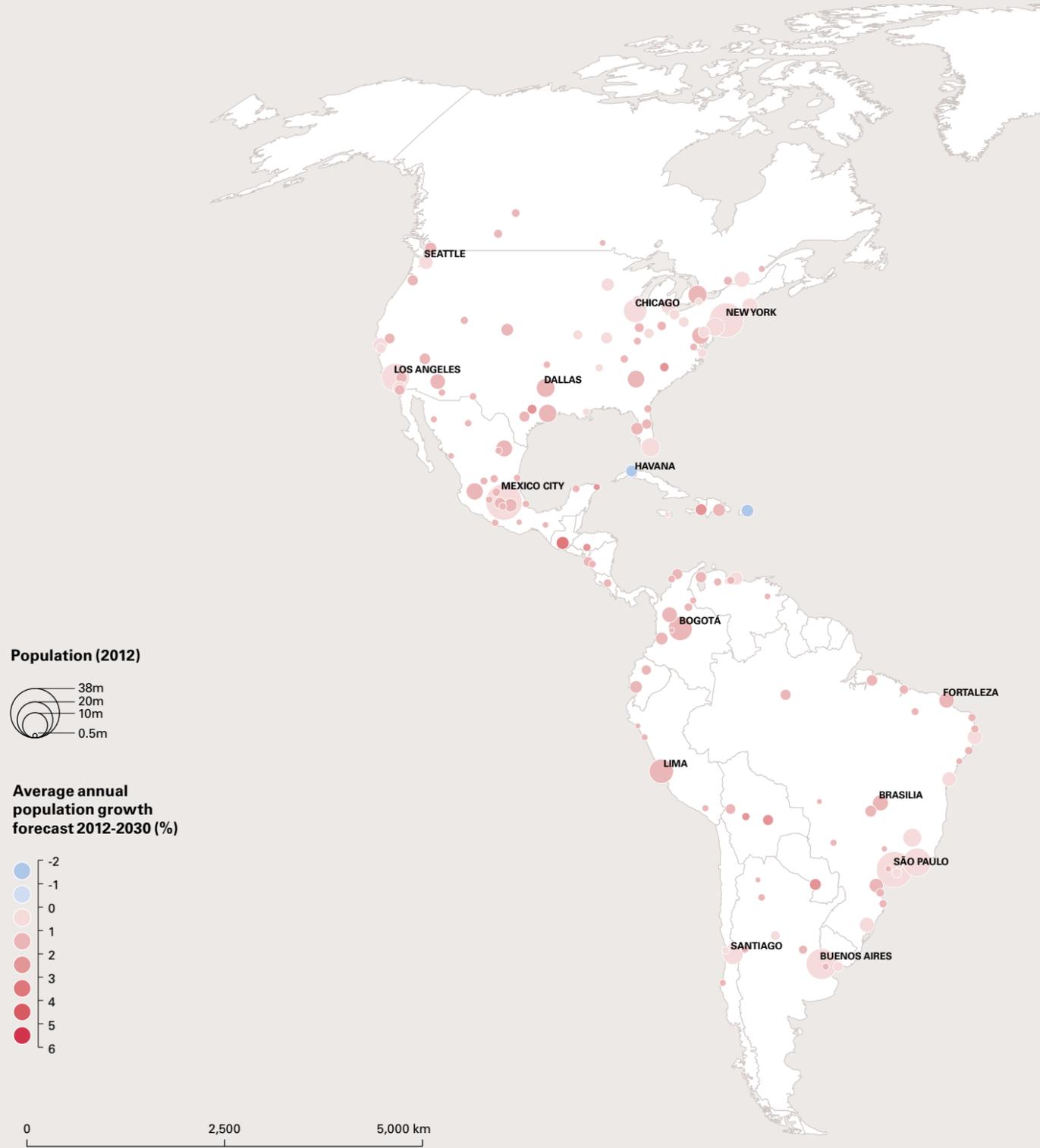
The large world map to the right indicates that the population growth rate of larger cities is disproportionately distributed across the world, with faster growing areas in parts of Africa and Asia, more modest or low growth in Latin America and parts of North America, slow or zero growth in Europe, and negative growth in parts of Japan, Eastern Europe, Russia and the Caribbean.

The size of projected populations by 2030 varies widely, with China and India leading the field for the number of megacities projected to have over 10 million inhabitants by 2030. While today Tokyo is the world's largest city, with an agglomeration of 38 million – followed by Delhi, Shanghai and Mumbai – its population is set to shrink by about 400,000 people by 2030, while all the runners-up are set to continue growing. But amongst the larger cities, it is Dhaka, Lagos, Kinshasa and Dar es Salaam that will transform most rapidly due to extreme growth rates, many with high percentages of informal development.

The smaller map illustrates future patterns of economic output and growth for the same 700 cities. The most striking feature is the dramatic regional differences that by 2030 will still persist in GDP/per capita between the Global North and Global South – with important exceptions in the Middle East, China and parts of Latin America and Oceania, with the most intense growth in average GDP concentrated in China and East Asia.

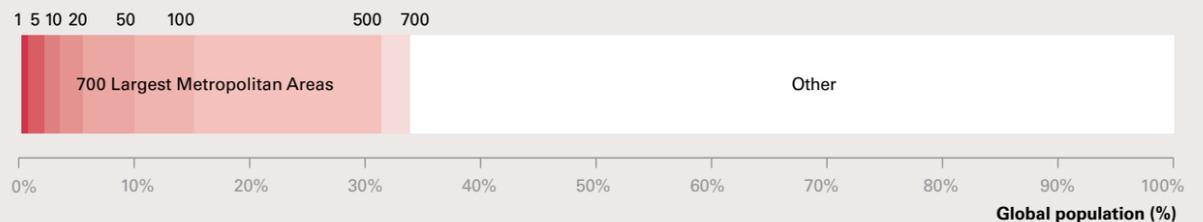
The chart to the right illustrates the global demographic and economic impact of 700 large cities, confirming the disproportionately large contribution made by a relatively few, large cities to both global population and GDP.

## POPULATIONS OF THE LARGEST URBAN AGGLOMERATIONS

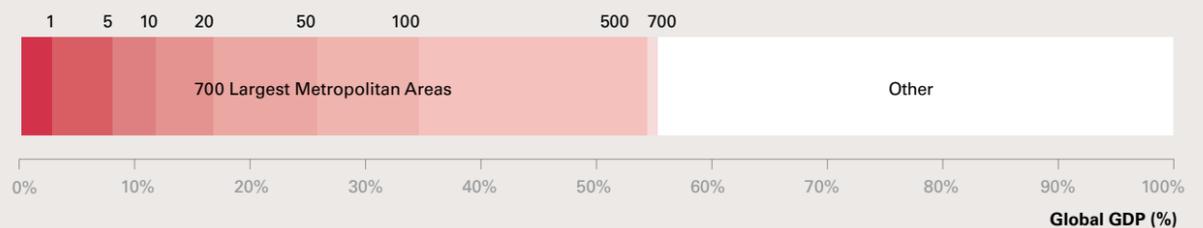


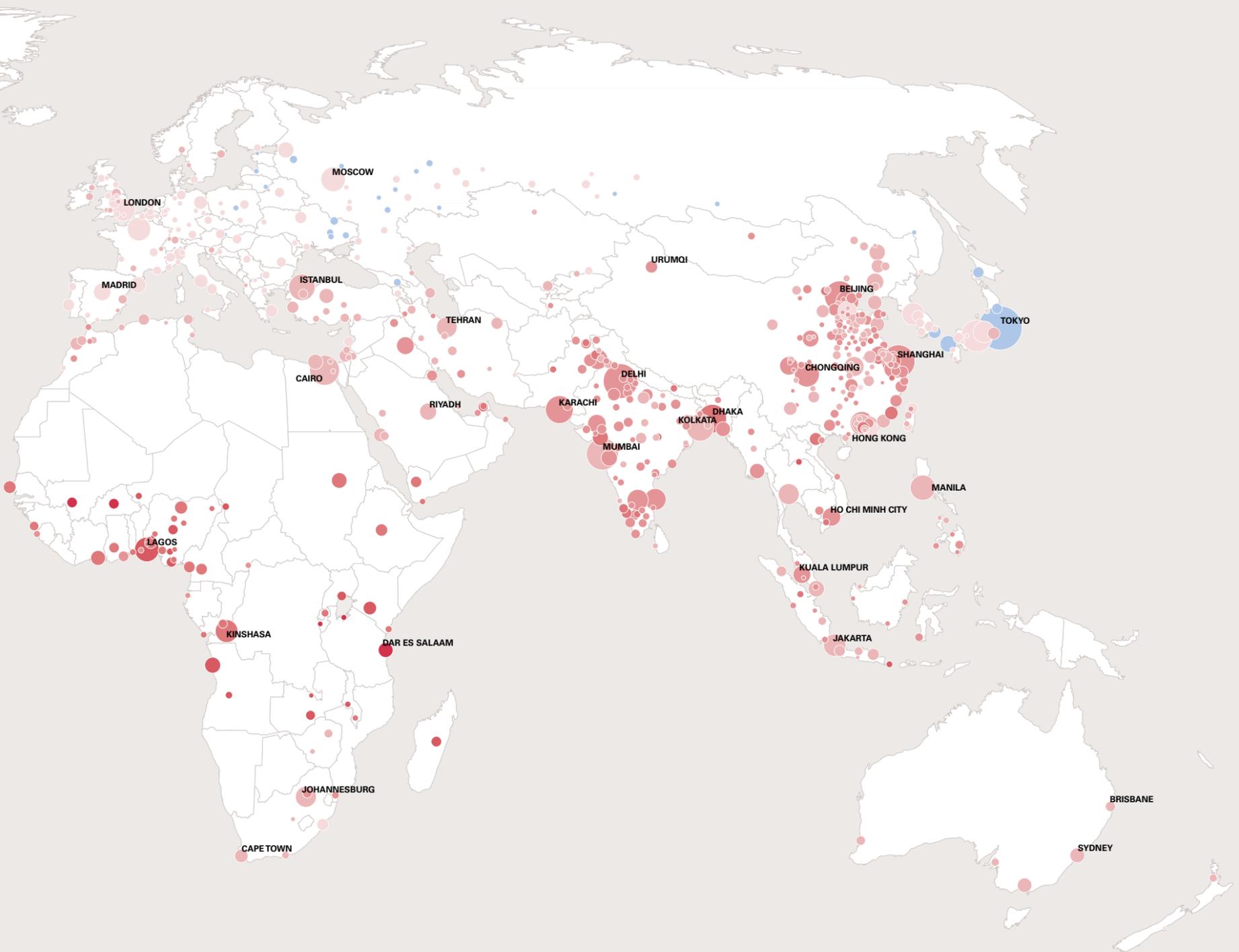
## The cumulative contribution of the largest metropolitan areas (2012)

### Population



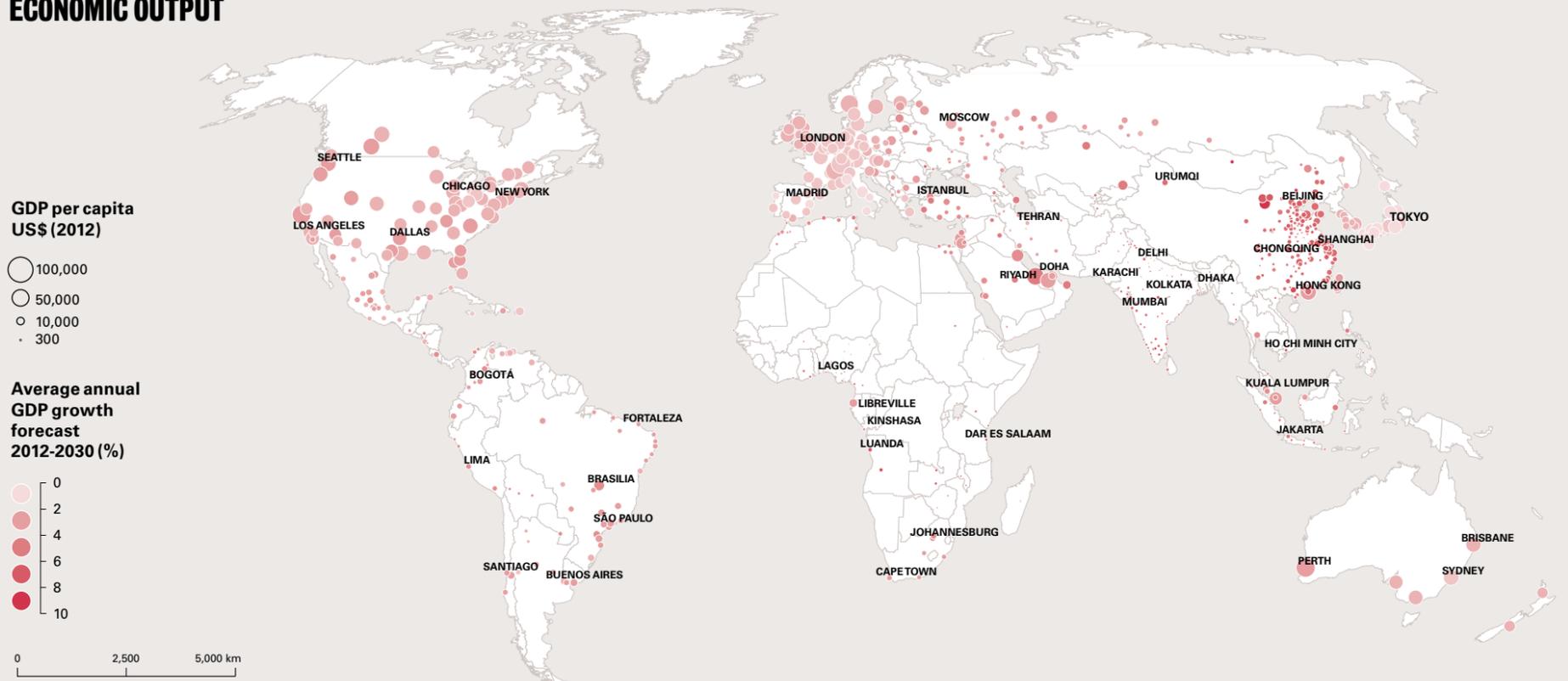
### Economic output





Projected population data courtesy of UN DESA World Urbanisation Prospects, 2014 Revision

## ECONOMIC OUTPUT



# HOW CITIES PERFORM

Behind the basic parameters that define how cities perform lie very different patterns of urban development, with diverse spatial, social and economic characteristics. In this city data matrix, LSE Cities has assembled information from a range of official sources for nine selected cities, revealing their social, governance, planning, transport and environmental patterns.

The graphic overview of these results highlights some striking differences. Lagos will be growing the most rapidly over the coming years, with an average annual population growth rate of 6.4% per year – more than three times faster than Delhi (2%) and nearly six times faster than Bogotá (1.2%). Tokyo, currently the largest metropolitan area in the world, is actually depopulating at a rate of -0.1% per year, which will amount to a reduction of almost 400,000 people between 2012 and 2030.

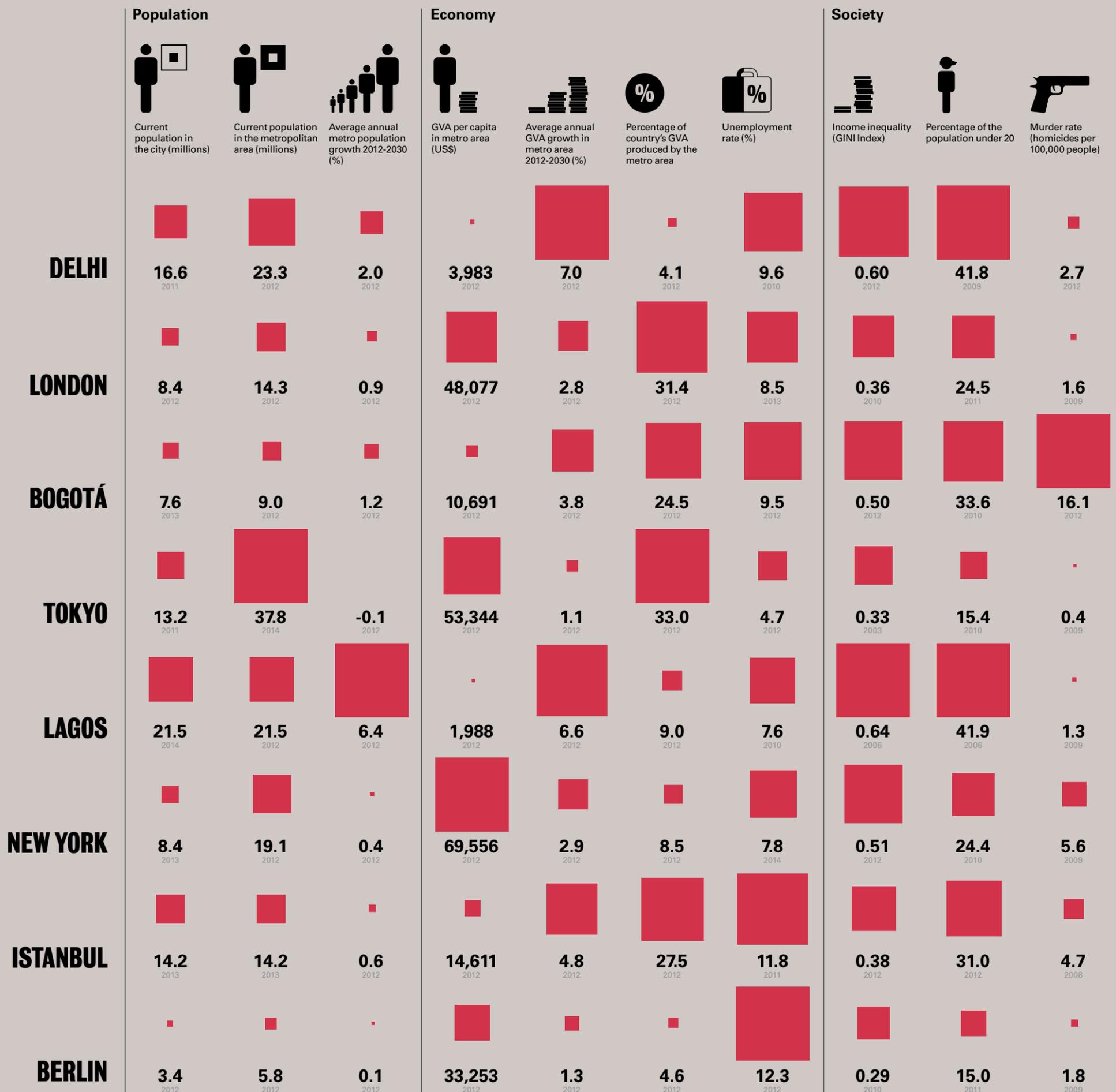
Lagos also leads on economic growth, with projected GVA for the metropolitan region increasing by 6.6% per year between 2012 and 2030, outdone only by Delhi, where the growth rate is projected to be 7% per year – a marked contrast to the relatively slow growth of Berlin and Tokyo. Looking at GVA per capita, New York (US\$69,556) and Tokyo (US\$53,344) top the list, followed by London (US\$48,077) and Berlin (US\$33,253). People living in these four cities are many times wealthier, on average, than those in Bogotá or Istanbul, which in turn are significantly wealthier than the average resident of Delhi (US\$3,983) or Lagos (US\$1,988).

At 12.3%, Berlin has the highest rate of unemployment of all nine cities (with Istanbul a close second at 11.8%), at a time where overall German unemployment has fallen to below 5% for the first time since the beginning of the last

recession. Tokyo has the lowest unemployment rate at just 4.7%, twice as low as Delhi or London. However, only 15% of the residents of Tokyo are under the age of 20 (compared to 40% in Delhi and Lagos).

Tokyo also boasts one of the lowest levels of income inequality as indicated by the Gini coefficient – a measure of income distribution where the higher number represents greater inequality. While Tokyo and Berlin are the most equitable, Delhi and Lagos are dealing with Gini coefficients of 0.6 and higher, demonstrating that the strong economic growth has created a more unequal urban society.

When considering voter turnout in the most recent local elections, stark differences in political participation become immediately apparent. New York experienced a historically low turnout during the last elections, with only 24% of eligible voters casting their ballot. By comparison, nearly



90% of Istanbul voters turned out to vote.

Despite significant variation in the administrative structures and associated political powers of these cities, each has a democratically-elected body that acts as the legislative arm of the government. The London Assembly has the lowest number of representatives (25) while Istanbul's Municipal Council has the highest (207). Arrangements relating to the city leadership are similarly divergent. Concerns about corruption and the concentration of political power mean that in Bogotá the mayor can only be elected for one four year term. By contrast in Delhi, London, Tokyo and Berlin, the mayor (or equivalent city leader) can in theory be re-elected an unlimited number of times.

In terms of the built environment, Delhi and Bogotá face very similar densities within their built-up area

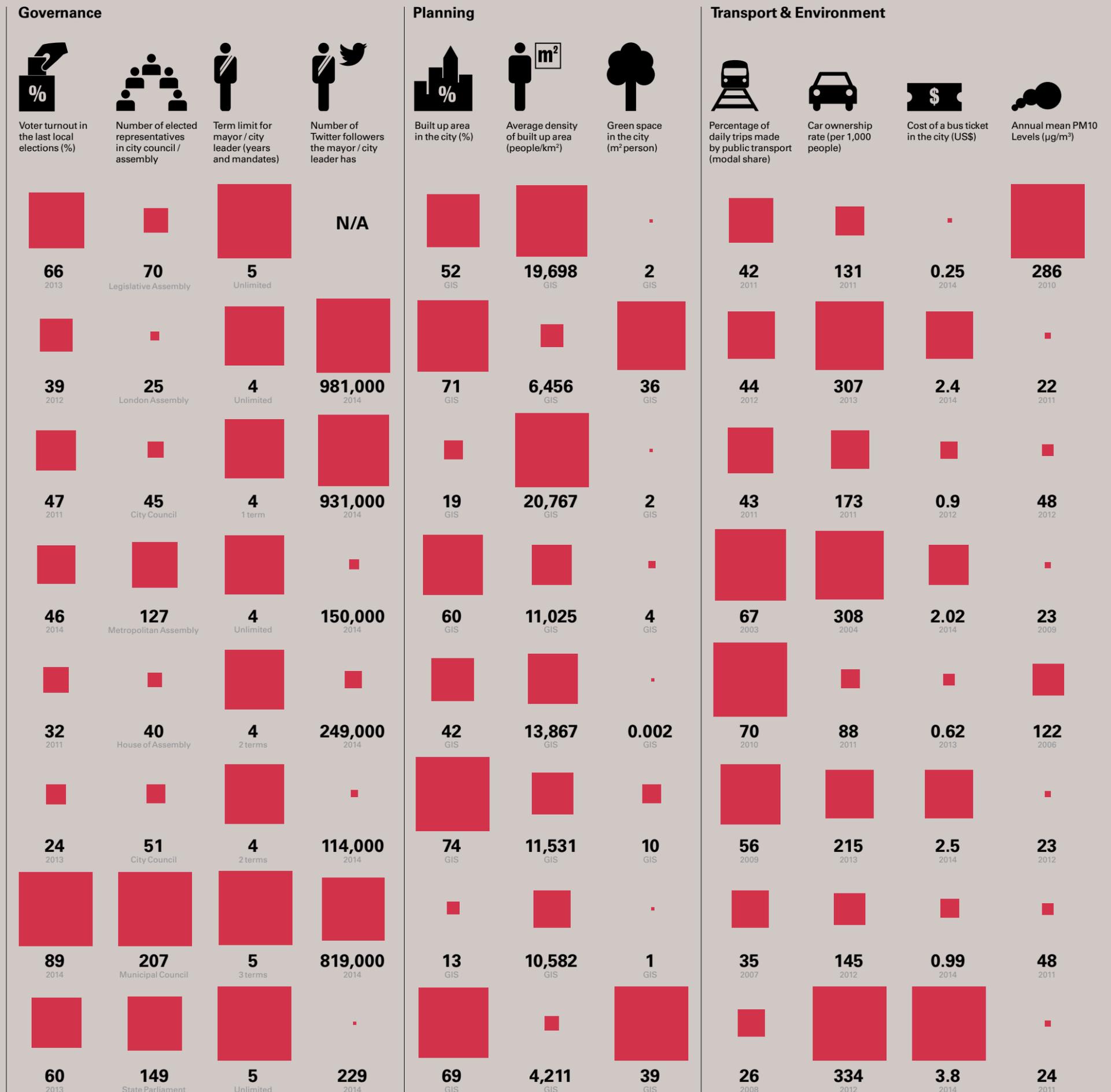
(around 20,000 people/km<sup>2</sup>) and both have a similarly low amount of green space per person, yet in the case of Delhi more than half of the total land area of the city is already built-up, while for Bogotá it is less than a fifth. New York has the highest percentage of built-up land (74%), followed closely by London (71%) and Berlin (69%).

Berlin and London also have the lowest average density, with Berlin being five times less dense than Delhi. While low density and a high built-up area may sound like a bad combination, it is in fact London and Berlin that have by far the highest amount of green space per person, with 36m<sup>2</sup> and 39m<sup>2</sup> respectively, with the residents of Lagos only benefitting from 0.002 m<sup>2</sup> of green space per person.

Figures for car ownership and public transport use also vary widely, highlighting the cities' diverse transport infrastructures. Berlin has both the lowest public transport

use (26% of all trips) and highest car ownership rate (334 cars per 1,000 inhabitants) although it should be noted that 'ownership' does not equate to 'use', and commutes undertaken by bicycle or on foot are not accounted for here. By contrast, 70% of trips in Lagos are made by bus, and it has the lowest car ownership rate of all nine cities. However, its air pollution levels are high with PM10 levels of 122µg/m<sup>3</sup>, although not as severe as Delhi's (286µg/m<sup>3</sup> of PM10).

Measurement years and methodologies used to calculate indicator values may vary between cities and are not always comparable.



# WHAT CITIES TELL US

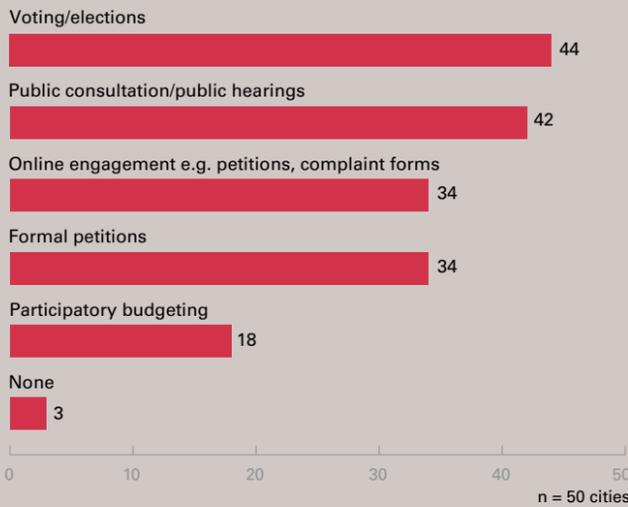
Global comparative research on urban governance is confronted with a substantial data challenge. Regardless of the ever-increasing availability of information on institutional arrangements in individual cities, knowledge and methodologies to capture and compare the wide spectrum of different urban governance systems is limited. The global survey on urban governance – undertaken by LSE Cities in partnership with UN Habitat and United Cities and Local Governments (UCLG), and supported by the MacArthur Foundation – addresses this data challenge and explores new ways of communicating and ‘mapping’ urban governance for public dissemination, comparative policy and research analysis. A selection of the initial findings are presented here.

The information presented here is a snapshot of the results from a set of 50 city governments that took part in a pilot survey. The survey includes information from five continents and 30 countries, with stronger representation of cities from the Americas and Europe. 25 cities have higher income economies, and 29 cities have populations of over 500,000 people. The survey considered a range of urban governance issues, such as political power, budget and financing, multi-level governance, participation and accountability, strategic planning and institutional change.

## THE INFLUENCE OF CITIZENS

Citizens have the ability to influence local policies in multiple ways. Voting in elections is the most common and was reported by 44 of the cities. The vast majority of city governments included in this survey are governed by an executive mayor who is directly elected versus appointed or indirectly elected mayors. Of the 50 cities, only five have reported not having a mayor at all. ‘Voting’ is followed by ‘public consultation’, as a further means of influencing policy, and then (with an equal number of mentions) ‘online engagement’ and ‘formal petitions’. Interestingly, a large number of cities also stated that participatory budgeting is one of the processes through which citizens can influence local policies. Some of the cities which have given more detailed replies noted that that youth councils and joint planning processes are integral to how citizens participate in local policies. The survey also found that the larger the city in terms of population, the less capacity citizens have to influence local policies, suggesting that while larger cities may profit from economies of scale and economic resilience, they at the same may offer reduced levels of subsidiarity.

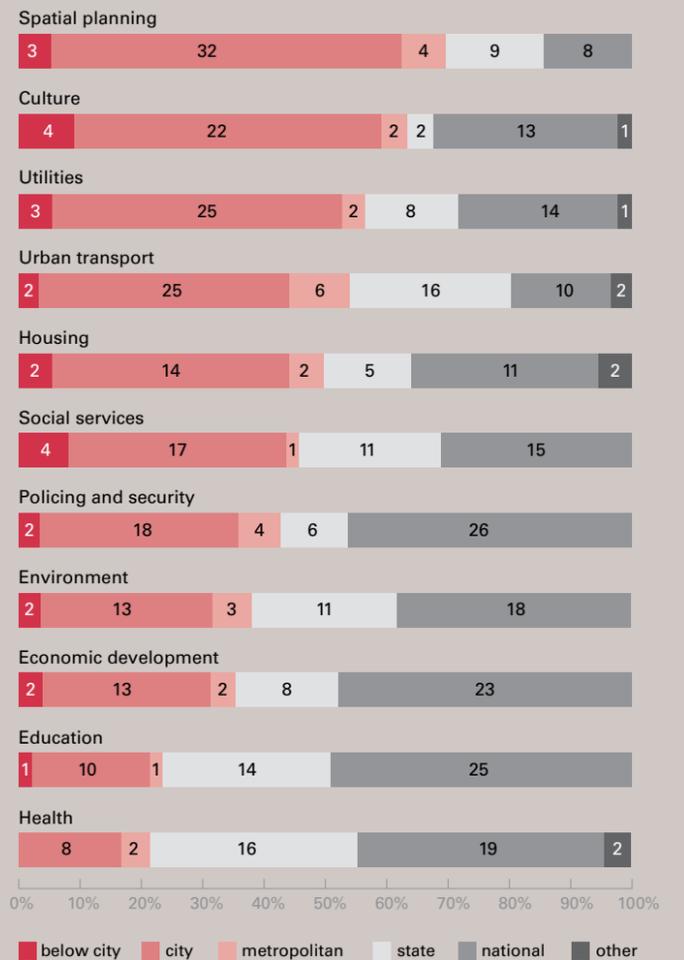
## In what capacity can citizens influence local policies?



## GOVERNING DIFFERENT URBAN POLICY SECTORS

Substantial differences in urban governance across different cities exist with regards to the sectoral distribution of political power. The survey reveals a clear tendency whereby certain policy sectors are exposed to greater political powers at the urban level while others are more centralised at the level of state or national governments. The survey results show that city level governments take greater responsibility for spatial planning, culture, utilities and transport – and are far less involved with other policy sectors, such as health and education. Other sectors that are more greatly influenced from the local level are social services, policing and security. The ability to lead on specific policy sectors also directly relates to questions of budget and revenue streams. Cities which do not have the budget to administer certain policy sectors tend to also lack executive powers in these areas. Some cities have pointed out that they are under additional influence from regional and provincial bodies. The local policies of European cities are also strongly influenced by supranational bodies such as the European Union. Other cities noted the importance of public consultations as well as NGOs and public organisations.

## Who is leading these sectors?



## CITY FINANCING

Cities are financed through a wide variety of different sources, including their own local revenues as well as state, national and in some cases even supranational transfers. The survey identified four dominant types based on their dependence on funds coming from different levels of government: state (or region)-dependent cities; national dependent cities; financially independent cities; and, cities which receive funding from multiple sources.

Cities which are heavily dependent on state (or regional) resources include Artik (Armenia), Ghent (Belgium) and Istanbul (Turkey). 50%-85% of the total budget in these cities comes from the state level. Cities which are mainly funded through the national government include La Paz (Bolivia), Madrid (Spain) and Mexico City (Mexico). These cities receive between 50% and 95% funding through the central government. In financially independent cities, less than 50% of their funds come from the state, national or supranational tiers of government. These include Gothenburg (Sweden), Montreal (Canada) as well as Philadelphia (U.S.A). The last category includes cities with a budget funded through multiple sources, including several combinations of state, national as well as supranational sources. Included here are cities such as Rio de Janeiro (Brazil), Port Harcourt (Nigeria) and Villa el Salvador (Peru). Due to the relatively small sample size, it is difficult to identify significant regional trends. European cities reported the significance of the regional and provincial funds that come into the city.

The survey further identified four main sources of revenue for local budgets. These include taxes (property tax, income tax), user fees (tariffs), sale of assets (including land) and other sources. The majority of cities raise over 50% of their income from taxes. European cities noted that some funding streams come from provincial and regional sources, and also directly from the European Union.

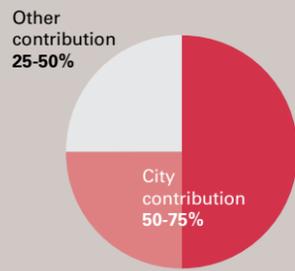
## CITIES INCLUDED IN THE SURVEY



## Percentage of city budget from different tiers of government

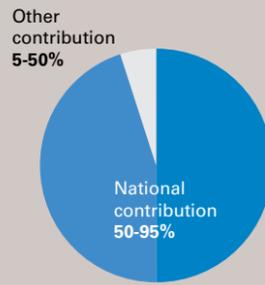
### Financially independent cities

18 cities including Gothenburg, Montreal, Philadelphia



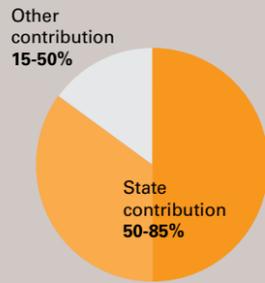
### Nationally funded cities

9 cities including Mexico City, La Paz, Madrid



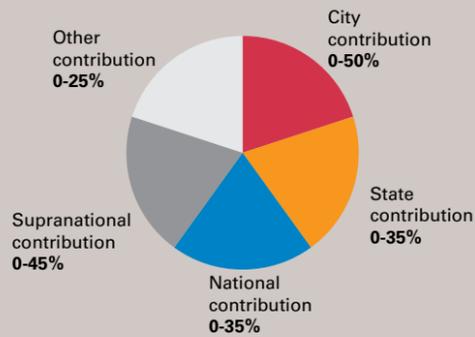
### State dependent cities

3 cities including Artik, Ghent, Istanbul



### Cities dependent on multiple sources

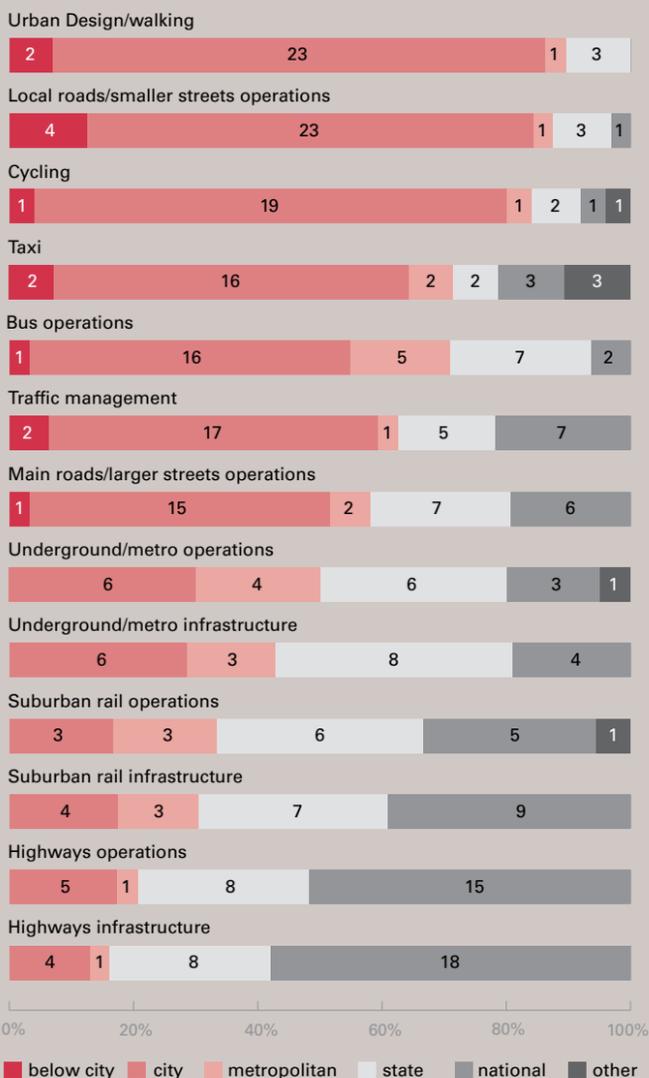
10 cities including Rio de Janeiro, Port Harcourt, Villa el Salvador



## WHO IS LEADING ON URBAN TRANSPORT?

Given the particular relevance of urban transport and the governance of its transport sub-sectors, the survey illustrates the sector's substantial exposure to multi-level governance. While city governments tend to lead on small- and medium-scale public infrastructure initiatives – such as public space improvements, cycle paths, footpaths and smaller roads – large-scale infrastructure tends to be controlled by state and national governments, often requiring substantial external investments. Both highway infrastructure and operations and rail-based transport are the most centralised transport sub-sectors, mainly led by national government.

### Who is leading these transport sectors?



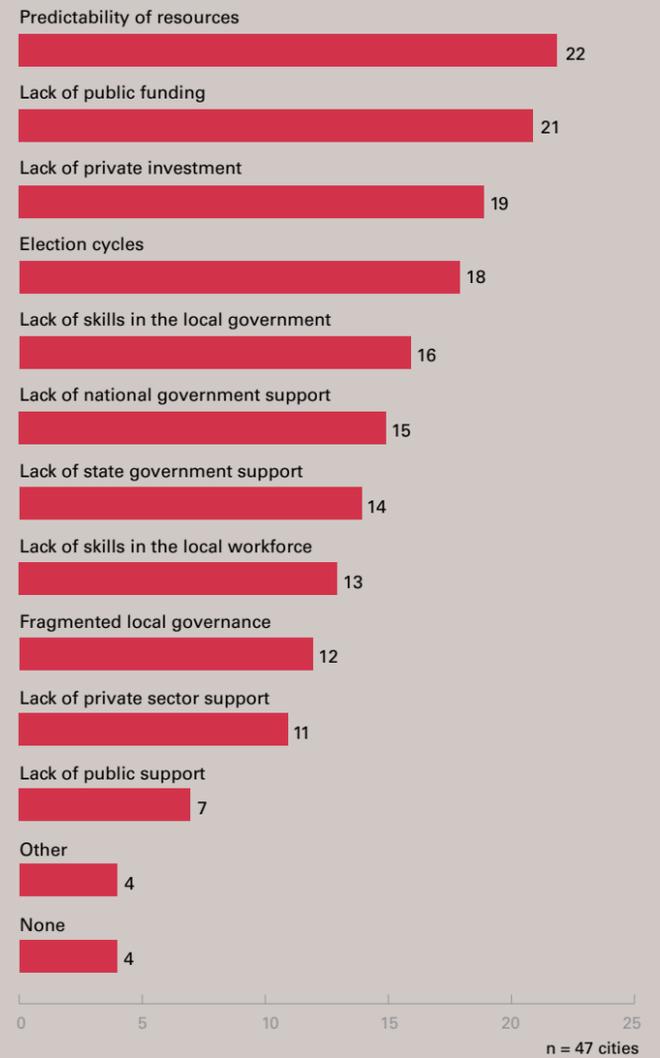
## URBAN GOVERNANCE CHALLENGES

The survey asked respondents to state the three biggest governance challenges that their city faces. 'Urban transport' was the most often cited, identified as an issue by 35% of cities, closely followed by 'financial resources' and 'employment'. Transport includes a number of issues, such as congestion, constraints on mobility and the establishment of effective public transport systems. 31% of cities stated that financial resources are a major factor constraining cities governance realities, 25% singled out employment levels (e.g. job creation and youth unemployment) and 21% referred to environment-related challenges such as pollution, the attainment of environmental targets and water and waste management issues as significant challenges. Cities from Central and South America, in particular, identified security and crime as a prime urban governance challenge. This includes cities such as Fortaleza (Brazil), Rio de Janeiro, Cartagena (Colombia) and Mexico City. A further, more region-specific challenge is unemployment, which features dominantly in cities in Europe including Ghent (Belgium), Madrid, Málaga (Spain), Tampere (Finland) and Liverpool (UK).

## GOVERNANCE CONSTRAINTS

City governments face many institutional constraints in managing their cities. Respondents to the survey were asked to choose from a number of options and could identify multiple constraints. The largest number of cities highlighted the unpredictability of resources as a significant governance constraint, more even than the overall lack of public funding. This underscores the problem that cities currently lack the ability to plan for future development, as they are exposed to volatile income and resources. Less prominent were concerns related to public and private sector support.

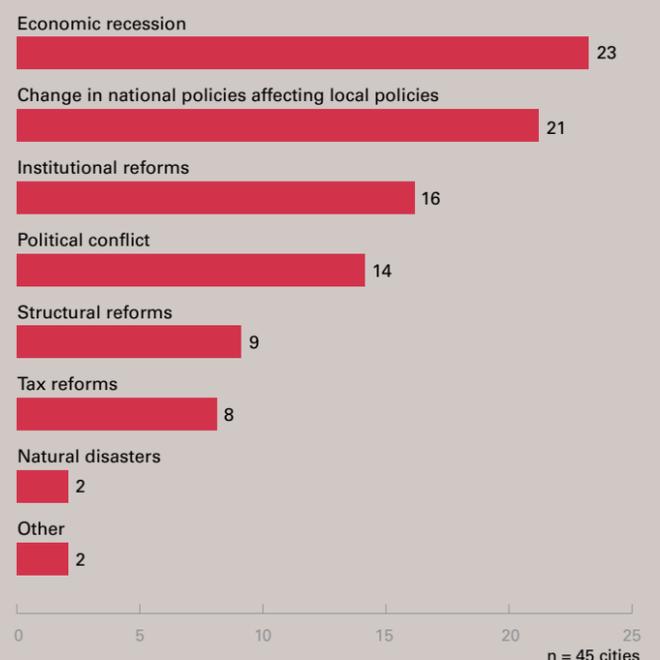
## Which of the following governance constraints is your city/local government facing?



## GOVERNANCE DISRUPTIONS

Cities are increasingly affected by external events which often lead to significant local disruptions. The survey sought to identify cases of major disruptions that affected local government operations. 50% of cities identified the recent economic recession as a major factor which interfered with urban governance. Preliminary analysis also suggests that the population size of cities included in this survey correlates negatively with disruptions caused by the economic recession: the bigger the city, the less likely they seem to be disrupted by the economic recession. The second most frequently cited disturbance was 'national policies which affected the local level' and 'institutional reforms'. A large number of cities from countries with recent civil unrest referred to political conflict as causing major disruptions to the governance of their city. These include Addis Ababa (Ethiopia), Antananarivo (Madagascar), Gaza City (Palestine), Istanbul (Turkey) and Rio de Janeiro (Brazil).

### Have there been any examples of recent disruptions that have affected the way your city/local government operates?



# PATTERNS OF GROWTH

To better understand the connections between cities and their governance systems, LSE Cities has carried out in-depth analysis of four case studies – Delhi, London, Tokyo and Bogotá – all cities which offer interesting insights regarding institutional arrangements and innovation, budgets and responsibilities, management of urban expansion and ownership of transport systems.

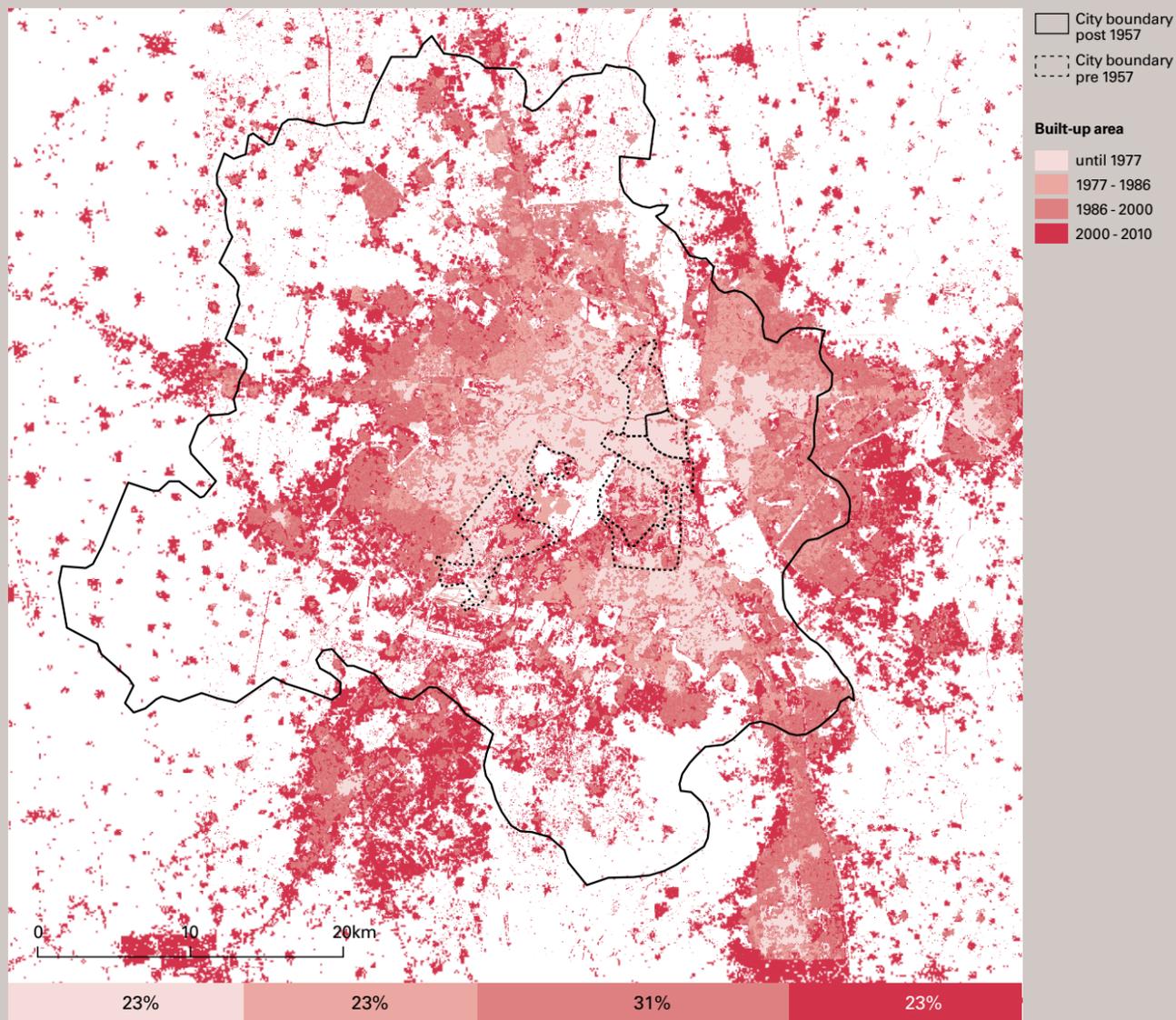
Based on data provided by the German Space Agency DLR-DFD, these maps show how the built-up area in each city has grown over the last four decades at intervals of about ten years. The distribution of urban development within each time frame is illustrated by colour (darker red indicates more recent development) while the length of the bar chart indicates the percentage of total built-up land realised in each period. White areas are unpopulated zones where topography and natural features like rivers and mountains constrain urban development. The boundary of both the current city-wide administrative authority and the historic boundary are overlaid on each map.

Reflecting its status as a young city with a deep history, over 55% of greater Delhi has been built since 2000, while in London only 15% was built in the same time frame, though much of the new growth reveals a process of densification within the boundaries of the Greater London Authority. In Tokyo, the world's largest agglomeration built at very high density, 90% of the urban footprint was already completed by 1972, while Bogotá experienced 82% of its growth until 1980, in line with many other Latin American cities.

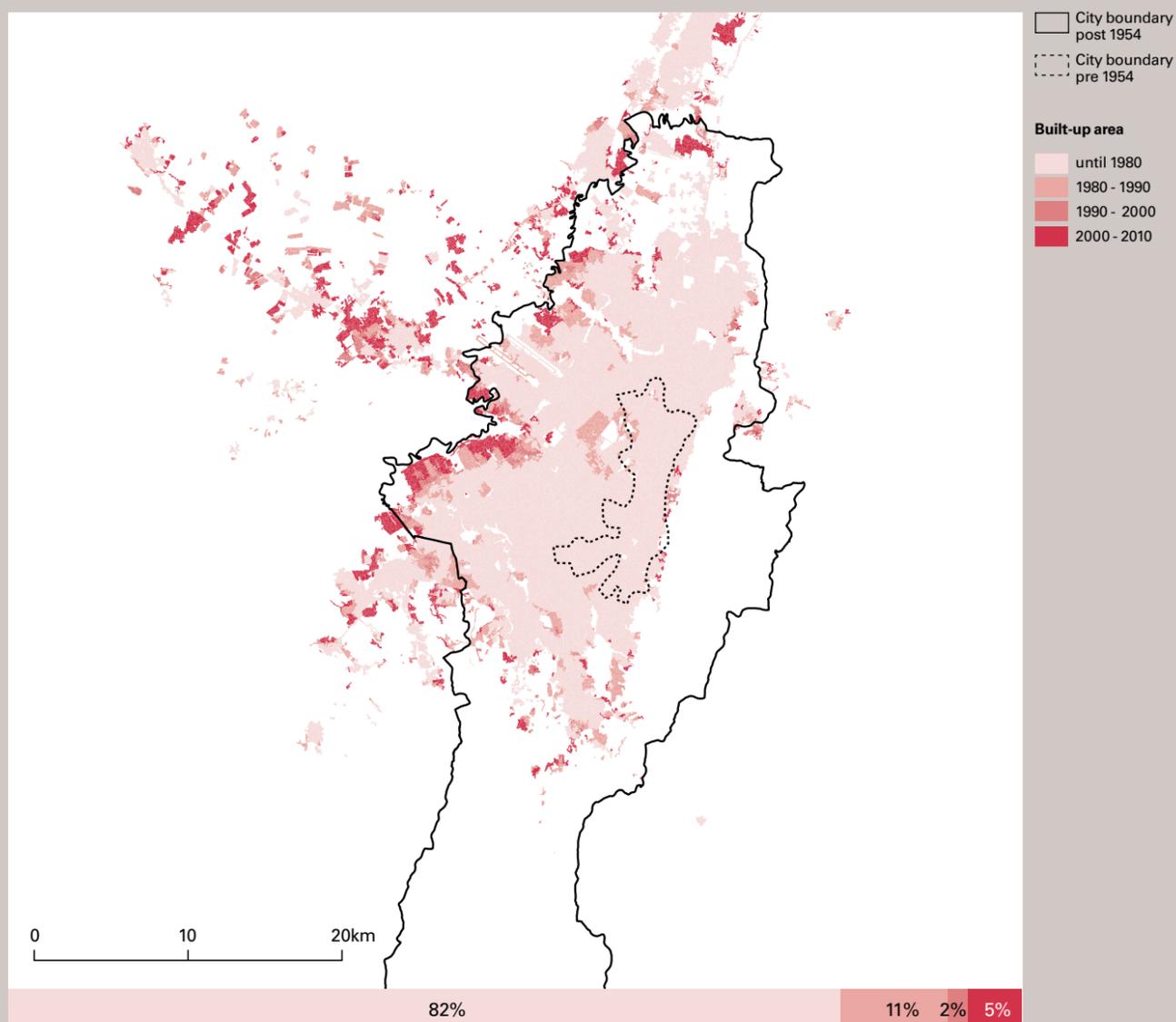
Each of the four cities has faced the challenges of urban expansion in different ways. Tokyo and Delhi in effect implemented oversized governance systems over 60 years ago and have waited for the city form to catch up. Tokyo's Metropolitan Organisation Act of 1943, which merged the Prefecture and City to form the Metropolis of Tokyo, made the new institutional boundaries three times larger than its boundary at the time. Similarly, Delhi's 1947 independence boundaries covered 19 times the area of Old Delhi (Shahjahanabad) and Lutyen's New Delhi. Today, the built-up areas of both have spilled over these 'historic' boundaries, with Delhi showing high levels of new development in the neighbouring states to the south and east of the traditional city boundary.

London had already reached its peak as a world megacity by the mid-20th century. The 1943 Greater London Plan defined the political boundary of the then London County Council at what was roughly the limit of the built-up area, but reinforced it with the implementation of the Green Belt. By 1965 the London County Council gave way to the Greater London Council which covered five times the area (which coincides with today's Greater London Authority boundaries). In 1954, Bogotá's Special District enlarged the city boundary to 37 times its former size, and while much of the administrative area remains unpopulated (due to topography and land constraints) the majority of recent growth is concentrated on the poorer peripheral edges to the north and west.

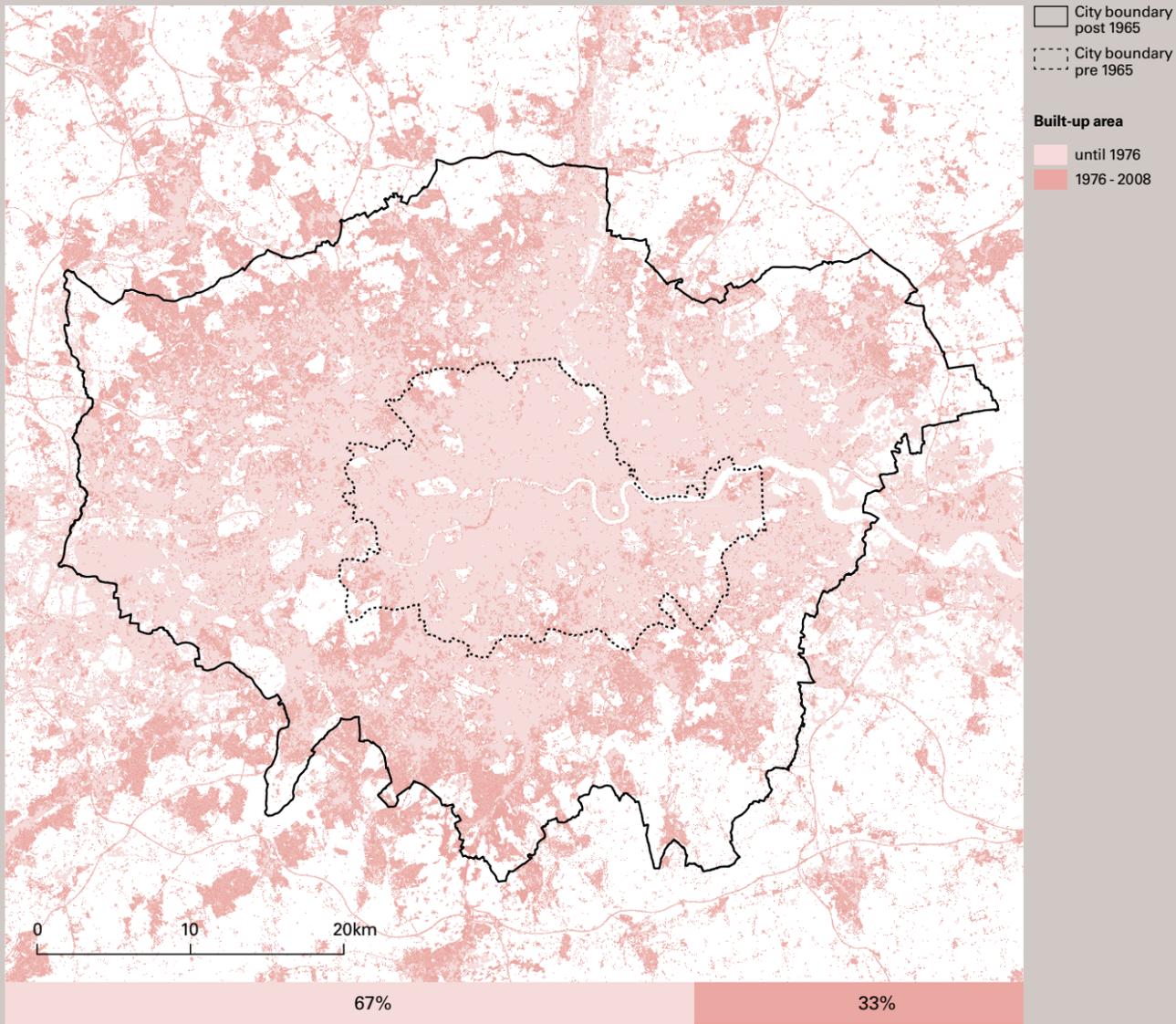
## DELHI



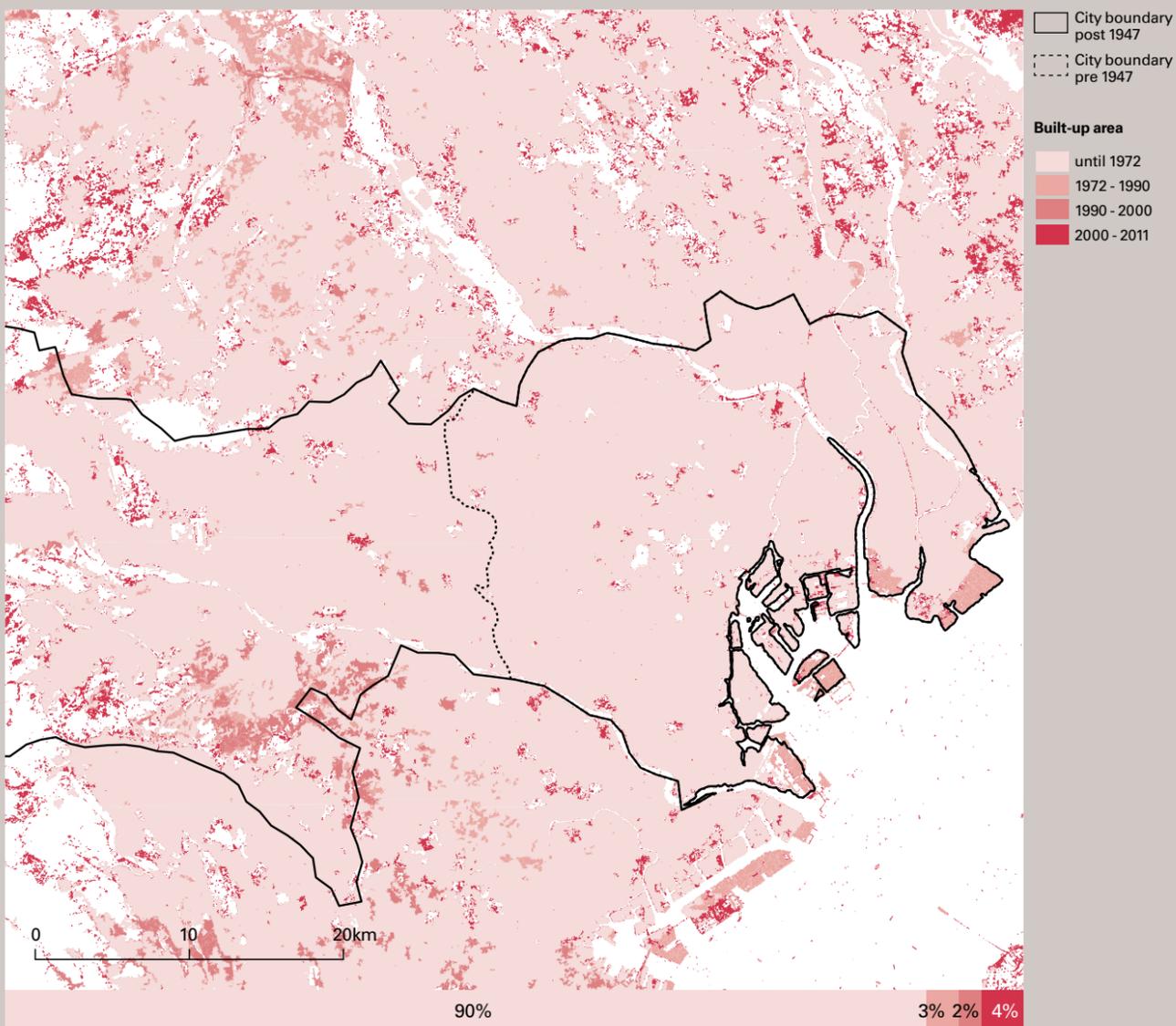
## BOGOTÁ



# LONDON



# TOKYO



Urban Growth maps based on data provided by DLR-DFD, as cited:  
Taubenböck H, Esch T, Felbier A, Wiesner M, Roth A & Dech S (2012): Monitoring of mega cities from space. In: Remote Sensing of Environment, vol. 117, pp. 162-176.  
Esch T, Taubenböck H, Roth A, Heldens W, Felbier A, Thiel M, Schmidt M, Müller A & Dech S (2012): TanDEM-X mission: New perspectives for the inventory and monitoring of global settlement patterns. Journal of Selected Topics in Applied Earth Observation & Remote Sensing, vol 6, p.22.

City boundaries based on data provided by the Lincoln Institute of Land Policy and Vision of Britain (University of Portsmouth).

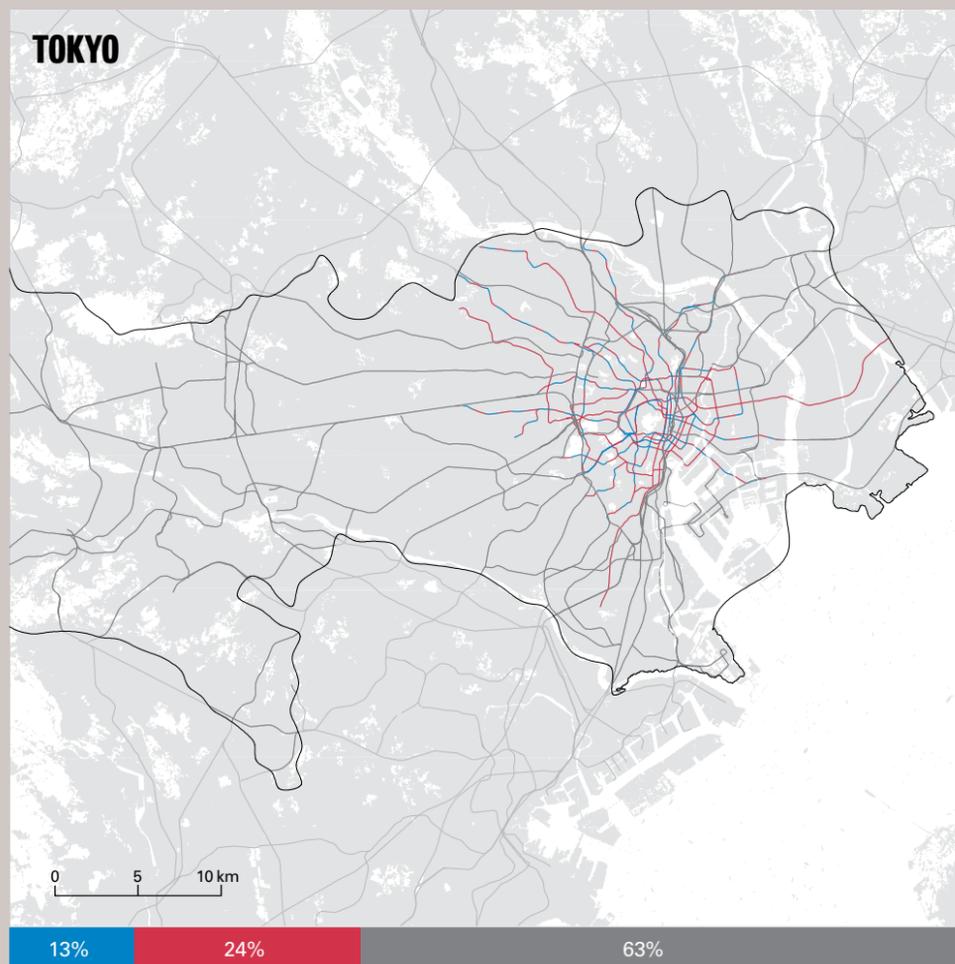
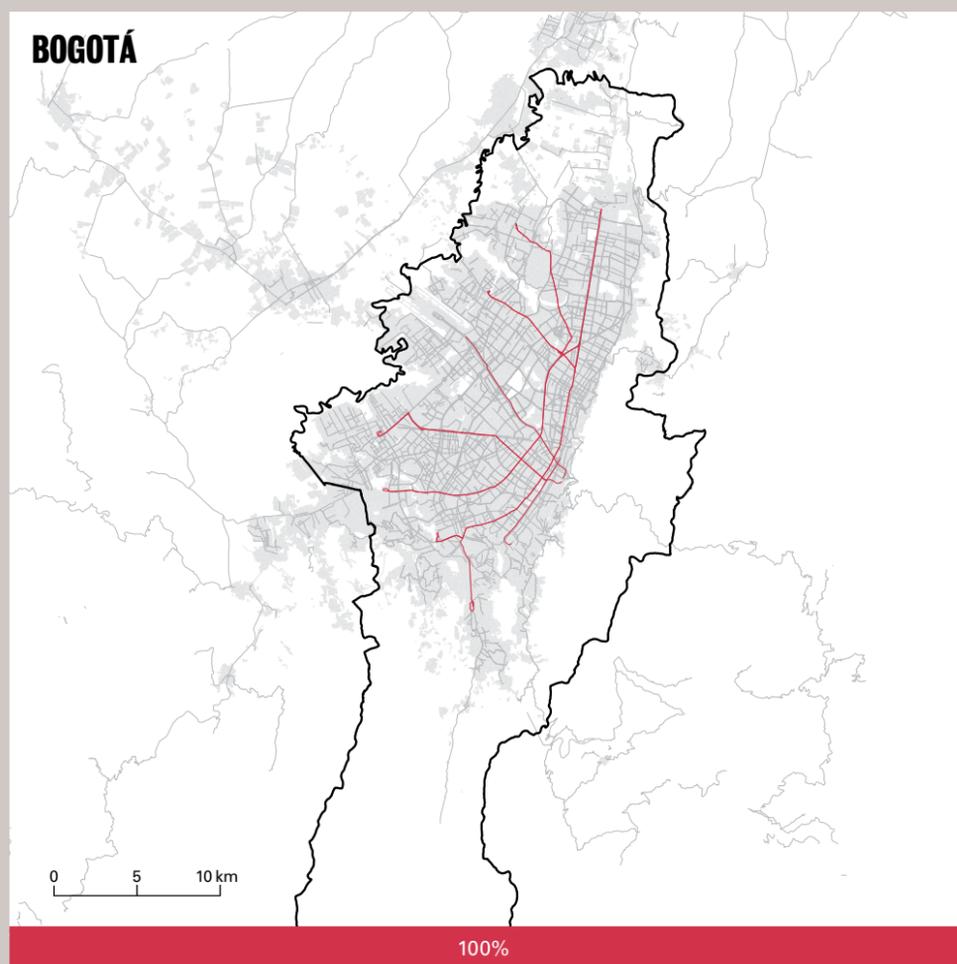
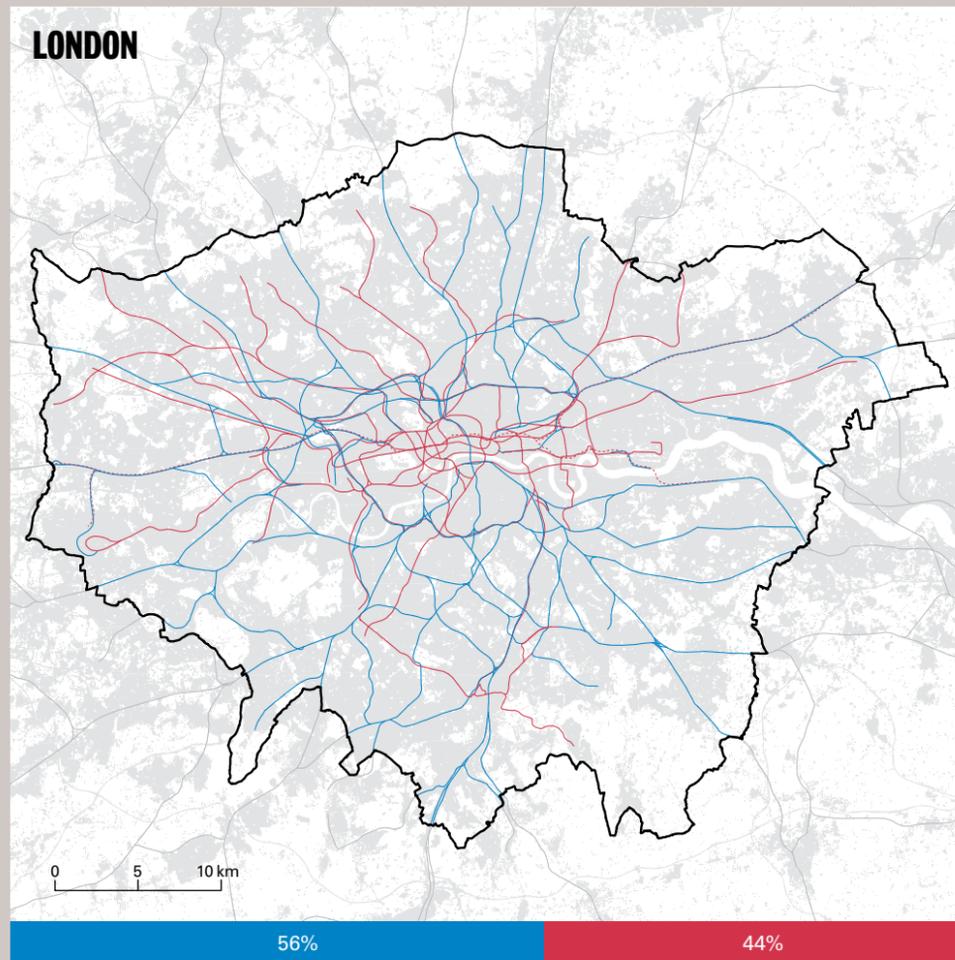
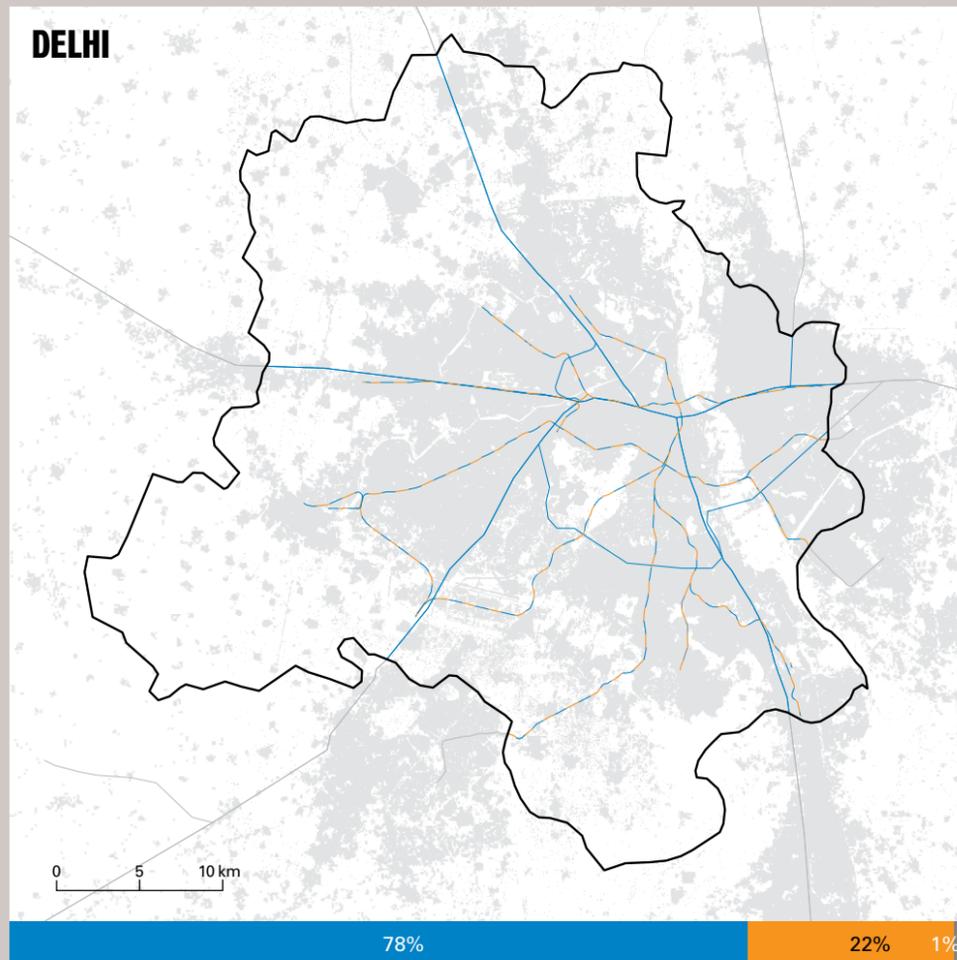
# MANAGING MOBILITY

LSE Cities research has consistently identified public transport as a key driver of urban economic, environmental and social performance. The four case studies of Delhi, Bogotá, London and Tokyo, have pioneered innovations in transport in the last few decades, from Tokyo's highly integrated transport system to Delhi's new Metro, London's Congestion Charge, Boris Bikes and CrossRail to Bogotá's

Bus Rapid Transit (BRT) and ciclovías. The colours of routes on the maps identify which level of government – national, state, city, local and shared responsibility – owns and manages different parts of the network. The bar charts indicate the percentage of the type of city transport infrastructure managed by each government level. In London, there is a separation between ownership and

operations – with some private companies managing buses and trains – while the public sector (mayor and boroughs) still maintains the strategic and managerial power over the base infrastructure. Delhi's BRT route (50% private sector funded) and Tokyo's rail privatisation (representing 63% of the transport infrastructure) confirm the growing importance of private sector investment in public

## RAIL AND BUS RAPID TRANSIT (BRT) INFRASTRUCTURE



■ National level    
 ■ State level    
 ■ City level    
 ■ Private sector    
  Outside boundary / data unavailable    
  Shared responsibility

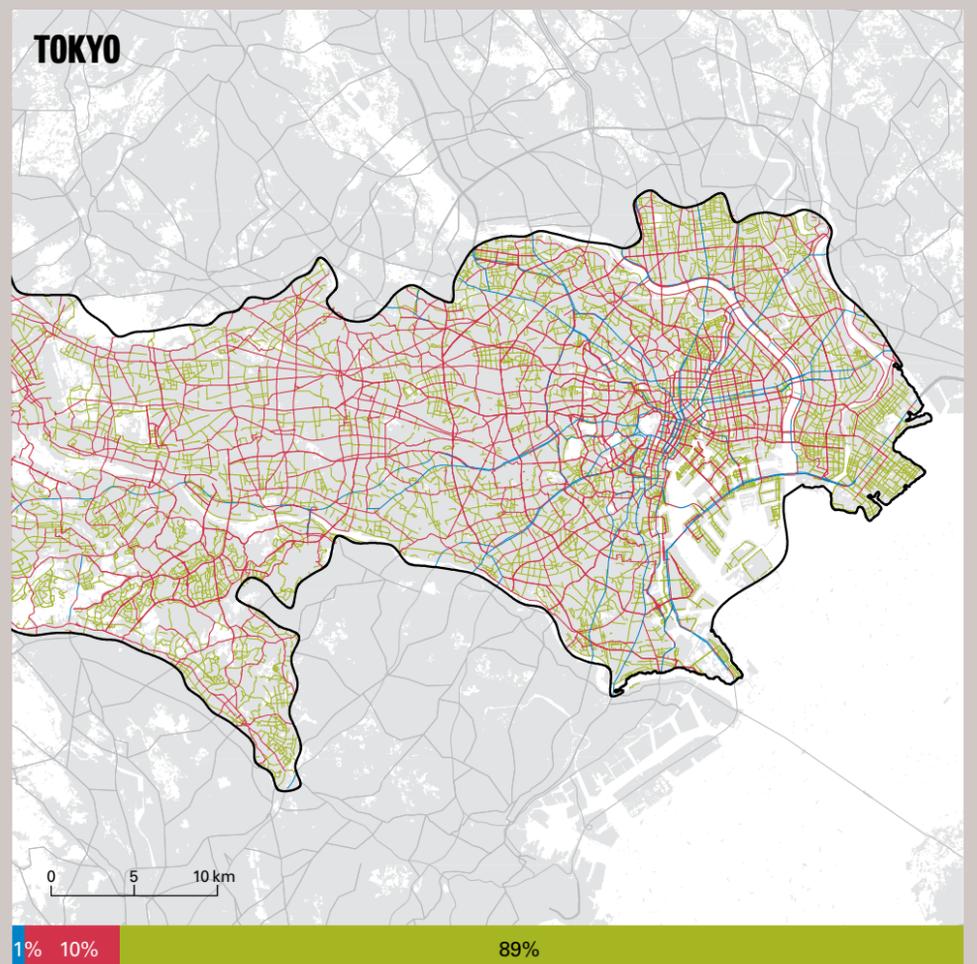
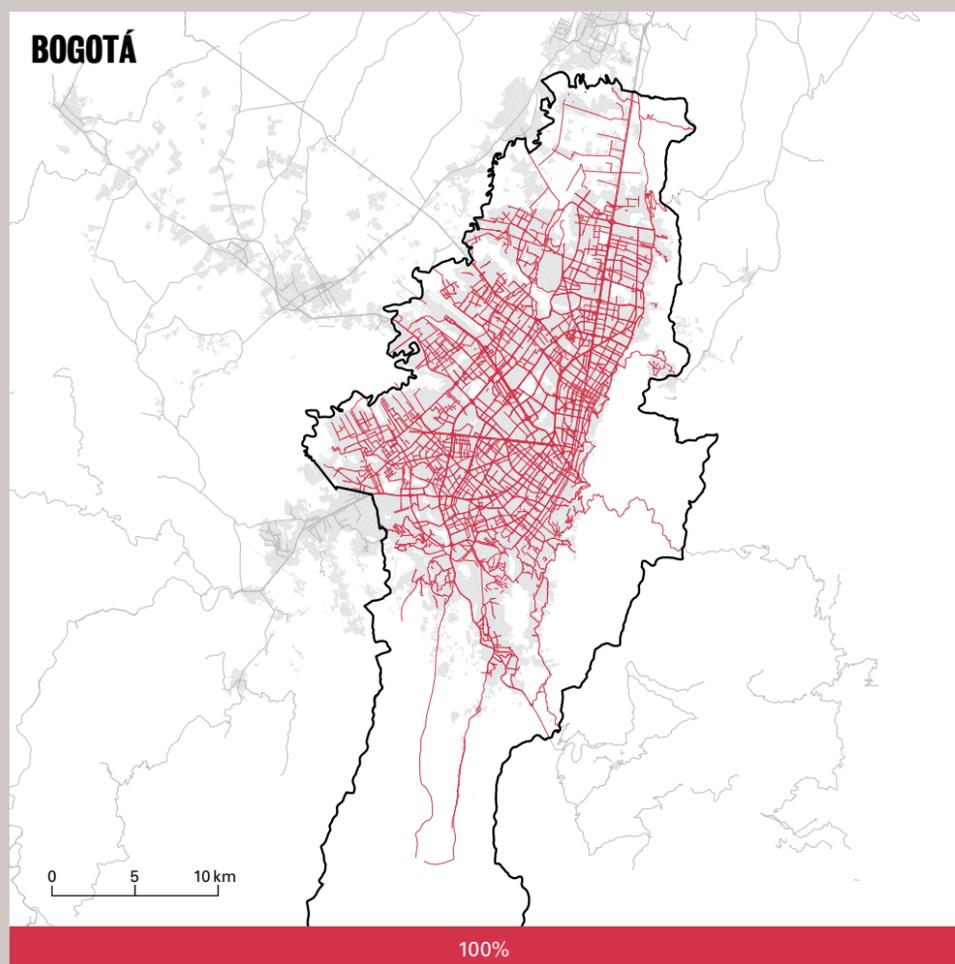
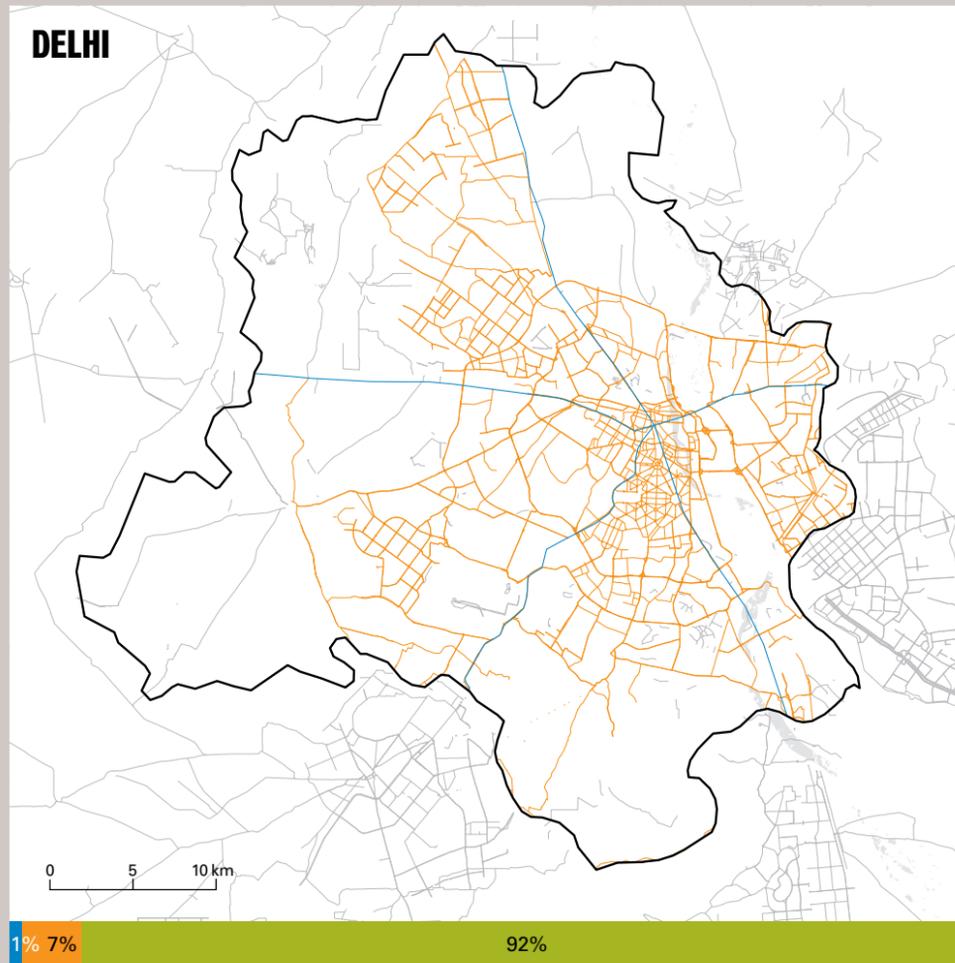
transport infrastructure. Although national governments traditionally control and fund the management of rail-based public transport, this research confirms that they play a less significant role than the sub-city level when it comes to roads. In London, local boroughs manage 90% of roads, while the Mayor (through Transport for London) controls the major arteries which carry 30% of the city's

traffic. Local boards control 89% of the roads in Tokyo. Infrastructure management at the level of the municipality represents an advantage in terms of the exercise of democracy and responsiveness to citizens, but economic growth and the availability of resources will struggle to keep pace of the requirements of urban populations. As a result, support from the private sector or national

government will become even more significant to the sustainability of urban transport systems in the future.

These maps do not display every road within the metropolitan area, in some cases to improve legibility and in others due to the unavailability of data.

## KEY ROADS

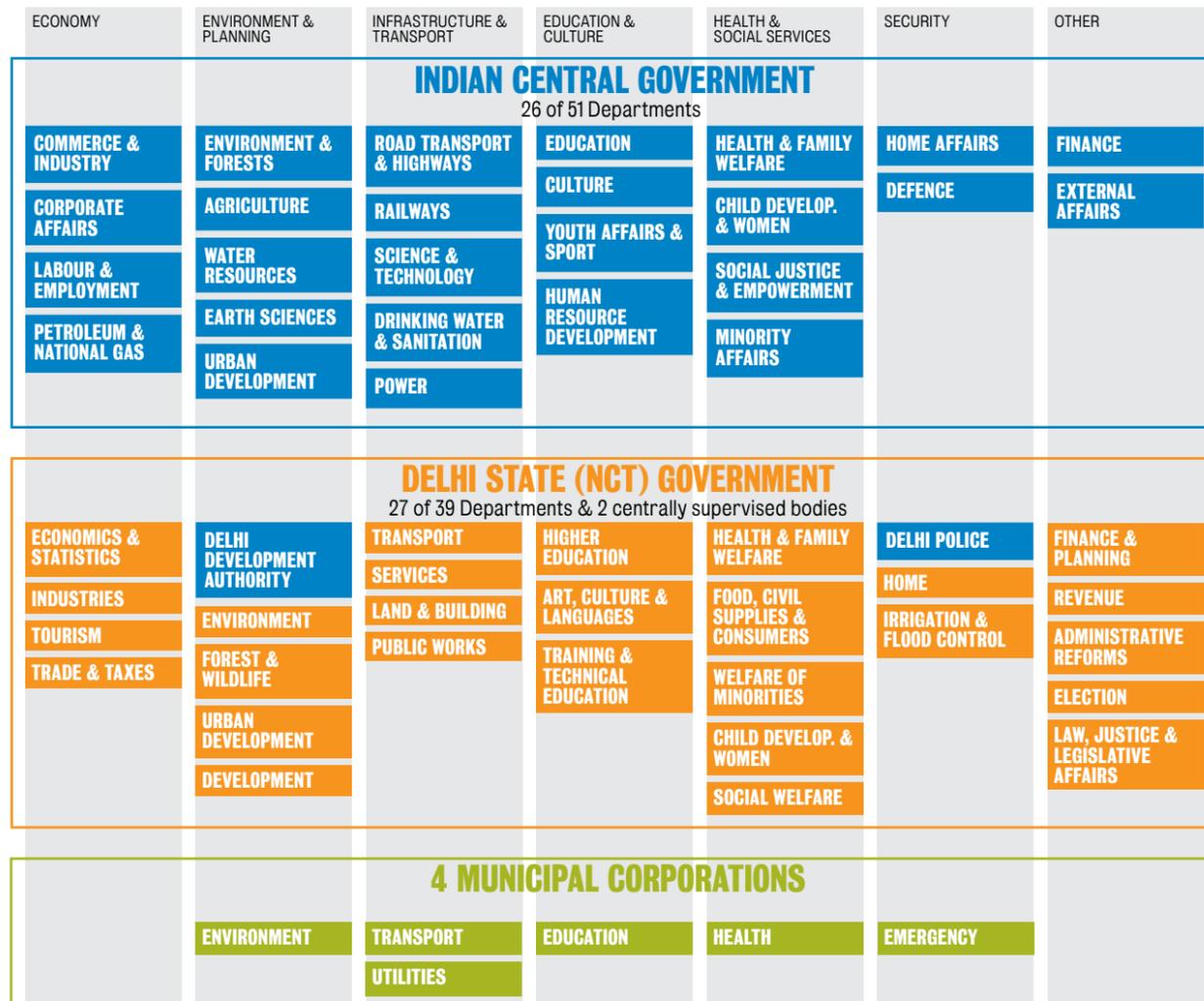


■ National level   
 ■ State level   
 ■ City level   
 ■ Private sector   
 ■ Sub-city government   
   Outside boundary / data unavailable   
   Shared responsibility

# GOVERNANCE STRUCTURES

## DELHI

### GOVERNANCE STRUCTURE

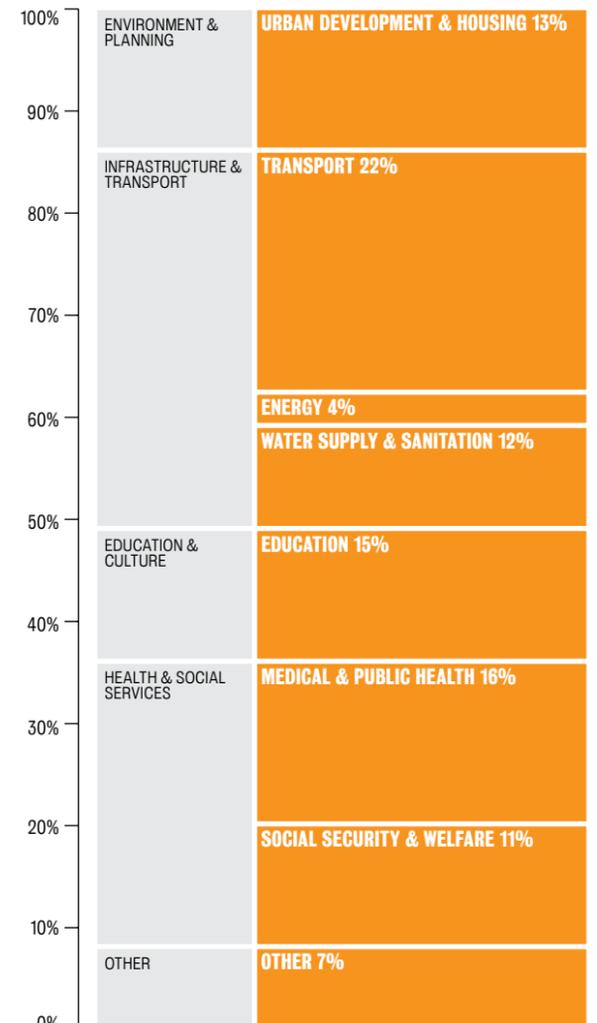


### Multi-level governance

■ National level
 ■ State level
 ■ Sub-city level

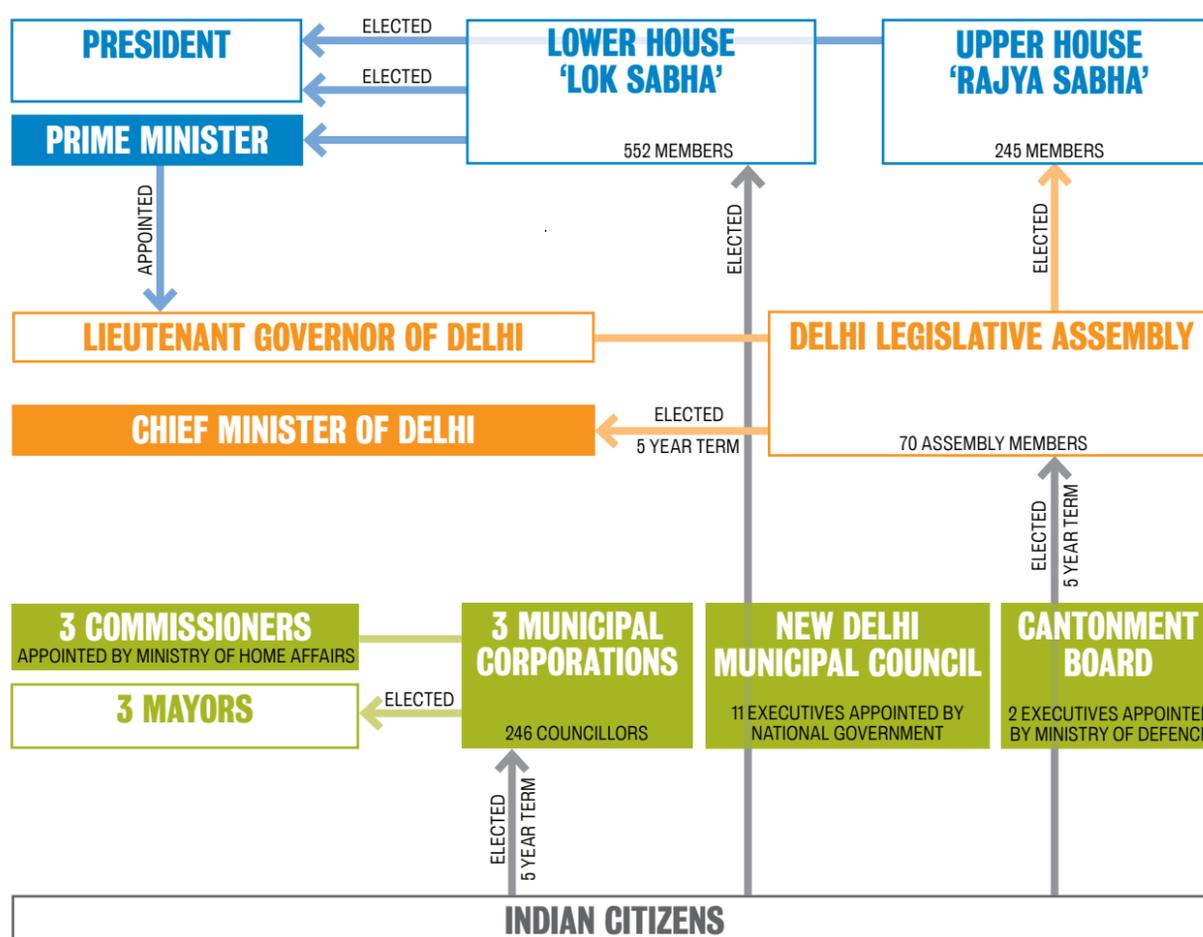
### DELHI STATE EXPENDITURE

2014-2015



### POLITICAL REPRESENTATION

■ Executive
 ■ Legislative



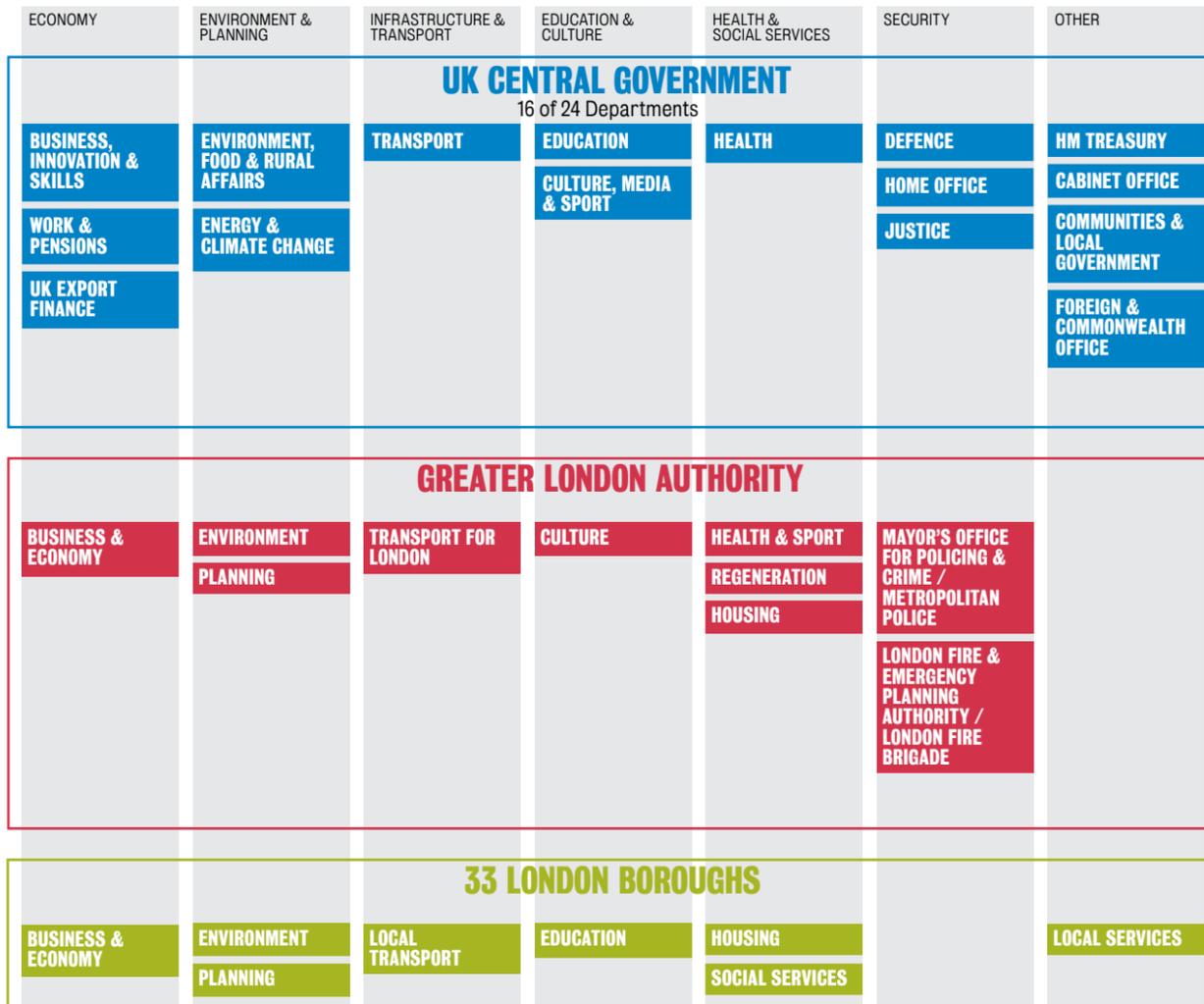
### ADMINISTRATIVE BOUNDARY



The National Capital Territory (NCT) of Delhi is one of India's 29 states, with a population of 16.6 million. Its powers are closely dependent on the Indian national government. At the state level, powerful bodies like the Delhi Development Authority and the Delhi Police are centrally supervised. Executive power is exerted through the Chief Minister of Delhi, who is elected by 70 members of the Delhi Legislative Assembly. The central government appoints the Lieutenant Governor. At the local level, there are 11 districts administered through four Municipal Corporations and, partly, by the Delhi Cantonment Board. The executives within these institutions are appointed by national ministries. In 2012, a change in legislation saw the Delhi Municipal Corporation split into three separate corporations: the East, South and North Delhi Corporations, each with their own commissioner and mayor. 22% of the NCT's budget is allocated to public transport and 13% to urban development and housing.

# LONDON

## GOVERNANCE STRUCTURE

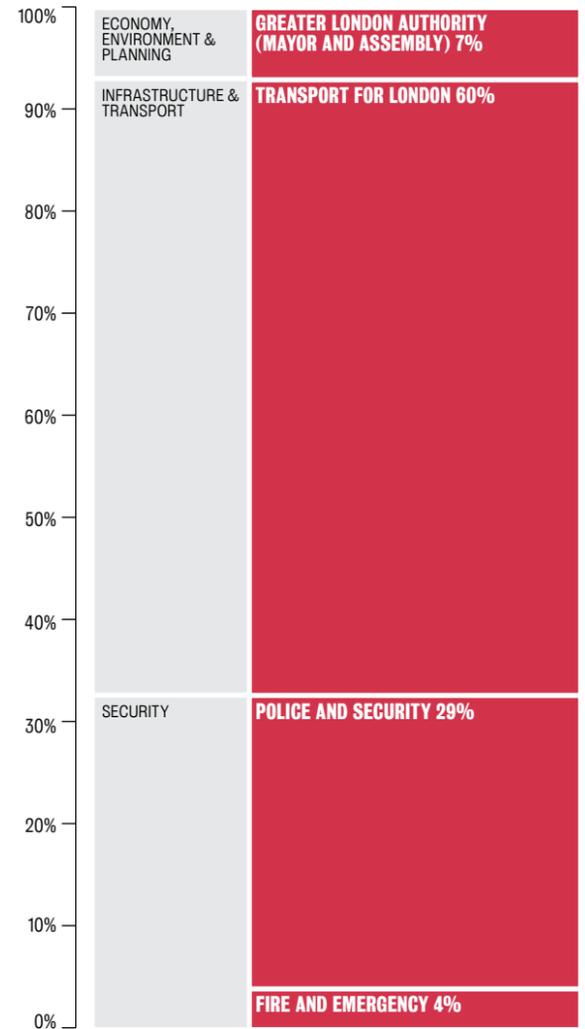


## Multi-Level Governance

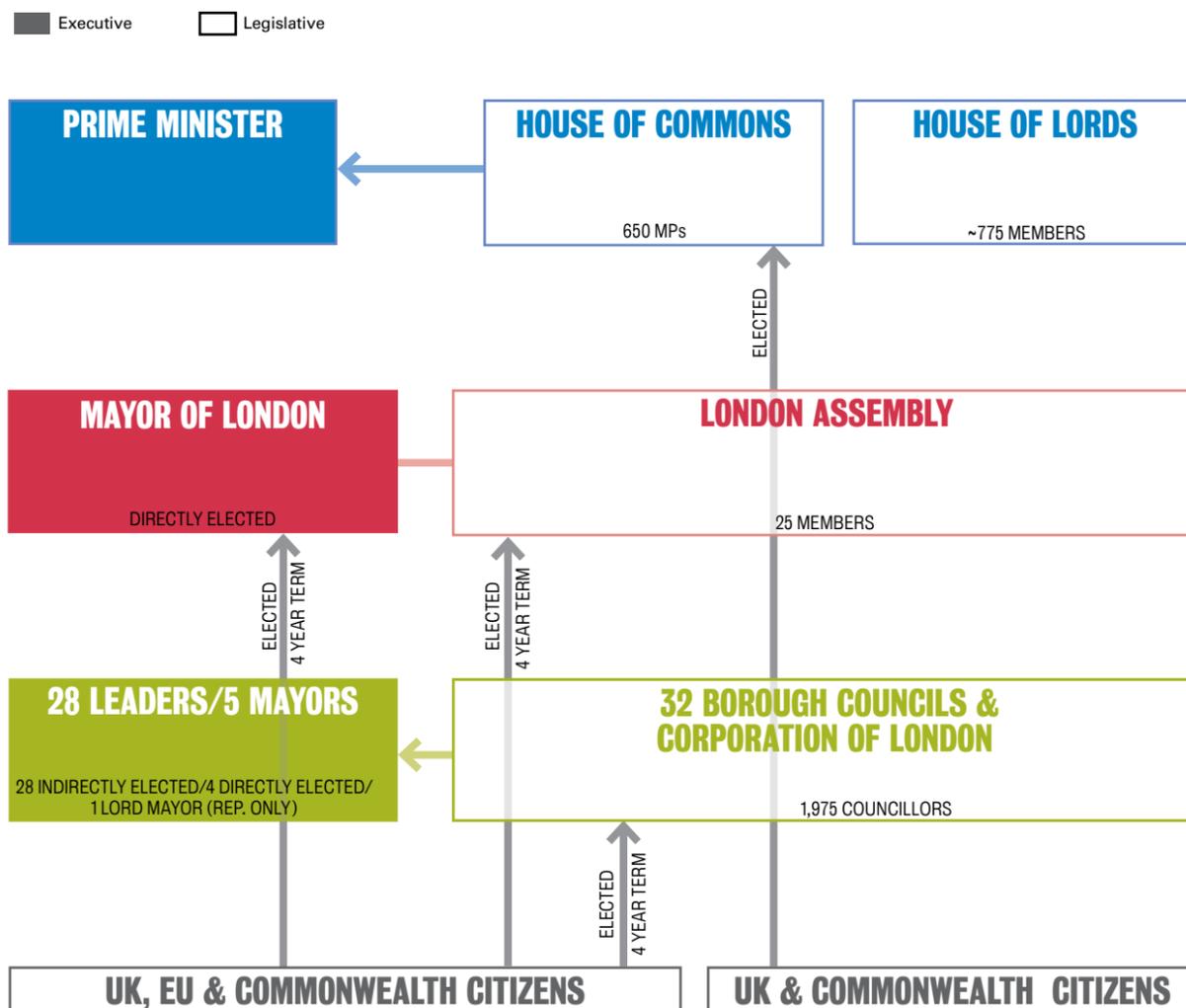
■ National level
 ■ City level
 ■ Sub-city level

## GREATER LONDON EXPENDITURE

2014-2015



## POLITICAL REPRESENTATION



## ADMINISTRATIVE BOUNDARY

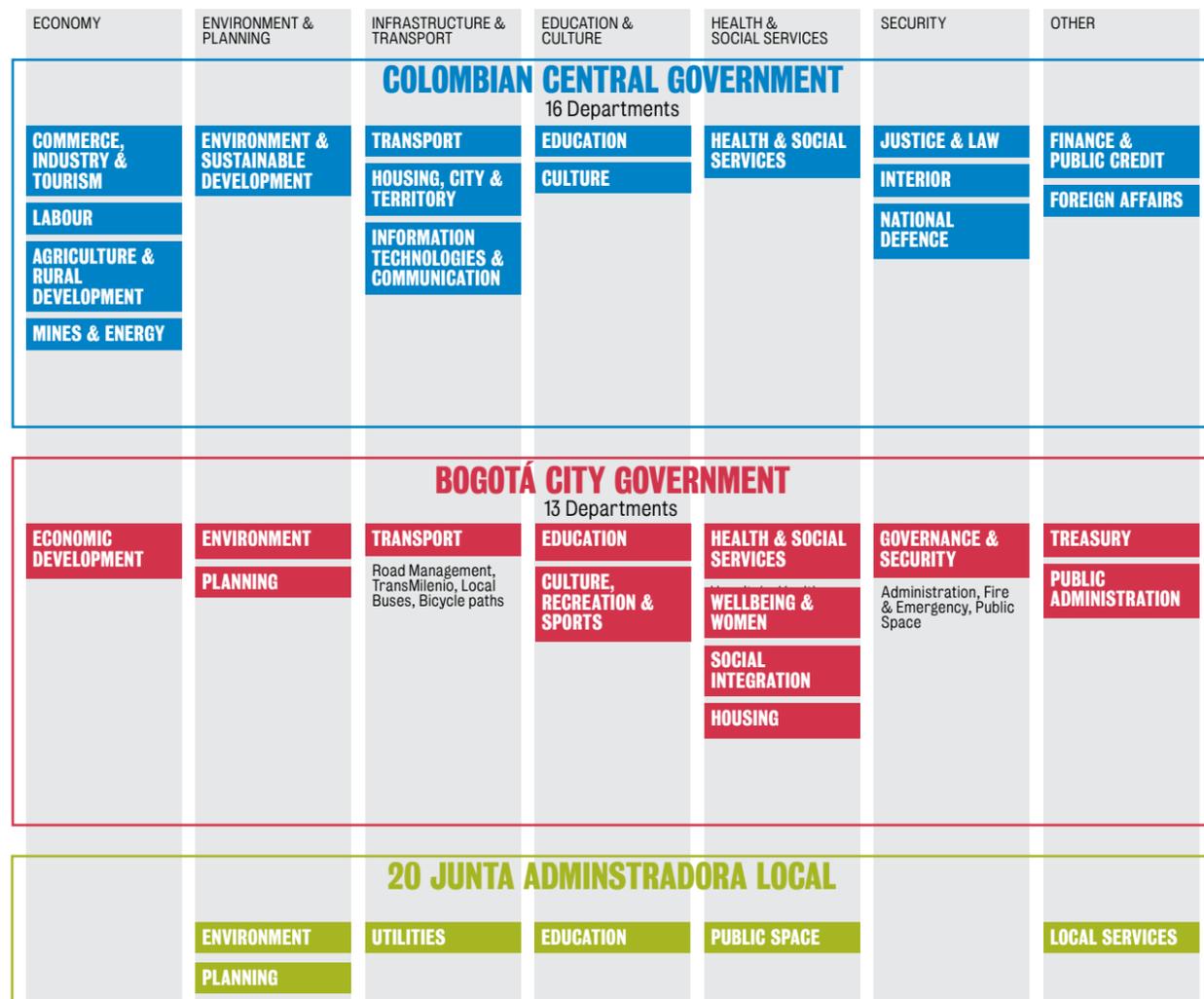


Since 2000, the eight million residents of London have been governed by a directly elected mayor and the Greater London Authority. The mayor sets the strategic framework for all of London's 33 boroughs (including the Corporation of London) and has executive powers over a number of city-wide areas including transport (the mayor chairs Transport for London), policing, fire and emergency services, inward investment and, to a degree, regeneration and housing. Other areas like education and health are controlled by central or local government. Unlike other nations, there is no state or regional level of governance in the UK. The mayor has the largest electorate in the UK, and one of the largest in Europe, with 5.8 million voters entitled to take part in elections every four years. The 25 directly elected members of the London Assembly have the responsibility of scrutinising the Mayor's Office. Local boroughs, made up roughly 200,000-300,000 residents, are responsible for most other services including schools, social services planning, environment and waste collection. 28 of the 33 borough leaders are indirectly elected through the borough councils, with four borough-level mayors directly elected. The lion's share of the GLA budget is spent on transport (60%), with nearly one-third on police and security.

# GOVERNANCE STRUCTURES

## BOGOTÁ

### GOVERNANCE STRUCTURE

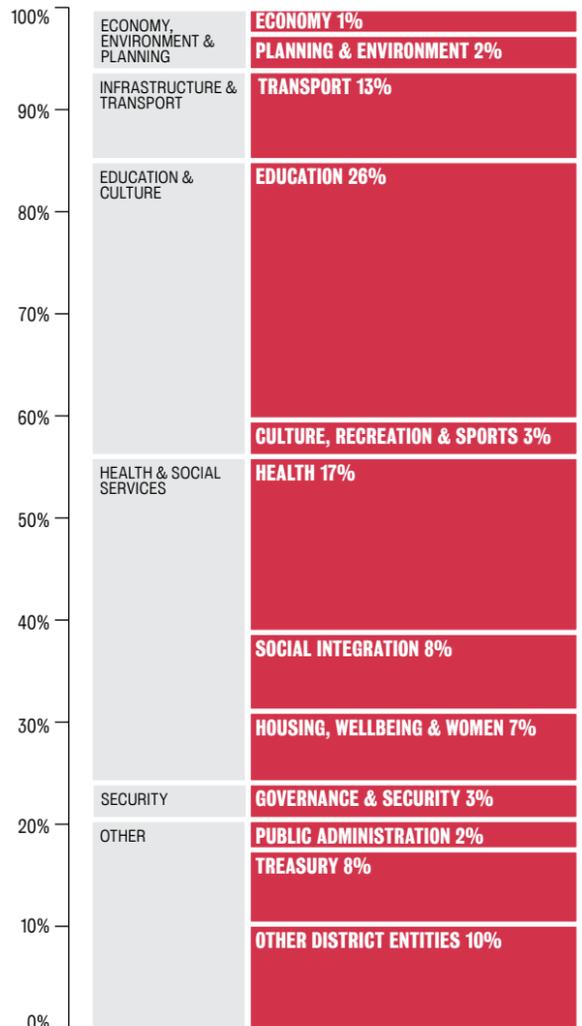


### Multi-Level Governance

■ National level
 ■ City level
 ■ Sub-city level

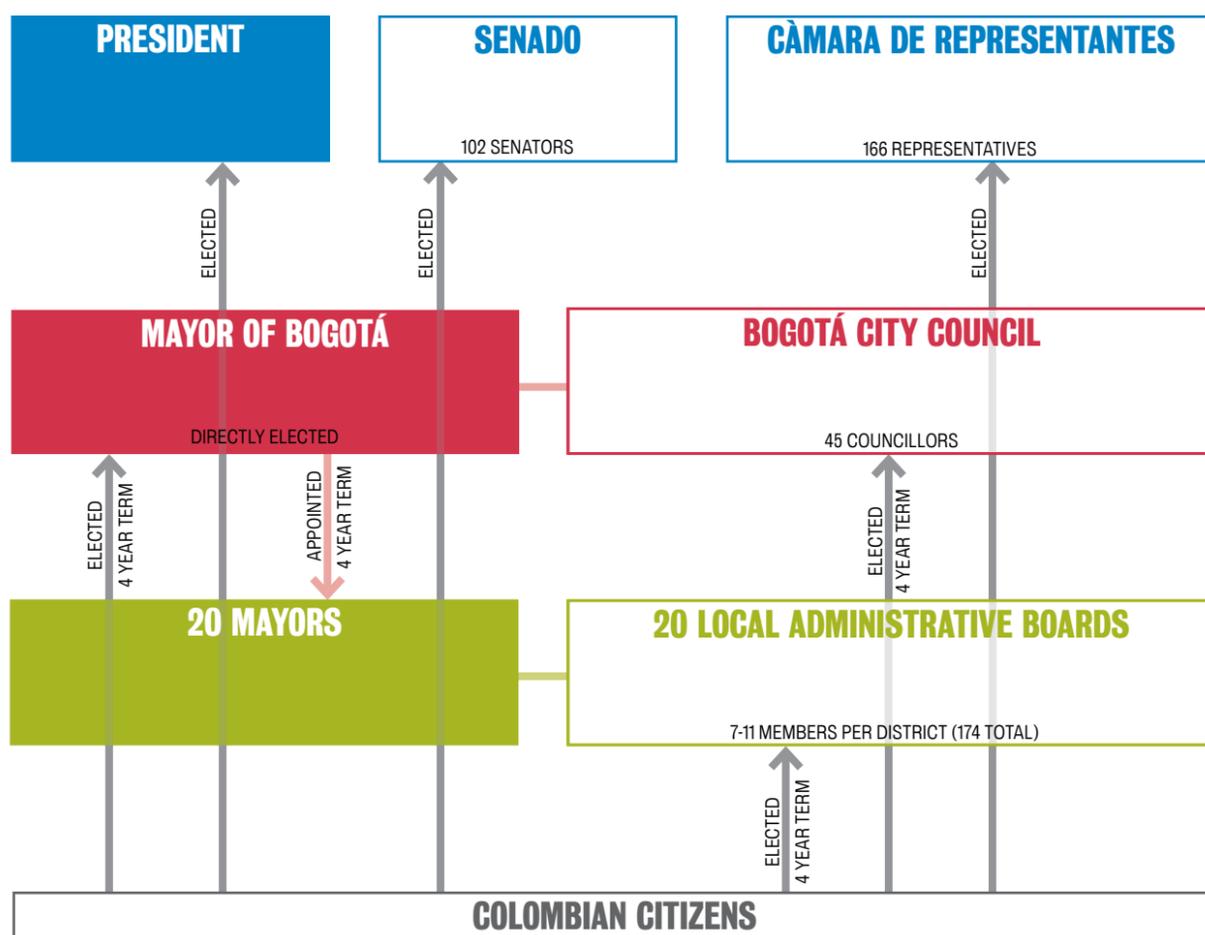
### BOGOTÁ EXPENDITURE

2012-2013

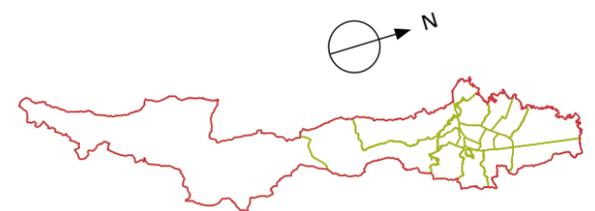


### POLITICAL REPRESENTATION

■ Executive
 ■ Legislative



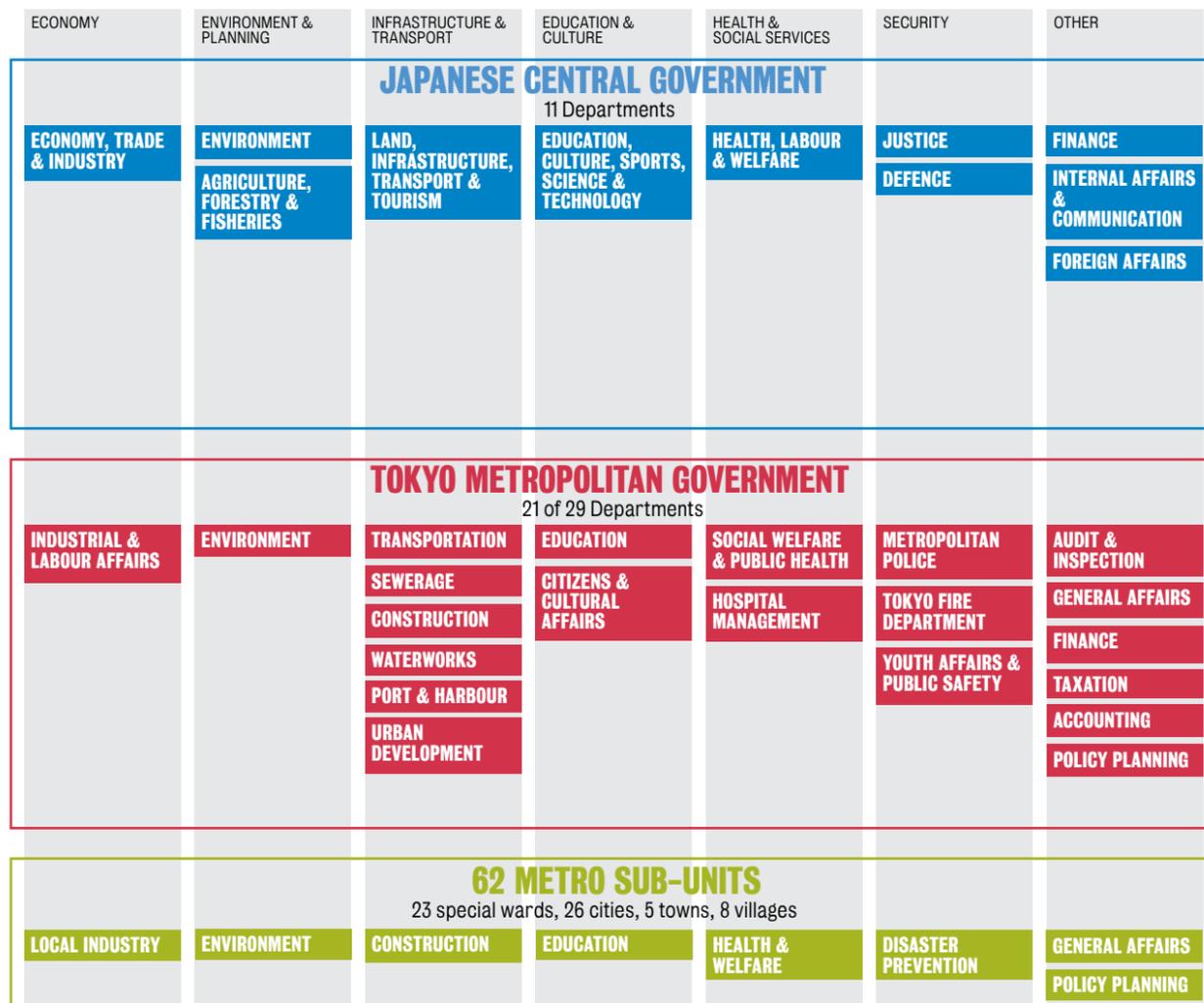
### ADMINISTRATIVE BOUNDARY



The City of Bogotá is the capital of Colombia with a population of over seven million people. It is governed by a directly elected mayor, who cannot hold office for more than one four-year term consecutively. While the city formally lies within the Department of Cundinamarca, it is administered independently from the rest of the state and has a degree of autonomy, with 45 directly elected councillors on the Bogotá City Council. Like the UK and unlike India, the power of the regional state is not dominant in city governance structures. The mayor of Bogotá has relatively strong powers across many different sectors including education, health and transport, while the 20 local administrative boards, each made up of 7-11 members, have relatively few responsibilities compared to local boroughs in other cities. The mayor's and City Council's direct influence over transport, health, environmental and educational policies account for the city's ability to implement a series of successful innovations, including the Transmilenio Bus Rapid Transit system, the ciclovía network of cycle ways, and the provision of high-quality schools and libraries near the city's most deprived communities. 26% of the city budget is allocated to education, with 17% on health and 13% on transport.

# TOKYO

## GOVERNANCE STRUCTURE

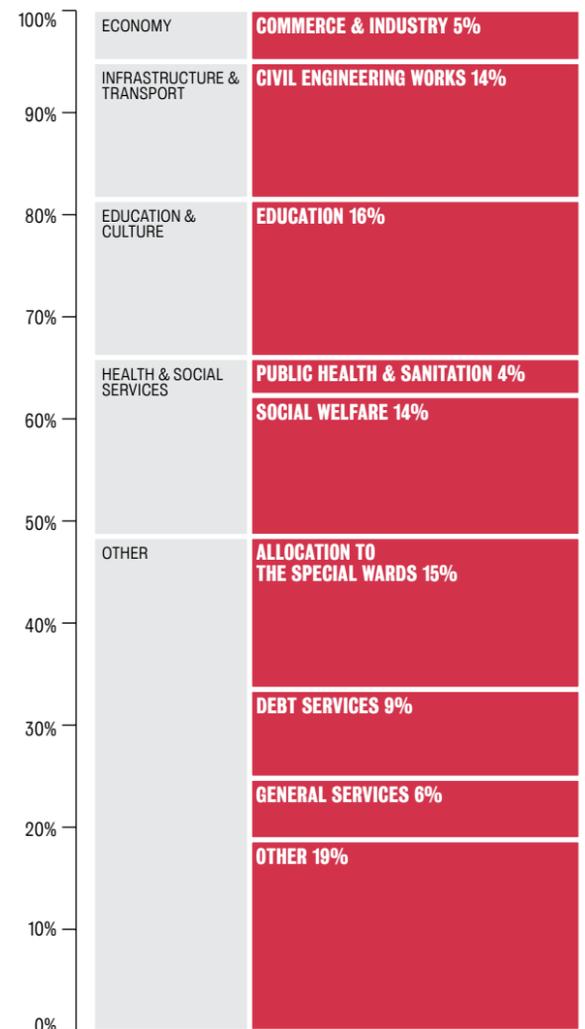


## Multi-Level Governance

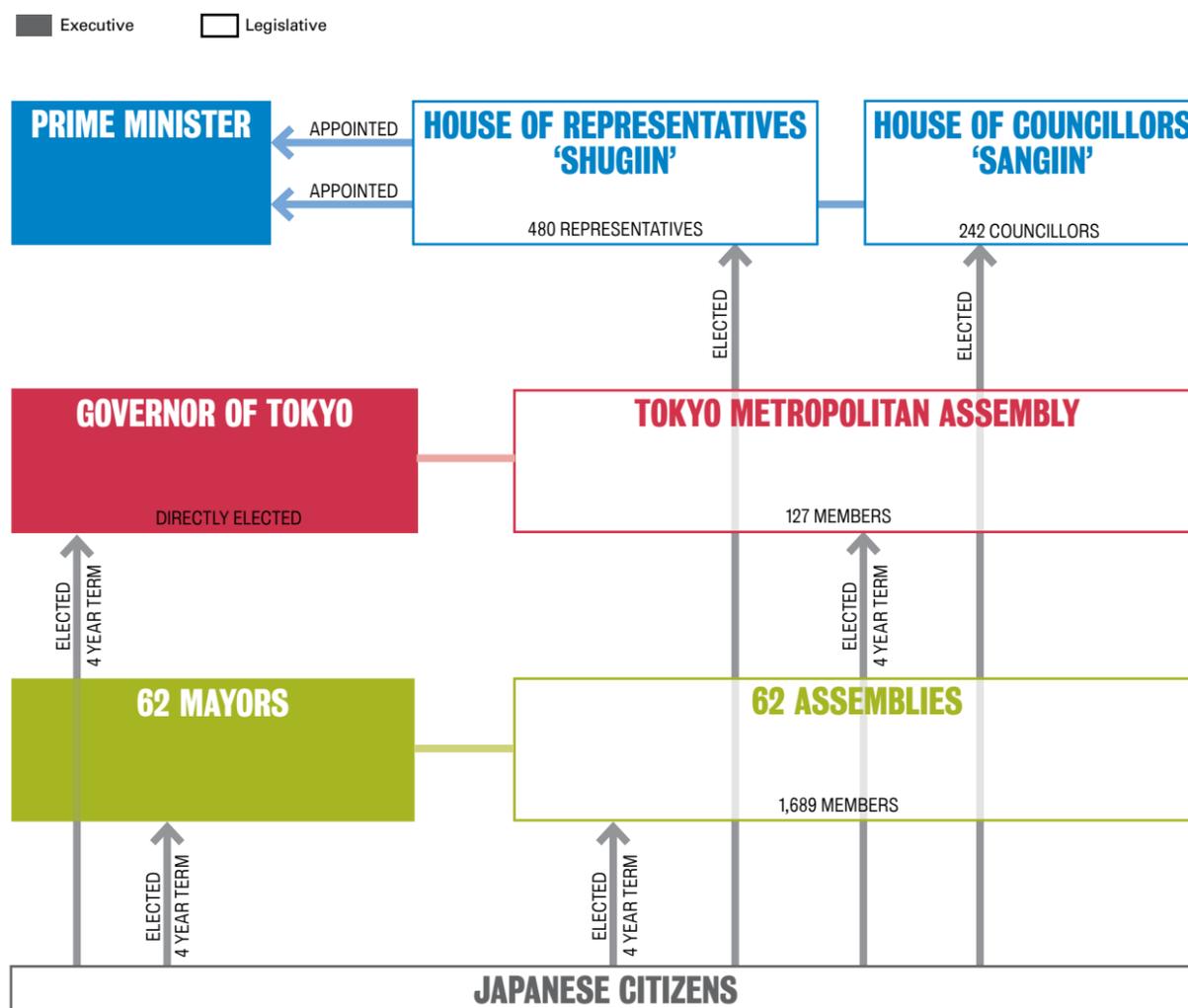
■ National level
 ■ City level
 ■ Sub-city level

## METROPOLITAN TOKYO EXPENDITURE

2012



## POLITICAL REPRESENTATION



## ADMINISTRATIVE BOUNDARY



Tokyo is largest urban agglomeration in the world with a population of 38 million people. It is the capital of Japan (and one of its 47 prefectures) and has 13.2 million residents. Despite its size, it has developed an articulated metropolitan governance system that responds to its specific economic, environmental and social challenges, with one of the most sophisticated and efficient integrated public transport systems in the world. Given the size and economic weight of the greater Tokyo area, the directly elected Governor of Tokyo is the second most powerful figure in Japan after the Prime Minister, with an electorate of 9.6 million residents. 127 members of the Tokyo Metropolitan Assembly are directly elected. The Tokyo Metropolitan Government (TMG) administers a total of 62 municipalities which include 23 special wards, 26 cities, five towns and eight villages. Each of these 62 units has a directly elected mayor and assembly who serve office for four years. While the TMG handles broader administrative works, local municipalities are responsible for local services such as education, health and welfare. The 23 special high-density wards are home to major business activities, with different needs from the other municipalities in the prefecture. While 16% of the TMG budget goes to education, 14% to civil engineering and 14% to social welfare, it is interesting to note that 15% is allocated to special ward initiatives.

# MEASURING DENSITY

Density is a fundamental measure of urban structure and determines the efficiency of its urban footprint. On these pages, the number of people living in a square kilometre – the ‘ambient population density’ over 24 hours – is represented for the four case study cities. Across an area of 100x100 kilometres, the diagrams illustrate this density of ‘occupation’ in any part of the city over a 24 hour period. They combine a range of socio-economic data – residential location, places of employment, journeys to work – to capture the key spatial dimensions of urban economic life.

The taller spikes in the diagrams represent higher numbers of people concentrated in particular locations – dense residential areas, central business districts, event spaces, shopping streets etc. Flatter zones suggest more residential neighbourhoods of a suburban or low-density nature.

Higher densities can facilitate more sustainable public transport, walking and cycling, making it more efficient to provide services and promote urban vitality. These advantages depend, however, on high-quality urban design and effective city management to minimise the negative impacts of overcrowding, stress and pollution.

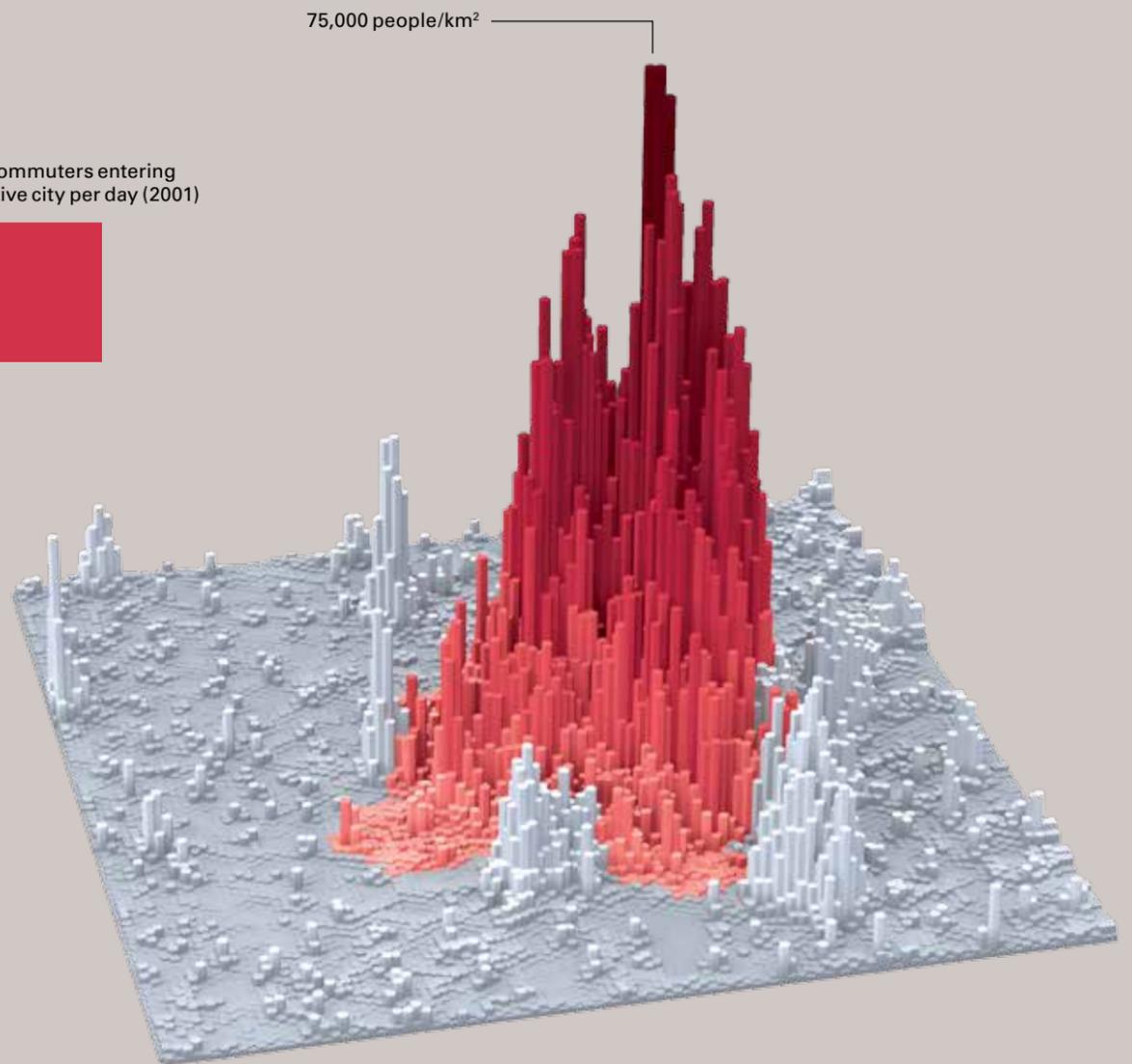
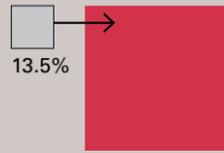
While some cities have maintained resident population levels in their central areas, others are losing population from these zones as their boundaries expand. This poses a challenge to cities, as they depend on residents’ taxes to finance urban facilities and infrastructure.

At the same time, most cities have a high percentage of people entering to work each day who do not pay taxes there and often are not represented by the city government as they cannot vote locally. Studying commuters is therefore fundamental to the governance of cities. Tokyo has the equivalent of 20% of its population entering the administrative city every day, while Delhi has 13.5% and Bogotá and London in the order of 9%.

Density differs widely within the four case study cities. Delhi and Bogotá have higher and more concentrated densities in the city core and outskirts while Tokyo and London present lower and more balanced distribution of densities.

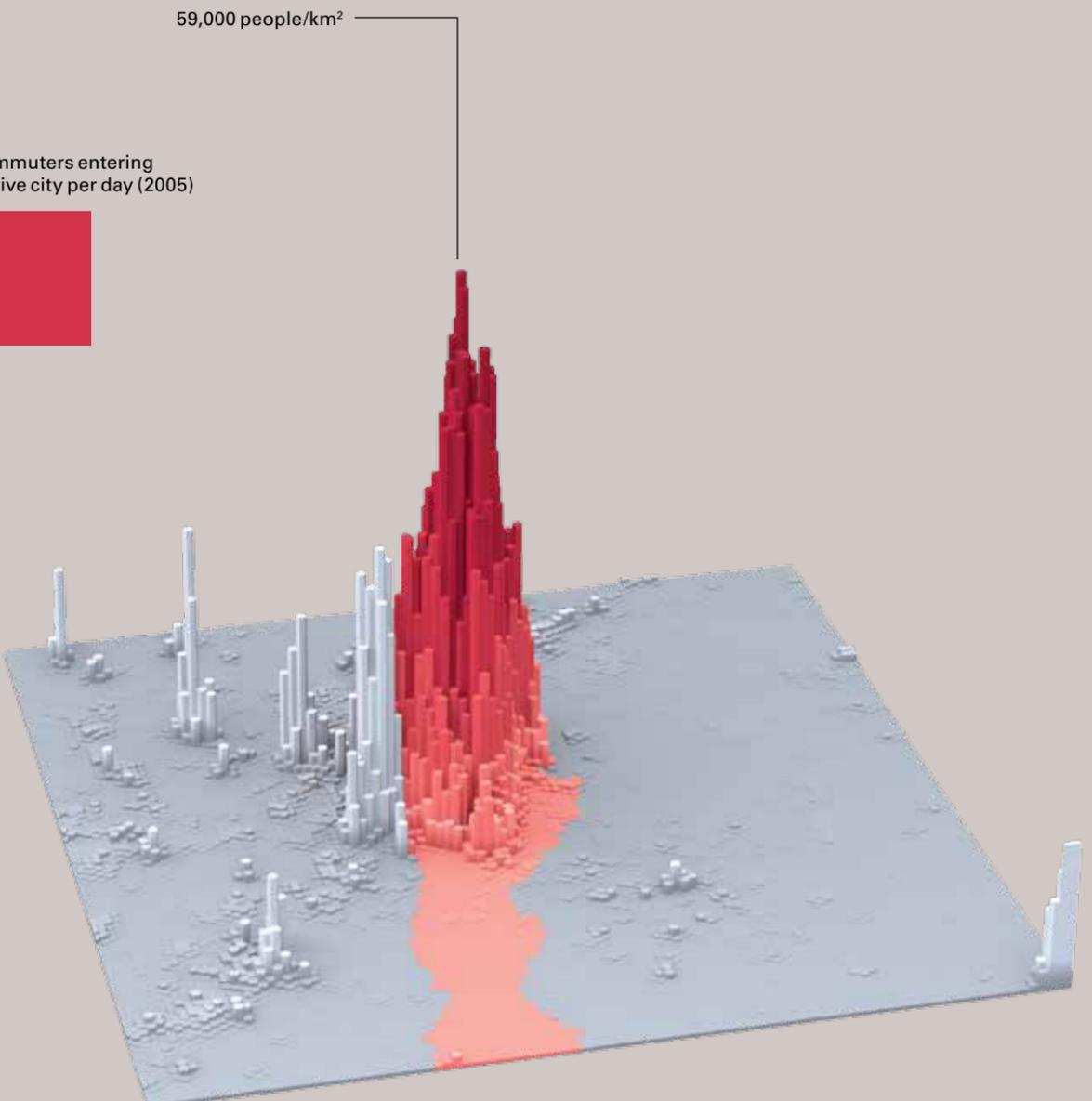
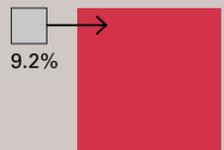
## DELHI

1,865,000 commuters entering administrative city per day (2001)



## BOGOTÁ

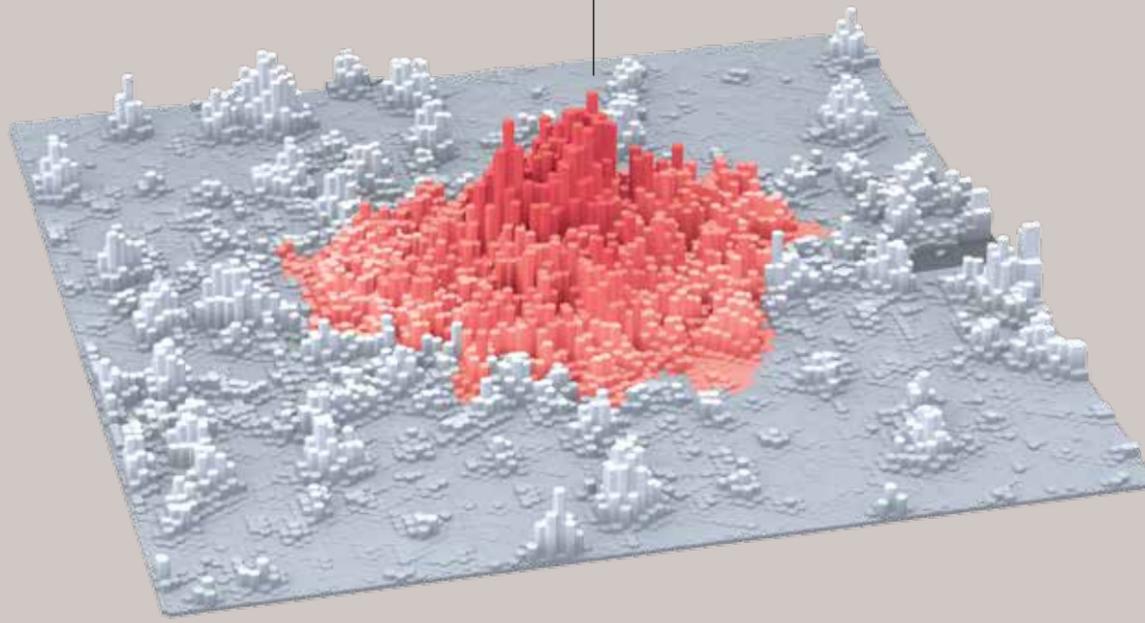
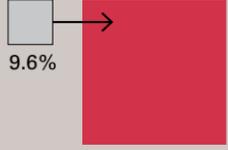
625,000 commuters entering administrative city per day (2005)



# LONDON

21,000 people/km<sup>2</sup>

722,000 commuters entering administrative city per day (2007)



# TOKYO

33,000 people/km<sup>2</sup>

2,530,000 commuters entering administrative city per day (2010)

