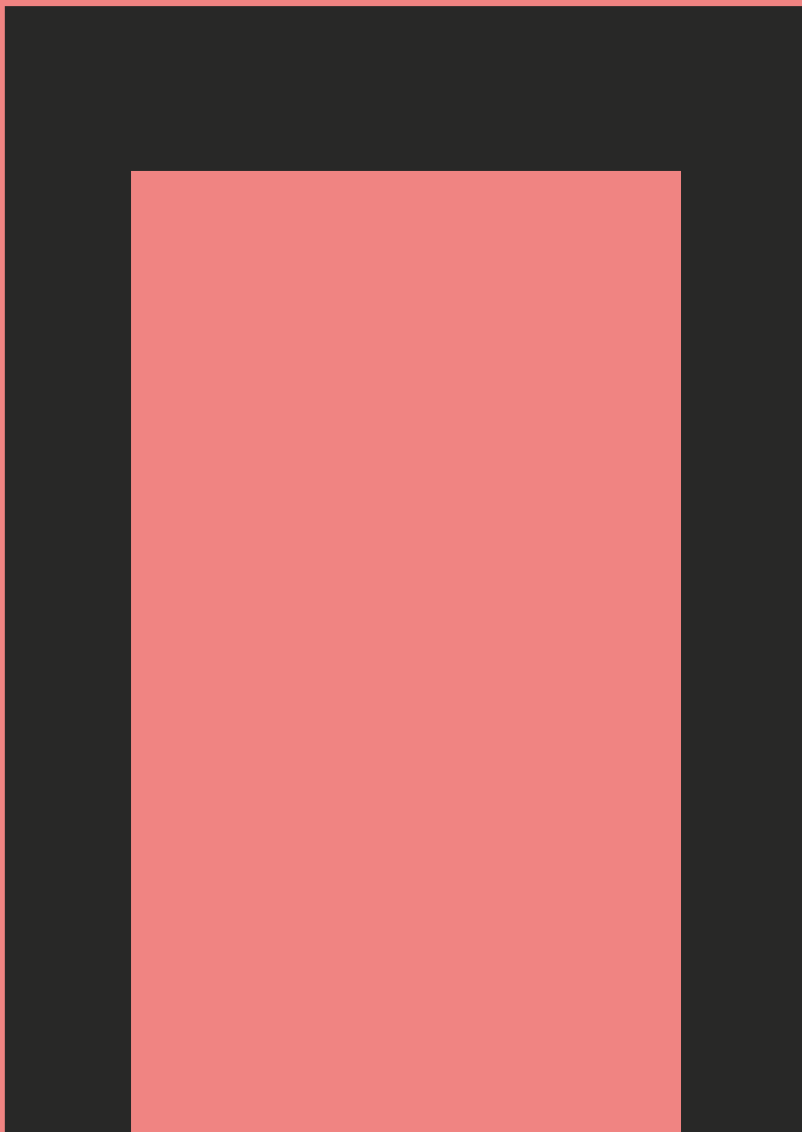
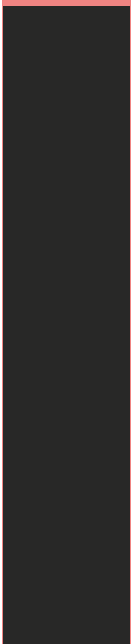




**asian**

**metropolitan  
report**



# contents



—————→	<b>foreword</b>	p. 3
—————→	<b>executive summary</b>	p. 5
—————→	<b>overview</b>	p. 9
—————→	<b>background of Asian metropolisation</b>	p. 10
—————→	<b>analysis of metropolitan indicators in Asia</b>	p. 19
	context and governance	p. 20
	economic development	p. 32
	social cohesion	p. 43
	environmental sustainability	p. 53
	quality of life	p. 64
—————→	<b>conclusions</b>	p. 72
—————→	<b>appendices</b>	p. 76
	bibliography	p. 77
	metropolitan indicators	p. 80
	acknowledgments	p. 90



# foreword



**Since its launch in 2016, the Metropolis Observatory has been providing frameworks to build metropolitan approaches to urban governance. The project is structured into a collection of issue papers (so far with twelve editions published), which cover various trends of urban life through metropolitan perspectives, and into a system of metropolitan indicators, which compare objective data about metropolitan spaces around the world.**

The current 38 metropolitan indicators result from pioneering comparative research on 71 metropolitan spaces (where 82 Metropolis members operate) and unleash new empirical insights, comparable across jurisdictions, about metropolitan realities across the world. Grouped into the categories that make up the Metropolis vision (governance, economic development, social cohesion, gender equality, sustainability, and quality of life), the indicators were researched between 2018 and 2019 by the team of LSE-Cities, and since June 2019 can be freely accessed online.

Considering the diverse cultural realities and situations that exist in different regions of the world, and understanding that global comparisons, although valid for overall benchmarking, may generate some distortions, we decided to build on the data provided by the system of metropolitan indicators and publish specialised reports analysing the trends of each major continent separately. In November 2019, the first issue of the series, the African Metropolitan Report, was published, seizing the occasion of the last UCLG Congress, held in Durban. After more than a year of pandemic, we are finally pleased to publish this second edition, dedicated to the Asian continent, which will be released at the 13th Metropolis World Congress, hosted by Guangzhou, from 8 to 11 November 2021.

We are aware that within each world region there is a plethora of different realities, but in the case of Asia, Earth's largest and most populous continent, we must also be aware of the heterogeneity between its sub-regions. The analysis of indicators brought by the Asian Metropolitan Report, carefully drafted by a team of Asian academic experts, shows that East and North-East Asia, South-East Asia, South and South-West Asia, and Western Asia could actually be four different continents.

This report also invites us to reflect on the unprecedented speed of urbanisation in Asia during the past decades. Very rapidly, small towns have evolved into megacities, and new forms of metropolitan cities are emerging, in processes that placed national and local leaders in front of a series of new challenges in terms of needs, investments, and governance.

More recently, the COVID-19 pandemic exacerbated such challenges, bringing to Asian metropolitan spaces contexts of worsened income inequality, inadequate government capacity, scarcity of resources to deliver public services, and lack of clarity around the institutional setup that could enable improved service delivery. On each count, the pressures from COVID-19 have had adverse impacts because of several channels of affects, mainly spending cuts and loss of revenue regarding subnational governments.

I hope that the Asian Metropolitan Report brings to light some of the most pressing debates regarding the current and future state of metropolitan spaces in Asia, and that its findings help decision-makers and practitioners in the Asia region to explore innovative, sustainable, and inclusive solutions to metropolisation phenomena.

→  
**Octavi de la Varga**  
Metropolis Secretary General  
September 2021



# executive summary



**The Asian Metropolitan Report discusses the results of the analysis of 38 metropolitan indicators from 28 metropolitan spaces. Launched by Metropolis in June 2019, these metropolitan indicators currently cover 71 metropolitan spaces across the world, including 28 located in Asia.**

The preparation of this report is based on the analysis of 38 metropolitan indicators from 28 metropolitan spaces in Asia. Other relevant data was sourced from the United Nations' World Urbanization Prospects 2018, and the European Union, Global Human Settlement Layer Urban Centre Database (GHS-UCDB). Further, this research was complemented by information on metropolitan spaces in Asia available from academic papers, book chapters and the publications of multilateral agencies such as United Cities and Local Governments (UCLG), the United Nations, the Asian Development Bank, the World Bank, and the Organisation for Economic Co-operation and Development (OECD).

This report is structured into six sections. After the executive summary, the first section presents an overview of metropolitan spaces in Asia. Second section provides the background of metropolisation in Asia. Section three builds on the analysis of the 38 metropolitan indicators, which are divided into six categories: (1) context and governance, (2) economic development, (3) social cohesion, (4) environmental sustainability, and (5) quality of life. In order to mainstream gender equality into the research process, the analysis of this separate category ('gender equality') of metropolitan indicators has been incorporated into that of the five aforementioned categories. The results of the analysis are illustrated through **40 figures** including maps and graphs. Section three also discusses the findings of the analysis, providing relevant examples, including those based on case studies from the Metropolis membership. Section four summarises the key findings and provides concluding remarks on a few important challenges faced by metropolitan spaces in Asia. The last section on appendices compiles other information relevant to the report.

## context and governance

Asian cities have been growing at a faster pace compared to those around the world. The region's urban population, which was 246 million in 1950, grew by 859.19 percent between 1950 and 2020. Asia's urban population is estimated to grow to 3.48 billion by 2050.<sup>1</sup> In other words, between 2020 and 2050, an additional 1.12 billion people will be added to Asian cities and towns. Asian metropolises are some of the most densely populated large cities in the world; in 2020, out of 312 metropolitan cities in Asia, 89 had a **population density** of over 10 000 persons per sq. km.<sup>2</sup> The high metropolitan population densities indicate that urban policy makers and city planners in Asia have attempted to tackle several urban challenges together including the scarcity of land for urban development and expansion, limited availability of public funds for investment in infrastructure and services, and ever-increasing cost of housing construction.

Although declining gradually, the urban growth rates in Asia have been continuously higher than that for the world since 1950, and pose major challenges of metropolitan coordination, planning, management and governance. The average population of the 28 metropolitan spaces in Asia is 8.81 million which is 2.6 million higher than the global average (6.21 million). Delhi, with a population of 30.29 million, is the largest member of Metropolis in Asia; it is followed by Shanghai (27.05 million) and Beijing (20.46 million) that rank at second and third positions. Given the politico-historical background of the various countries in Asia, national governments use three types of approaches for governing their metropolitan spaces and city-regions that include autonomous urban authorities, mixed systems of regional governance, and unified metropolitan government.<sup>3</sup>

<sup>1</sup> UN-DESA, Population Division (2018).

<sup>2</sup> Ibid.

<sup>3</sup> UN-HABITAT & UN-ESCAP (2010), p.223-225.

The quality of urban governance depends on a variety of factors. That Asian metropolises feature a higher degree of **metropolitan coordination** compared to the international average underlines their efforts in this direction. Similarly, Metropolis' member spaces in Asia stand atop in regard to the **national prominence** indicator compared to their counterparts in other regions. However, Metropolis' members in Asia have the lowest **fiscal autonomy** compared to those around the world. Similarly, in regard to the **share of elected women** in metropolitan governments, Asia has recorded the lowest score among the world's major regions. Across the major developing regions in the world, Asia ranked first on **total budget per capita**, with the regional average figure of US\$ 1 073.

In recent decades, Asia has witnessed the emergence of three major types of metropolitan spatial configurations: mega urban regions, urban corridors and city-regions. These urban regions dominate the economic geography at sub-national as well as national levels. Together, these new spatial configurations pose metropolitan governance challenges: addressing lack of coordination requires conceiving the development of city and regions together; proper urban-regional planning requires dispersing specific urban functions (such as infrastructure and services) within a contiguous region; and tackling horizontal fiscal disparities requires transferring fiscal resources among urban governments in a region.<sup>4</sup>

---

<sup>4</sup> Gill & Kharas (2007), p.250.

---

## economic development

Widely recognized as engines of economic growth, Asian metropolitan spaces exhibit a wide range of **per capita GDP** levels, from US\$2 000 in sub-regions like South and South-West Asia to US\$20 000 per capita in East and North-East Asia which experienced sustained economic growth for multiple decades. Notwithstanding these vast differences, major cities like Bangkok are single-handed driving the entire national economy, whereas others, like Gaziantep, still only contribute marginally to the economic productivity growth of their countries.

In terms of **unemployment**, Asian cities on average fare much better than the global average, likely signalling the absorptive capacity of cities as they are able to create jobs for incoming migrants. Cities like New Delhi and Amman have served as well-known homes for migrants and refugees respectively, due in part to their thriving economic engines that create employment opportunities at scale. While large segments of Asian economies are in the **informal economy**, thus working conditions could be precarious, the extent of informality is inversely related to the state of economic development.

Given the youthful demographics of the continent, it is unsurprising that youth unemployment is a significant challenge, particularly in South and South-East Asia and parts of the Western Asia. The lack of education and mismatch between skills demanded by the market and supply via the labour force exacerbates these challenges. In Asian metropolitan spaces, the percentage of jobs linked to the primary sector is more than twice the global average, indicating that not all places have industrialized economies.

---

## social cohesion

In order to contribute toward prosperity, cities must provide strong social services and public services, so that all segments of society can feel included and become productive economic agents. Asian metropolitan cities attract migrant workers seeking better lives, but their overall degree of **income inequality**, with a Gini coefficient value of 0.37, although showing more equality than Africa and Latin America, is worse than that of industrialized economies of the western hemisphere. East and North-East Asia's inequality statistics, nevertheless, are at par with Europe and North America, due to their economic system's ability to create jobs, showcasing how other parts of Asia could achieve the same with inclusive institutions.

Evidently, Asian metropolitan spaces overall require greater investments in improving social services for the majority of residents, so urban environments can become more inclusive. Because of high population density, in metropolitan areas the underlying income inequalities become fully visible as low- and high-income residents live in closer proximity and can witness differences in quality of life and asset ownership. Although there is a positive correlation between income inequality and **murder rates** in metropolitan areas, there are indeed some exceptions, where relatively unequal cities have incredibly low murder rates, which are likely explained by strong community policing efforts.

## environmental sustainability

In order to improve environmental sustainability, metropolitan governments need to undertake a variety of actions including pollution control, reduction of CO<sub>2</sub> emissions, and the adequate and regular provision of urban infrastructure and services, such as green space, solid waste management, wastewater management, and renewable energy services. Compared to the World Health Organization's air quality guideline values, all Metropolis' 28 member spaces in Asia have an annual mean of fine particulate matter (PM<sub>2.5</sub>) above 10 µg/m<sup>3</sup>, which translates into **poor air quality**. However, they feature **CO<sub>2</sub> emissions** lower than the world's average, figures which could be explained by the fact that, among the world's regions, Asian metropolises had second lowest car ownership, at 15.9 cars per 100 inhabitants.

**Car ownership** and **waste generated per capita** reflect on the income-level of people; on these indicators, Metropolis' member spaces in Asia stand behind all regions except Africa. The metropolitan governments in Asia, struggle as those in Latin American and Caribbean and Africa, in the provision of **green space**. In regard to **wastewater collection coverage**, only Busan and Istanbul have their 100% citizens served. Delhi and Shanghai lead in **renewable energy use** amongst the Metropolis' 28 member spaces in Asia.

## quality of life

For urban residents, the expectation of a long and healthy life without the threat of violence embodies high quality of life. This is why **life expectancy** at birth is a powerful indicator that shows that Asian metropolitan areas' average of 74 years is only one year below the global average. But like other indicators, there are vast differences across this vast continent's various sub-regions, with East and North-East Asian metropolitan spaces leading the way with South and South-West Asia being the clear laggard. A large part of this is explained by differences in quality of healthcare services, where countries like South Korea have giant strides in recent years and results are evident in official statistics.

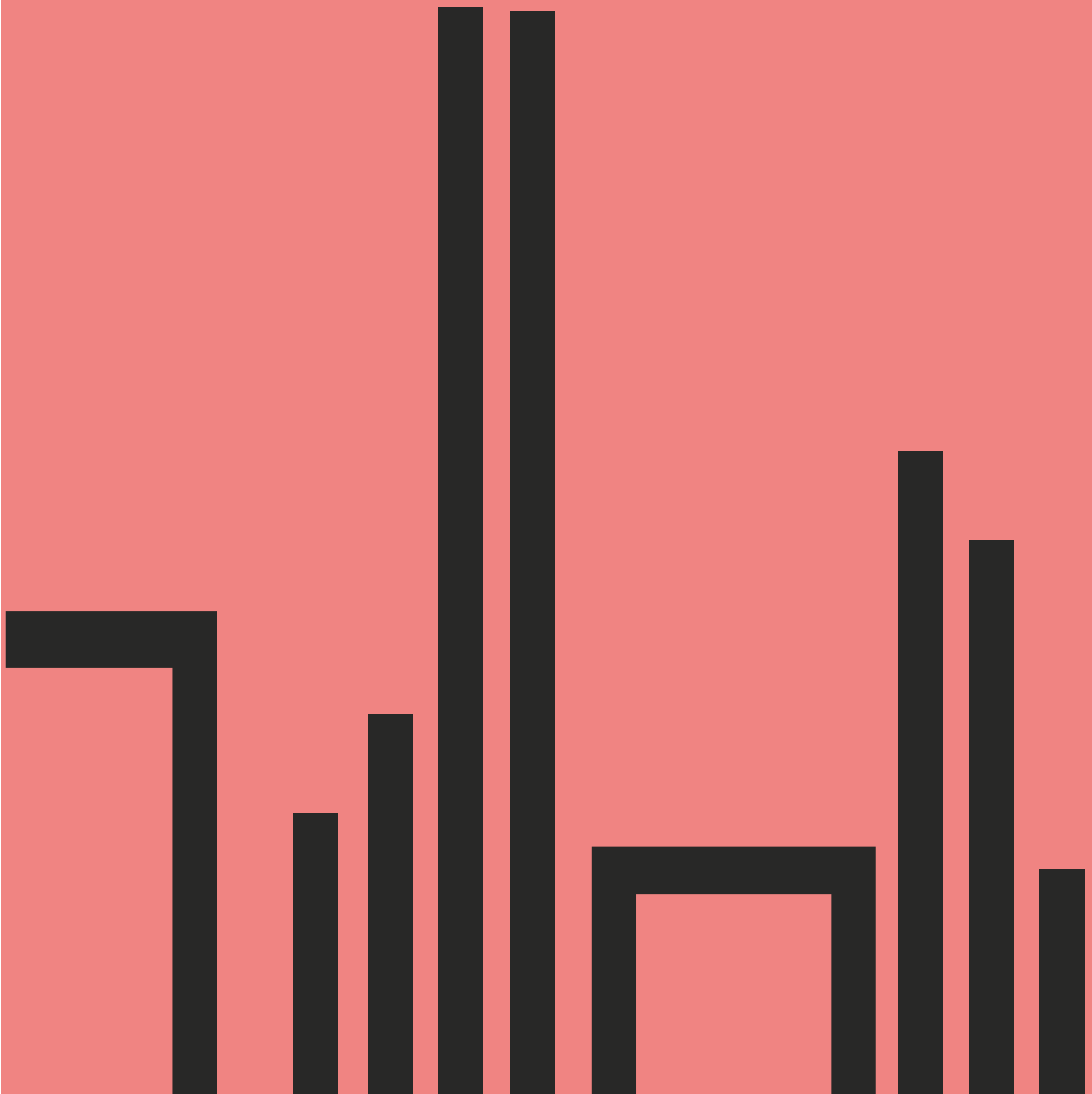
But since congestion, vehicular traffic and deteriorating air quality are all downsides of urbanisation, many Asian metropolitan spaces suffer disproportionately from the adverse impacts of air pollution. In South and South-West Asia for example, major cities like Lahore and New Delhi lose multiple days of air and ground transport every winter due to smog that generally engulfs vast swaths of land. But housing affordability is better than the global average, likely due to large per household sizes which reduces per capita costs. In terms of **access to public transport**, cities with historic central areas and appropriate population density supporting larger transport investments show better results.

During the COVID-19 pandemic, East and North-East Asian metropolitan cities' rapid response including lockdowns, testing and street cleaning efforts, have been lauded worldwide and attempts are being made to emulate these early successes.



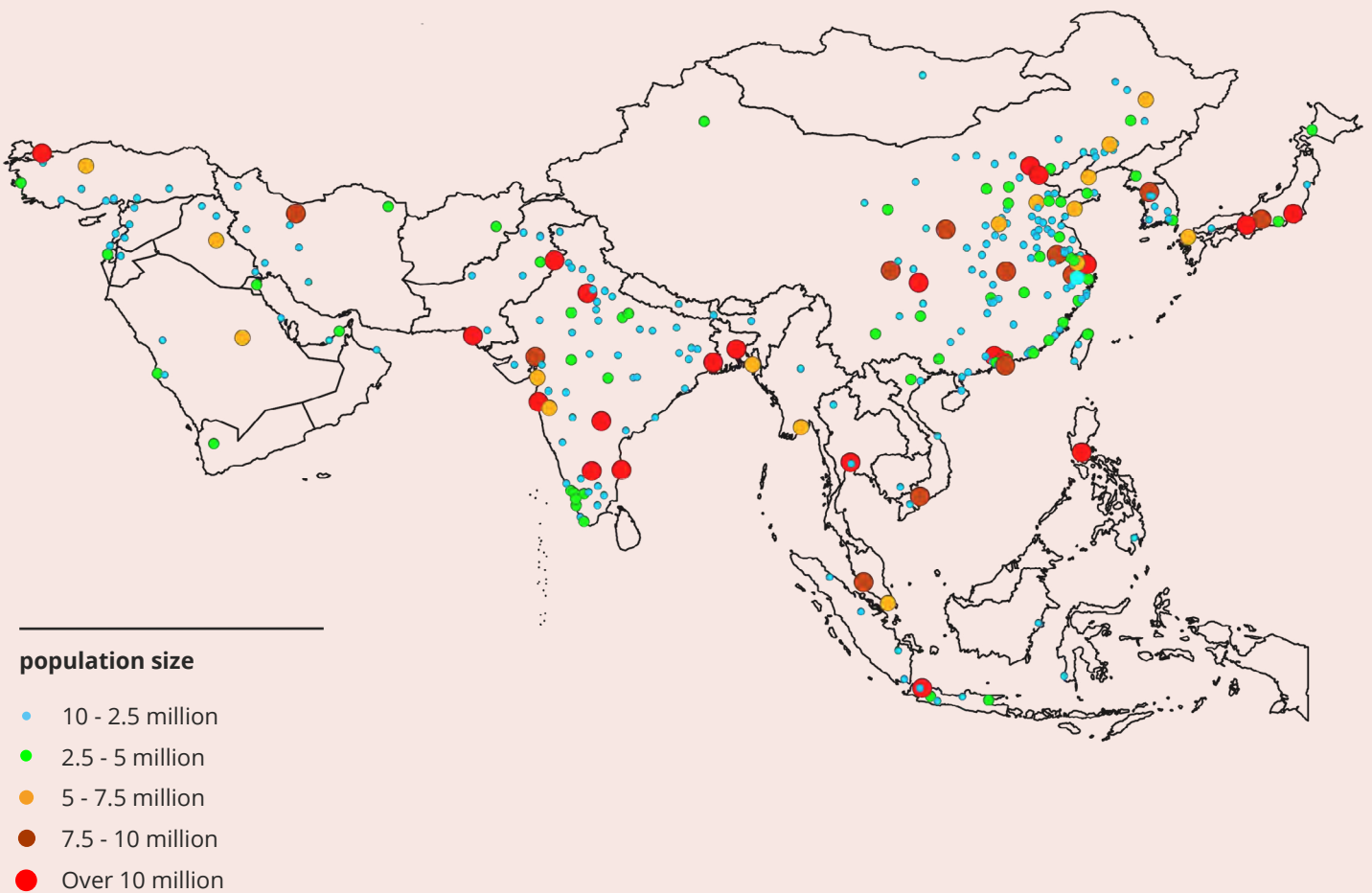


# background of Asian metropolisation



**Asia can be called a region of metropolitan spaces.** Across the world's major regions, Asia has the largest number of metropolises. In 2020, the region had 312 metropolitan cities<sup>6</sup> (Figure 1). Demographically, based on the 2020 data, the Asian metropolitan cities can be grouped into five categories: (i) 202 had population ranging between 1.0 to 2.5 million, (ii) 59 between 2.6 to 5.0 million, (iii) 18 between 5.1 to 7.5 million, (iv) 12 between 7.6 to 10 million, and (v) 21 were megacities with a population of over 10 million.

**Figure 1**  
**metropolitan cities in Asia, 2020**



<sup>6</sup> All urban demographic data mentioned in this section is sourced from UN-DESA, Population Division (2018), unless otherwise stated.

## Asian cities and urbanisation

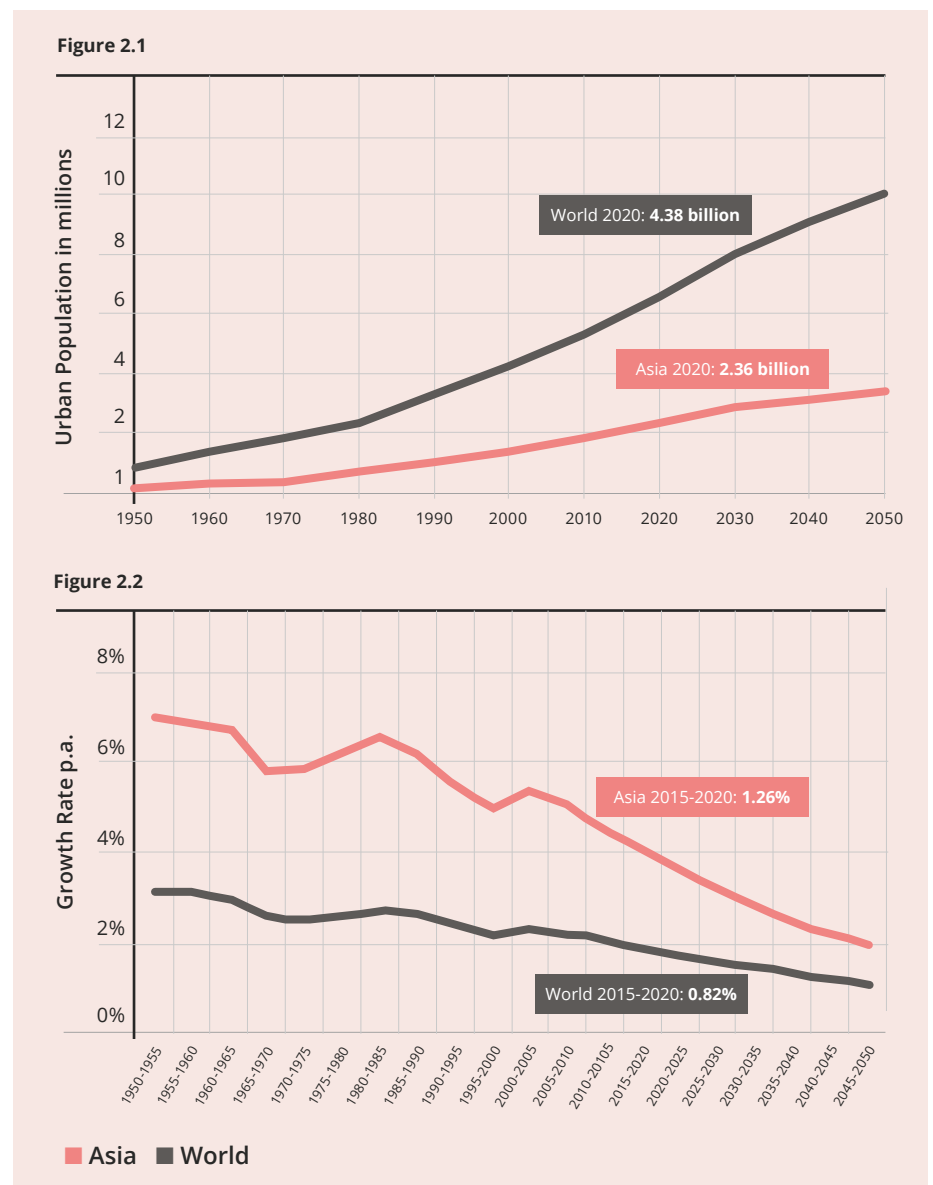
Asia has emerged as an economically dynamic region in the world in the recent decades. This not only owes to its long history, diverse geography, and rich resources but also to its metropolises, small- and medium-sized cities and towns, as well as the national and local governments.

Asian cities function as 'engines of economic growth' and contribute over 80% of Asia's regional gross domestic product<sup>7</sup> (GDP). Across its

four subregions — East and North-East Asia, South-East Asia, South and South-West Asia, and Western Asia — are found cities and towns abuzz with economic, social, cultural and political activities.

In 2020, Asian cities and towns house a populace of 2.36 billion out of the world's total urban population of 4.38 billion (Figure 2.1). Asia's share of the world's total urban population increased from 32.79% in 1950 to 53.93% in 2020.

**Figure 2**  
**population growth in the world**  
**and in Asia**  
(source: UN DESA)



<sup>7</sup> Dahiya (2012a, 2012b).

Asian cities have been growing at a faster pace compared to those around the world. Asia's urban population has increased from 17.5% in 1950 to 51% in 2020, an overall increase which has been almost twice compared to that for the world in general. The region's urban population, which was 246 million in 1950, grew by 859.2% between 1950 and 2020; during the same period, the total urban population in the world grew by 483.2%, from 751 million to 4.38 billion.

Further, the average annual 'growth rate of urban population' (or urbanisation rate) in Asia has been higher than that for the world since 1950 (Figure 2.2, previous page). In the past five years (2015-2020), for example, the average annual growth rate of urban population for Asia and the world was 0.82 and 1.26% respectively. However, as for the world, the urbanisation rate for Asia has been declining since the quinquennial period of 2000-2005.

Asia's urban population is estimated to grow to 3.48 billion by 2050. In other words, between 2020 and 2050, an additional 1.12 billion people will be added to Asian cities and towns. Thus, the level of Asia's urbanisation will increase from 51.1% in 2020 to 66.18% in 2050.

---

→ **The urbanisation rate, known as the pace at which the percentage of urban population changes over a particular time period, has been higher for Asia than that for the world since 1950**

---



HYDERABAD. Photo by arihant-daga on Unsplash

## Asia's metropolitan configurations

Spatially, three major types of metropolitan configurations have emerged in the recent decades, according to the United Nations Human Settlements Programme (UN-HABITAT)<sup>8</sup>:

- **Mega urban regions** “are natural economic units that result from the growth, convergence and spatial spread of geographically linked metropolitan areas and other agglomerations.<sup>9</sup> They are polycentric urban clusters surrounded by low-density hinterlands, and they grow considerably faster than the overall population of the nations in which they are located.<sup>10</sup><sup>11</sup> For instance, the Guangzhou–Shenzhen–Hong Kong mega urban region in China is over 120 million in population.
- **Urban corridors** “are characterized by linear systems of urban spaces linked through transportation networks.<sup>12</sup><sup>13</sup> Illustrative examples include the Tokyo–Yokohama–Nagoya–Osaka–Kobe–Kyoto corridor in Japan, and the Beijing–Tianjin–Tangshan–Qinhuangdao corridor in China, the Delhi–Mumbai corridor in India, and the Kuala Lumpur–Klang Valley corridor in Malaysia.
- **City-regions** are other dynamic and strategic cities that extend beyond their administrative boundaries and integrate their hinterlands.<sup>14</sup> A city-region is also called as ‘Extended Metropolitan Region’<sup>15</sup> (EMR). In 2020, Tokyo’s

EMR had a population of 37.39 million; it is followed by Delhi’s EMR with a population of 30.29 million.

Other notable city-regions with population over 10 million include: Shanghai (27.06 million), Dhaka (21.74 million), Beijing (20.46 million), Mumbai (20.41 million), Karachi (16.09 million), Chongqing (15.87 million), Istanbul (15.19 million), Kolkata (14.85 million), Metropolitan Manila (13.92 million), Lahore (12.64 million), Bengaluru (12.32 million), Chennai (10.97 million), Jakarta (10.77 million), Bangkok (10.53 million), Hyderabad (10.0 million).<sup>16</sup>

In general, mega urban regions, urban corridors and city-regions are three distinct spatial urban systems. Over time, however, some of the city-regions may expand and coalesce with other city-region(s) and/or mega urban region(s) to become (larger) mega urban regions. Urban corridors connect city-regions of varying spatial and demographic size; with the passage of time, they may help a city-region to coalesce with other city-region(s) and/or mega urban region(s) to result in a (larger) mega urban region. Mega urban regions, urban corridors and city-regions often do not have governance structures corresponding to their spatial boundaries. Nevertheless, some mega urban regions and city-regions may have a region wide infrastructure authority, for example, the metropolitan rapid transit systems in Tokyo, Delhi and Shanghai.<sup>17</sup>

## Mega urban regions, urban corridors and city-regions often do not have governance structures corresponding to their spatial boundaries

<sup>8</sup> UN-HABITAT (2010, pp.8-10).

<sup>9</sup> Florida (2008); see page 42.

<sup>10</sup> Florida et al (2007); see pages 5-6.

<sup>11</sup> UN-HABITAT (2020, p.8).

<sup>12</sup> Whebell (1969).

<sup>13</sup> UN-HABITAT (2020, p.8).

<sup>14</sup> Jacobs (1961); UN-HABITAT (2020, p.8).

<sup>15</sup> Ginsburg (1991).

<sup>16</sup> UN-DESA, Population Division (2018).

<sup>17</sup> See Tokyo Metro (2020); Delhi Metro Rail Corporation Limited (2020); Shanghai Metro (2020).

## metropolitan demographic growth

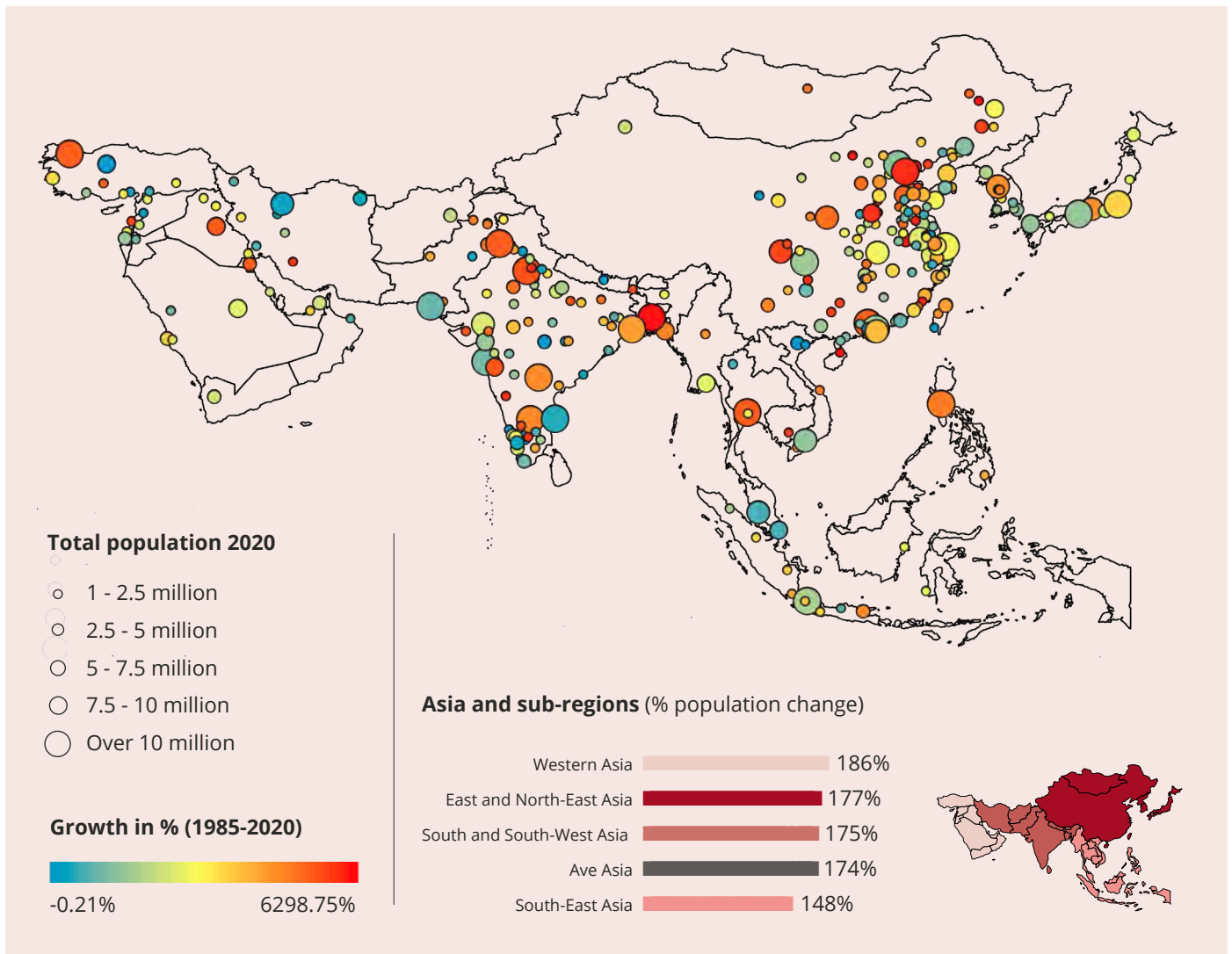
Asian metropolitan spaces have registered rapid demographic growth over the past four decades. During 1985-2020, the average growth rate of metropolitan population in the region was 174% (Figure 3). In this period, demographic growth—high or low—has taken place in those subregions and metropolitan cities that have been able to benefit from the process of sustained economic growth in the region.

Among the subregions, Western Asia registered the highest demographic growth of 186%

in its metropolitan population during 1985-2020. The average metropolitan demographic growth has been the lowest (148%) in the South-East Asia subregion.

In terms of specific metropolises, Shenzhen and Dongguan in the Pearl River Delta, and Liuyang in Hunan Province of China recorded the highest population growth rate of 6 299%, 3 030% and 2 373% respectively. The lowest population growth was recorded in Busan (-0.22%), second lowest in Seoul (6.75%) and third lowest in Hiroshima (8.67%).

Figure 3  
urban population growth in Asia. 1885-2020





BEIJING. Photo: Yinan Chen / Pixabay

## metropolitan population density

Metropolitan population density is a function of the number of people living in a metropolitan space and its geographical area. It is often more economic to provide infrastructure and services—such as water supply, wastewater collection, solid waste management, and public transportation—in densely populated urban areas. Further, it is argued that the “high density of people in cities facilitates economic growth through better sharing, matching and learning.”<sup>18</sup>

As the COVID-19 pandemic continues to spread around the world (during the preparation of this report), it may be argued that “[t]he epidemics are supposed to hit harder the urban areas with denser population and poor socio-economic conditions, i.e., in slums.”<sup>19</sup> However, the case of densely populated Dharavi slum in Mumbai shows that “with proactive and multi-pronged approaches, COVID-19 spread can be contained in even the areas with the poorest socio-economic conditions and with negligible health infrastructure.”<sup>20</sup> This is perhaps the reason for the OECD to contend that “[t]he health problem is not related to urban density but rather to structural inequalities

and the quality of urbanisation; and the urban premium will likely not turn into an urban penalty as agglomeration benefits continue to prevail.”<sup>21</sup>

Asian metropolises are some of the most densely populated large cities in the world. In 2020, out of the 312 metropolitan cities in Asia, 89 had a population density of over 10 000 persons per sq. km. (Figure 4, next page). The population density statistics of these 89 metropolises are as follows: 13 have a population density ranging between 20 000 and 99 743 persons per sq. km., 17 have a population density of 15 000 to 20 000 per sq. km., and 59 have a population density of 10 000 to 15 000 per sq. km.

These striking figures on metropolitan population density point to the fact that urban policy makers and city planners in Asia have attempted to tackle several urban challenges together. These challenges include the scarcity of land for urban development and expansion, limited availability of public funds for investment in infrastructure and services, and ever-increasing cost of housing construction.

<sup>18</sup> UN-HABITAT (2016, p.71).

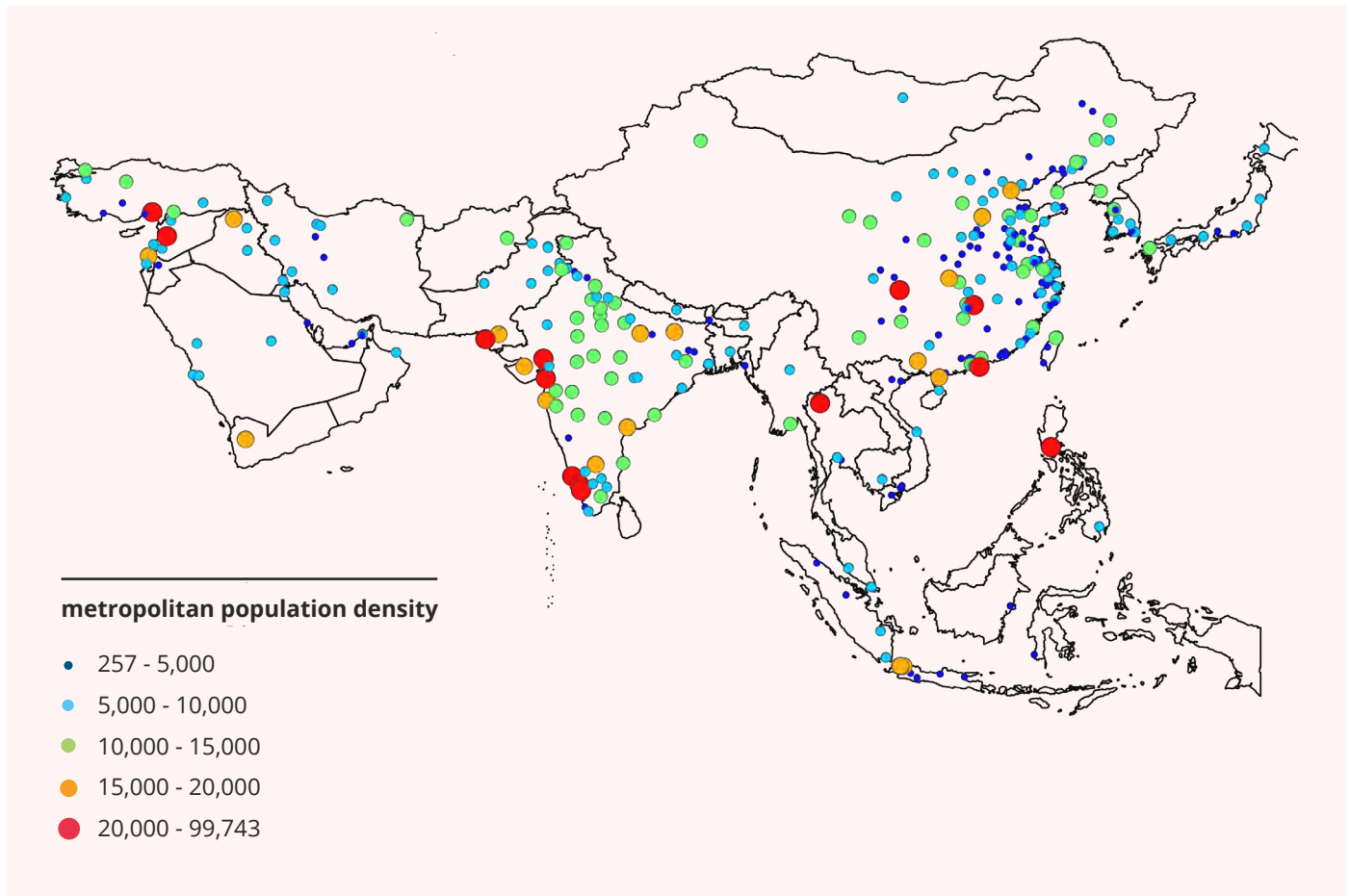
<sup>21</sup> OECD (2020), p.3.

<sup>19</sup> Kumar (2020).

<sup>20</sup> Ibid.



**Figure 4**  
**metropolitan population density in Asia. 2020**



## metropolitan challenges in Asia

The foregoing shows that the metropolitan challenges abound in Asia. First is the enormity of continuing demographic growth in metropolises across the region. Second are the large and complex spatial configurations that require effective strategies for metropolitan coordination. Third challenge is related to the extremely high urban population densities, which involve provision of land for urban development, capital investments for infrastructure and services, and public and private sector involvement in housing construction. Added to these are the other metropolitan challenges of, as the following sections

discuss, economic development, social cohesion, environmental sustainability and quality of life.

Tackling these multiple challenges underlines the need for developing a clear understanding of metropolitan-wide issues, formulating evidence-based as well as innovative policies and strategies, preparing and implementing effective urban programmes and plans, mobilising the necessary budgetary and financial resources, working with the partners and stakeholders through collaborative governance and, most importantly, effective decision making.



HANOI. Photo by Dave Weatherall on Unsplash

# analysis of metropolitan indicators in Asia



# context and governance

In Asia, the 28 metropolitan spaces reviewed by Metropolis present a striking picture of metropolitan governance and related challenges.

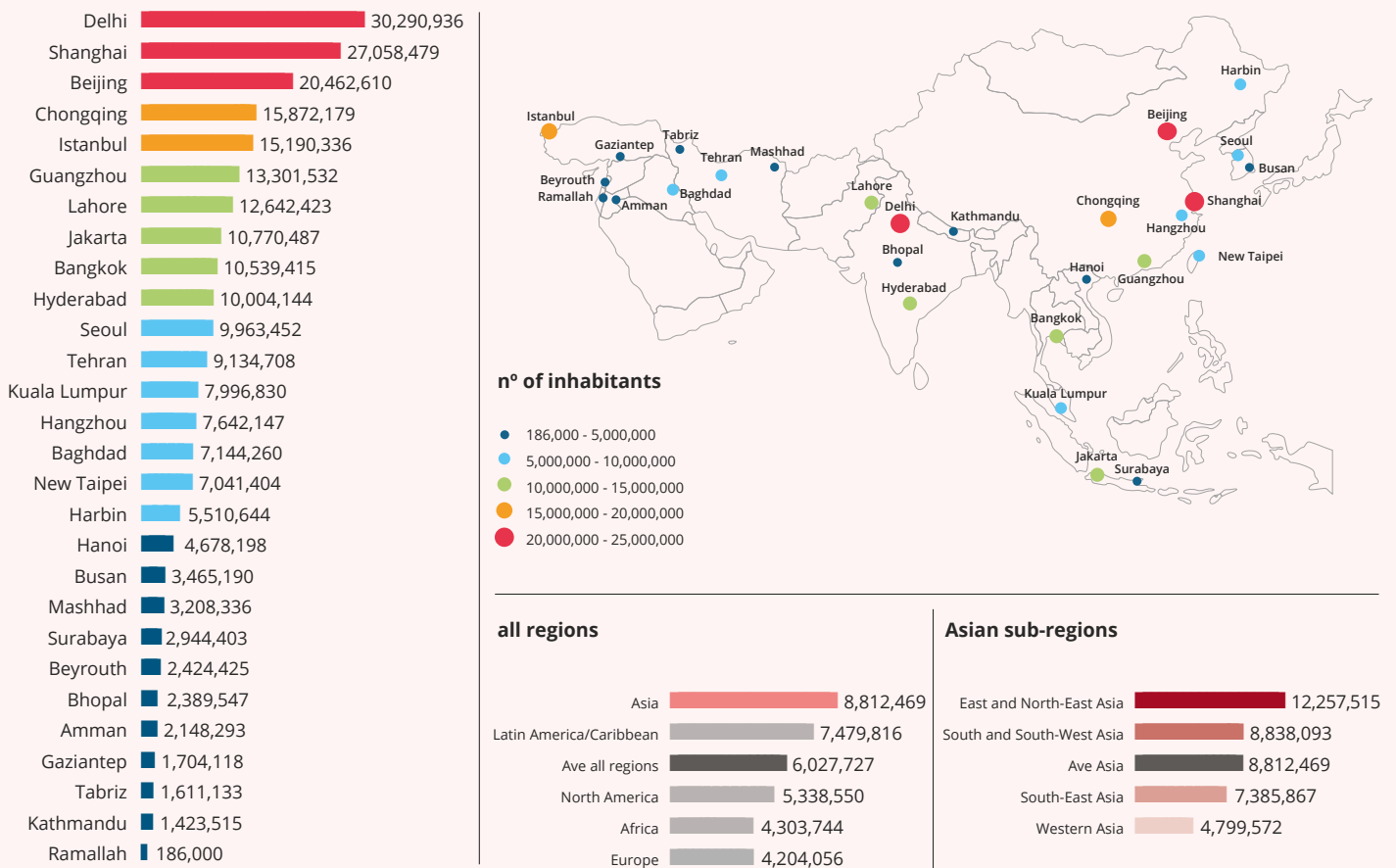
The average demographic size of these metropolises in Asia is 8.8 million, which is 2.6 million higher than the global average (Figure 5). In North and North-East Asia, the average size of metropolitan population is much higher at 12.25 million. Western Asia subregion has the lowest average metropolitan population of 4.79 million, which is still higher, though, than the figure of 4.20 million in Europe, for instance.

Delhi, with a population of 30.29 million, is the largest member

of Metropolis in Asia. Shanghai and Beijing rank at second and third with respective populations of 27.05 million and 20.46 million. Among the 28 Asian metropolitan spaces analysed in this report, 10 are megacities, each with a population of over 10 million.

These staggering figures underline the massive process of metropolisation that has been taking place in the various subregions of Asia. Further, these statistics point to the unprecedented challenges the Metropolis members in Asia face with regard to sustainable urban development, and metropolitan governance, policy making, planning and management.

**Figure 5**  
population size of metropolises in Asia: 2020



---



## The three main types of metropolitan governance systems in Asia

In Asia, national governments use three types of approaches for governing their metropolitan spaces and city-regions, each of them with its own advantages and disadvantages:<sup>22</sup>

### Autonomous urban authorities

- > Cities, towns and municipalities within a city-region are distinctly separate from each other both functionally and territorially.
- > Every local authority in charge of its own planning, policymaking, legislation and programme/project execution.
- > City charters/statutes clearly define the boundaries of each unit.
- > Different revenue-raising capabilities between authorities.
- > Richer urban authorities reluctant to share resources with poorer ones.
- > Impossibility to provide the same scope or quality of urban services or amenities across the territory.
- > Businesses taking advantage of urban authorities by making them compete against each other, demanding tax concessions or other favours if they are to locate in a specific area.

### Mixed systems of city-region governance

- > Authority and power vested in formal structures (e.g. central government departments, regional authorities, metropolitan bodies, special-purpose authorities, cities, towns and villages).
- > Each governance body is responsible for functions such as policy-setting, financing, planning and implementation of programmes and projects.
- > A governance body may be responsible for just one function, or a number of units may share the responsibility for specific services.
- > Specific functions may be carried out by separate agencies operating at different levels, or may also be shared by a number of government bodies.

### Unified metropolitan government

- > A single governing body to plan, manage, finance, support and maintain services in an area-wide territory.
- > Local authorities within the city-region are subordinated to the unified government.
- > Approach mainly used in national capitals where the central government's authority is dominant, it is also favoured in countries in transition, such as China (e.g., Beijing, Shanghai and Shenzhen) and Viet Nam.
- > Argued to achieve efficiency in the management of area-wide services.
- > Because urban problems such as environmental pollution, epidemics, floods and organized crime are impervious to formal political boundaries, this governance approach take advantage of economies of scale, agglomeration and location.
- > Rationalised regional tax structures enable access to more financial resources, as do the higher credit ratings deriving from the pooling of local authority assets.
- > Criticised for creating an unnecessary tier between traditional local authorities and the provincial/state or central government, and abhorrent bureaucratic attitudes.

---

<sup>22</sup> UN-HABITAT & UN-ESCAP (2010), pp.223-225.

## Local governments and decentralisation in Asia

Asia witnessed a decentralisation drive starting in the early 1990's. National governments in several Asian countries started implementing legislative measures for the decentralisation of powers to local governments. A few examples include the Local Government Code (1991) in the Philippines, the 73<sup>rd</sup> and 74<sup>th</sup> Constitution Amendment Acts (1992) in India, the Laws Nos. 22 and 25 (1999) in Indonesia, and the Decentralisation Act (1999) in Thailand.

---

### → Legislative efforts in Asia have helped in strengthening local democracy, resulting in better prioritisation of needs for infrastructure development, urban service provision, and increasingly better development outcomes

---

Over the past three decades, these legislative efforts in Asia have helped in decentralising and devolving administrative as well as fiscal powers to sub-national and local governments in regions and cities, including metropolitan cities. This has resulted in better prioritisation of local needs for infrastructure development, urban service provision, and increasingly better development outcomes. There is an enhanced institutional space for the various stakeholders to participate in the process of metropolitan governance. Apart from the national and local governments, these stakeholders include community, civic institutions, interest groups, non-governmental organisations, academia, and individual citizens.<sup>23</sup>

However, some difficult challenges related to metropolitan governance persist in Asia. **First challenge** is related to **poor administrative**

**capacity**, which affects not only new metropolitan spaces reaching the benchmark of one million population but also the larger ones, including megacities. Metropolitan governments lack either sufficient administrative and technical staff, or staff with adequate skills required to carry out their regular municipal functions.

**Second challenge** pertains to **limited financial capacity** that reflects on the budget of and expenditure by a metropolitan government. As discussed in the 'Background on Asian metropolisation' section, the pace of demographic growth is fast that it often leaves Asian metropolitan governments trying to meet their development targets whether they are related to planning and development of urban land, infrastructure and service provision, or else.

As metropolitan cities grow in size and new urban problems arise, there is an increase in the number of their functions. Dealing with complex problems requires going beyond traditional approaches and applying multi-sector governance mechanisms.

With rapid demographic growth have come the spatial expansion of metropolitan cities over their neighbouring administrative units. This creates new challenges of inter-jurisdictional and municipal coordination. Many such challenges require the creation and/or strengthening of metropolitan-wide authorities to manage urban infrastructure and services.

The Metropolis Observatory indicator of **metropolitan coordination** aims at assessing the level of coordination across policy sectors at the metropolitan area level. It assesses the number of sectors under some formal arrangement vis-à-vis metropolitan coordination and the coverage of that institutional arrangement. The score for this indicator ranges from

---

<sup>23</sup> Laquian (2005).

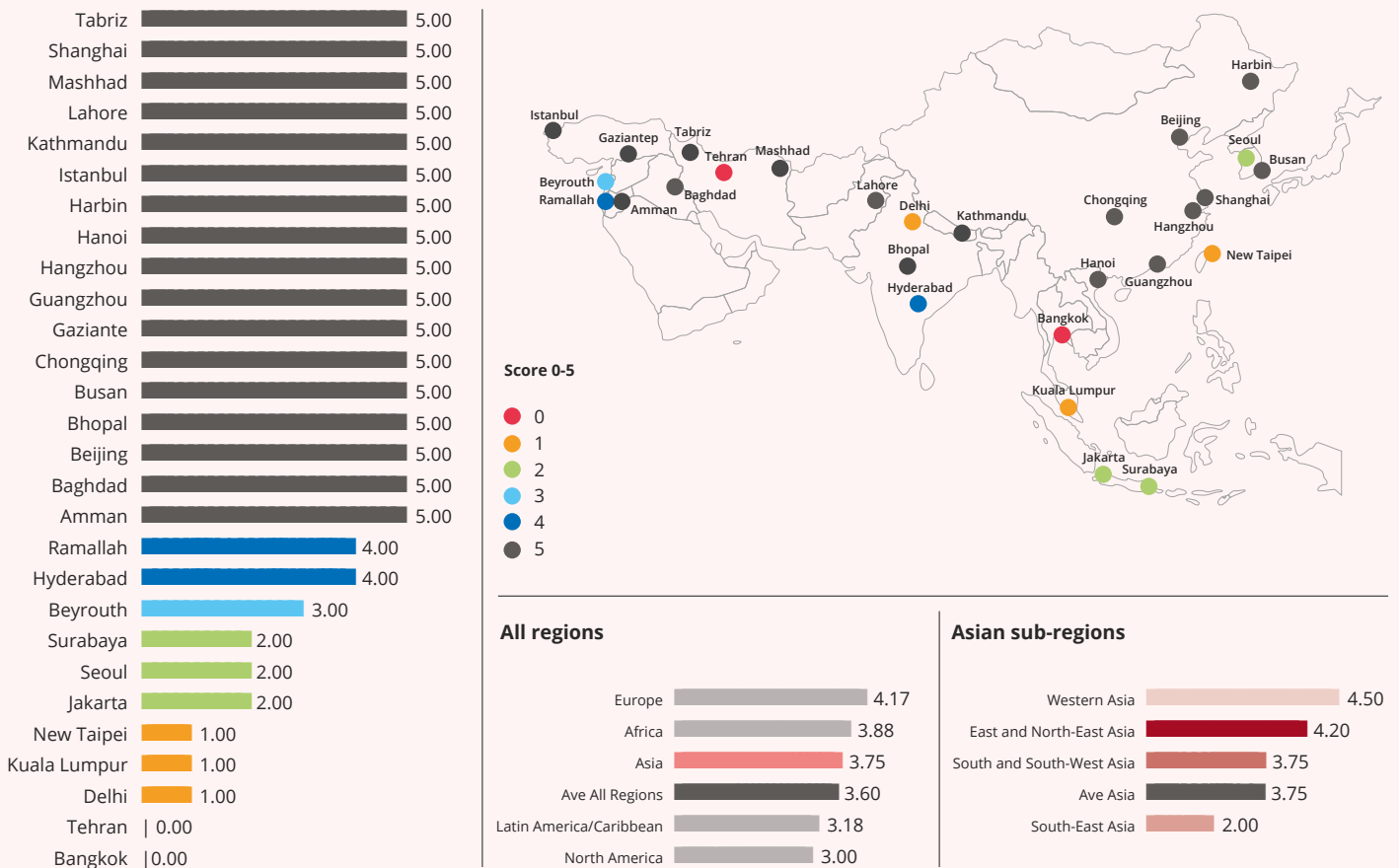
0 to 5, wherein 5 denotes a formal metropolitan governance structure, and 0 indicates no coordination at all.

Asian metropolises feature a higher degree of metropolitan coordination than the international average. Asian metropolises have recorded the average score of 3.75 for metropolitan coordination compared to the international average score of 3.5 (Figure 6). In Asia, 17 out of 28 metropolitan spaces have high levels of coordination. These metropolises include Amman, Baghdad, Beijing, Bhopal, Busan, Chongqing, Gaziantep, Guangzhou, Hangzhou, Hanoi, Harbin, Istanbul, Kathmandu, Lahore, Mashhad, Shanghai and Tabriz.

On the other end of the spectrum, Bangkok and Tehran have a score of 0 that indicates that there is no coordination at all across the sectors in these metropolitan cities. Among the subregions of Asia, Western Asia has the highest score of 4.5 on metropolitan coordination, compared to the regional average of 3.61. South-East Asia is the subregion with the lowest score of 2.

Related to the issue of metropolitan coordination is the indicator on **territorial fragmentation** that aims to understand the degree to which the governance of a metropolitan space is integrated or fragmented. This is computed as the 'number

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



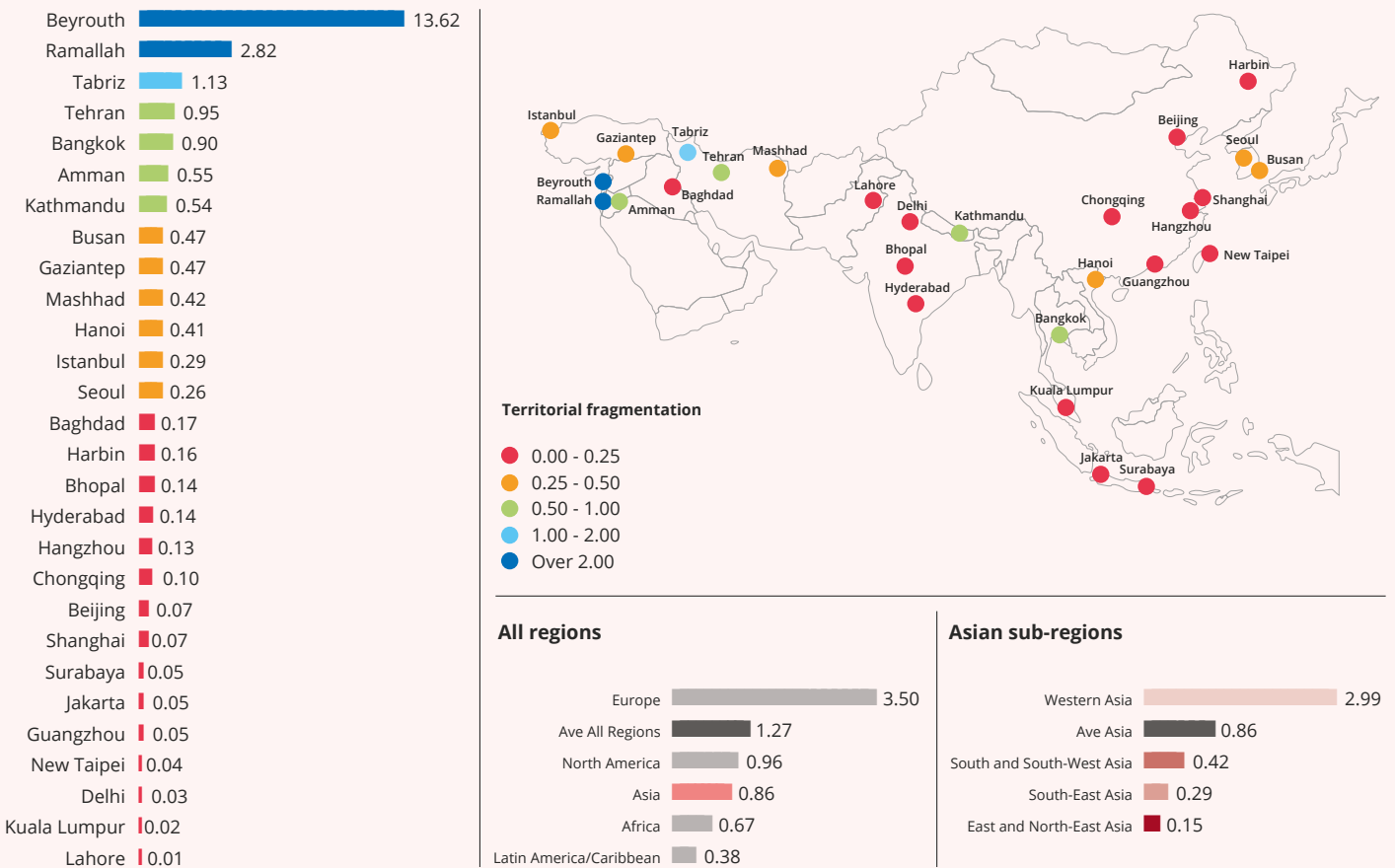
of local governments per 100,000 inhabitants in a metropolitan area’.

Asian metropolises have reported a lower level of territorial fragmentation compared to the international average. They have a score of 0.88 as opposed to world average of 1.28 (Figure 7). Among the Asian subregions, while East and North-East Asia has the lowest level (0.15), Western Asia has the highest level (2.99) of territorial fragmentation; the regional average score stands at 0.96. At the metropolitan level, Beyrouth has the highest value (13.62) for territorial fragmentation, which connotes that more than 13 agencies are involved in its metropolitan governance.

Territorial fragmentation, and the lack of intra- and inter-municipal coordination and cooperation in metropolitan areas are oft-cited problems. These problems came into prominence in the late 1980’s when the international development agendas started to focus on urban management and governance.<sup>24</sup> Fragmented governance structures are one of the factors that result in lower economic productivity of cities; their “effect is mitigated by almost half by the existence of a governance body at the metropolitan level.”<sup>25</sup>

One of the ways to improve inter-municipal cooperation is through metropolitan governance

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



<sup>24</sup> Bartone et al (1994); Dahiya and Pugh (2000).

<sup>25</sup> OECD (2015, p.36).





Ms. Hari Prabha Khadgi (left), Deputy Mayor of **KATHMANDU** Metropolitan City, and Ms. Manjushree Nagin Barkiya (right), Councillor in the **BHOPAL** Municipal Corporation, are two of the few examples of elected women in Asian metropolises.

---

## → Asian metropolises have recorded the lowest score in the share of elected women among all major regions in the world

---

reforms.<sup>26</sup> Since the late 1980's, some Asian countries—including India, Indonesia, Japan, Philippines, Republic of Korea and Thailand—have taken legislative measures to implement decentralisation reforms to improve intra- and inter-municipal coordination and cooperation, especially in metropolitan areas.<sup>27</sup> For instance, the 74<sup>th</sup> Constitution Amendment Act of India, passed in 1992, made provisions for the establishment of Metropolitan Planning Committees at the metropolitan city level across the country.<sup>28</sup> However, as these two indices show, the challenge of metropolitan coordination and territorial fragmentation persist across metropolitan areas in Asia and beyond.

The quality of urban governance also depends on how representative

a metropolitan government is of the local populace. The role of women in local governments has been emphasised increasingly since the organisation of the Fourth World Conference on Women that resulted in the 'Beijing Declaration and Platform for Action' in September 1995.<sup>29</sup> The Metropolis Observatory indicator on the **share of elected women** takes stock of women's representation in local governance.

Asian metropolises have recorded the lowest score in the share of elected women among all major regions in the world; their average share of 24.9% is lower than the global average figure of 30.2% (**Figure 8**, next page). Within Asian subregions, East and North-East Asia has the highest share (28.97%) of elected women, while the lowest share is that of South-East Asia (19.58%). A closer look shows that compared to these regional and subregional averages, some metropolises fare better than the others. Hyderabad (52.0%), Bhopal (48.2%) and Kathmandu (40.6%) are three metropolitan cities with the highest share of elected women in

<sup>26</sup> OECD/UCLG (2019).

<sup>28</sup> Gazette of India (1993).

<sup>27</sup> UN-HABITAT & UN-ESCAP (2010); OECD/UCLG (2019).

<sup>29</sup> United Nations (1995).

Asia.

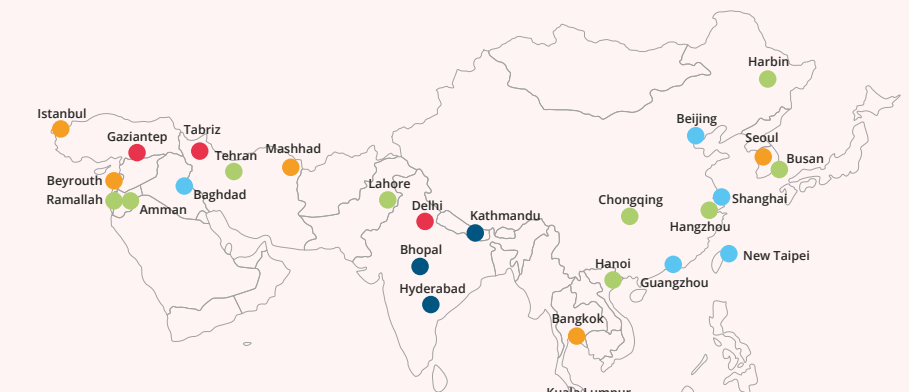
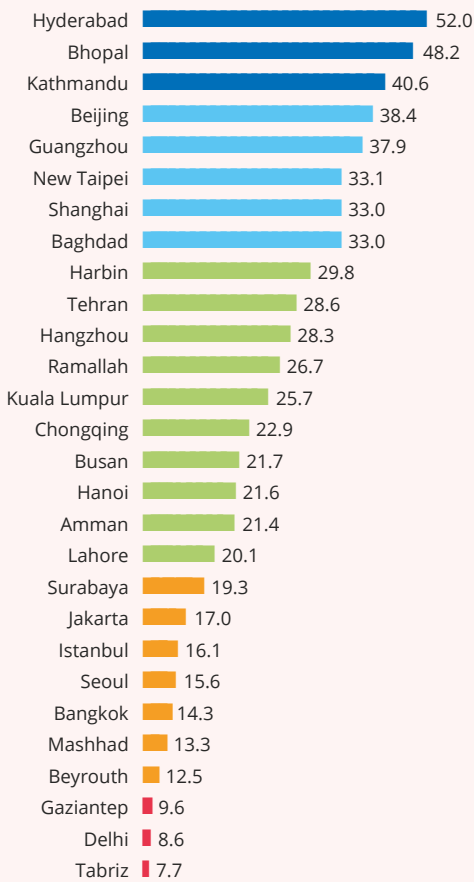
Globally, women are ‘severely under-represented’ with regard to political representation in general, and no country in the world has closed the women’s political representation gap in full.<sup>30</sup> According to the World Economic Forum’s Global Gender Gap Report 2020, by now only 25% of the gap in women’s political representation has been closed; that leaves a yawning gap of 75% to be closed around the world.

A number of challenges inhibit a higher representation of women in local governments, including in metropolitan governments. Some of these challenges are cultural beliefs about the status of women in a

society, the traditional domination of political parties by men, women’s limited access to resources, and lower accessibility to education among women compared to those for men.<sup>31</sup>

Metropolises often play a significant role in a nation’s culture, politics, economy, and financial sector. This is what underlines their national prominence. With regard to metropolitan governance, however, what is important is to understand the ‘ratio between the aggregated national budget for all jurisdictions within the metropolitan area and the national government budget (i.e. percentage of national government budget); and this is measured by the Metropolis Observatory indicator on

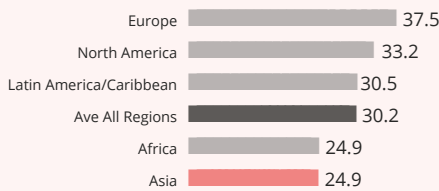
**Figure 8**  
**share of elected women**



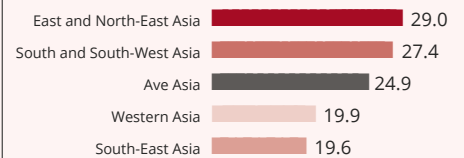
**% share of elected women**

- Below 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50

**All regions**



**Asian sub-regions**



<sup>30</sup> WEF (2019).

<sup>31</sup> UN-HABITAT (2008).

**national prominence.**

In Asia, the three cities with the highest values for the national prominence indicator are Beijing (23.38%), Seoul (21.55%) and New Taipei (12.80%); this indicates how dominant these metropolises are in their national budgetary planning (Figure 9). On the other end, Kathmandu (0.01%) and Beyrouth (0.02%) have recorded the lowest values.

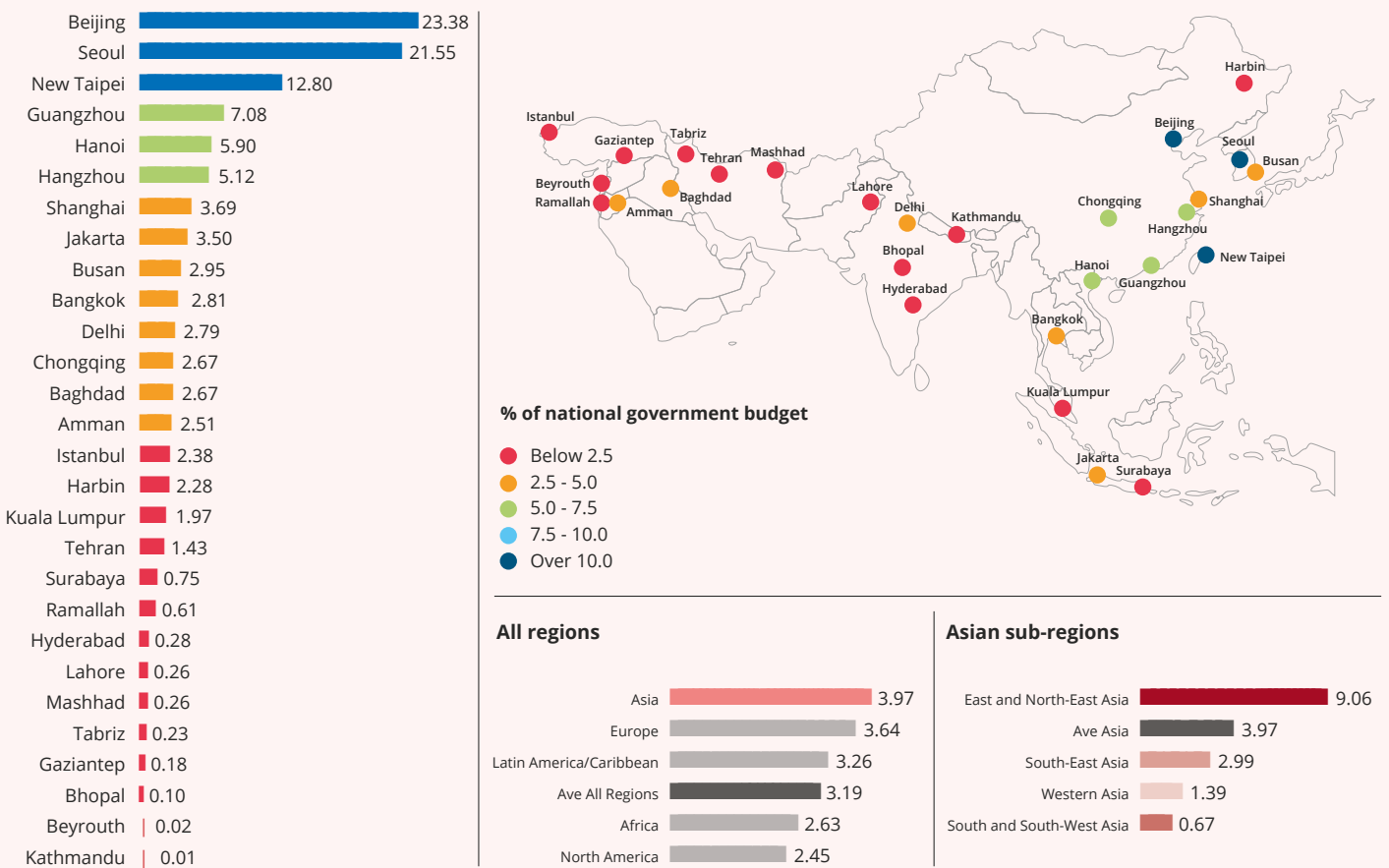
Across the world's five major regions, Asia stands atop in relation to the national prominence indicator with its value of 3.93% compared to the international average of 3.26%. Within Asian subregions, North and North-East Asia ranks the first with the value of 9.06%; the other three subregions stand below the regional

average of 3.53%.

The financial situation of a metropolis affects not only its governance but also the development, operation and maintenance of urban infrastructure and services. The Metropolis Observatory indicator of total **budget per capita** measures the amount of budgetary support (in US dollars) a metropolitan government is able to provide to its citizens. Thus, the values of this indicator reflect on the overall quality of life citizens are able to enjoy in a metropolitan space.

Across the major developing regions in the world, Asia ranked first—with the regional average figure of US\$ 1 073 total budget per capita and was marginally ahead of

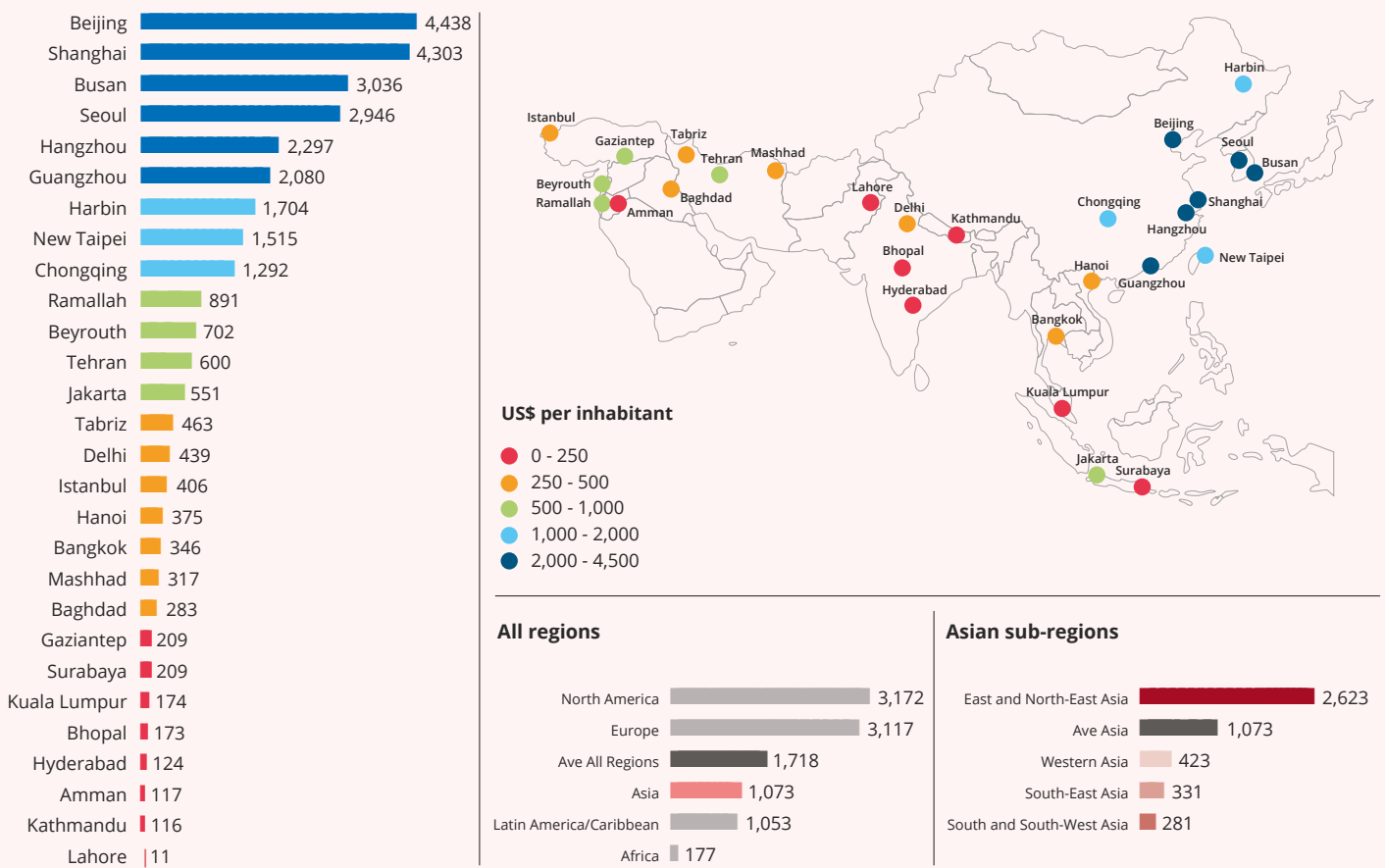
**Figure 9**  
**national prominence**



Latin America and Caribbean region (US\$ 1 053) (Figure 10). Among the Asian subregions, North and North-East Asia was way ahead with the figure of US\$ 2 623 total budget per capita, which was over six-fold compared to the figure of US\$ 423 for Western Asia. In terms of individual metropolitan cities, Beijing and Shanghai had the highest allocation of total budget per capita with figures of US\$ 4 438 and 4 303 respectively. The impact of such high budget allocations and investment is evident in the ranking of Chinese cities based on an evaluation index system for urban development put together by the China Development Research Foundation and PricewaterhouseCoopers (PwC).<sup>32</sup>

According to the 6th edition of the 'Chinese Cities of Opportunity 2019' report, which analysed 50 indicators in 38 cities, Beijing and Shanghai rank as the first and second cities in China.<sup>33</sup> Further, Beijing is ranked first in regard to two out of a total of 10 dimensions: 'intellectual capital and innovation' (a composite of five indicators: turnover rate of full-time teachers of middle and primary schools; scale of higher education students; educational level of employed population; state key laboratories; and city innovation index)<sup>34</sup> and 'economic clout' (a composite of five indicators: number of well-known enterprises; number of financial practitioners; foreign direct investment; proportion of tertiary

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

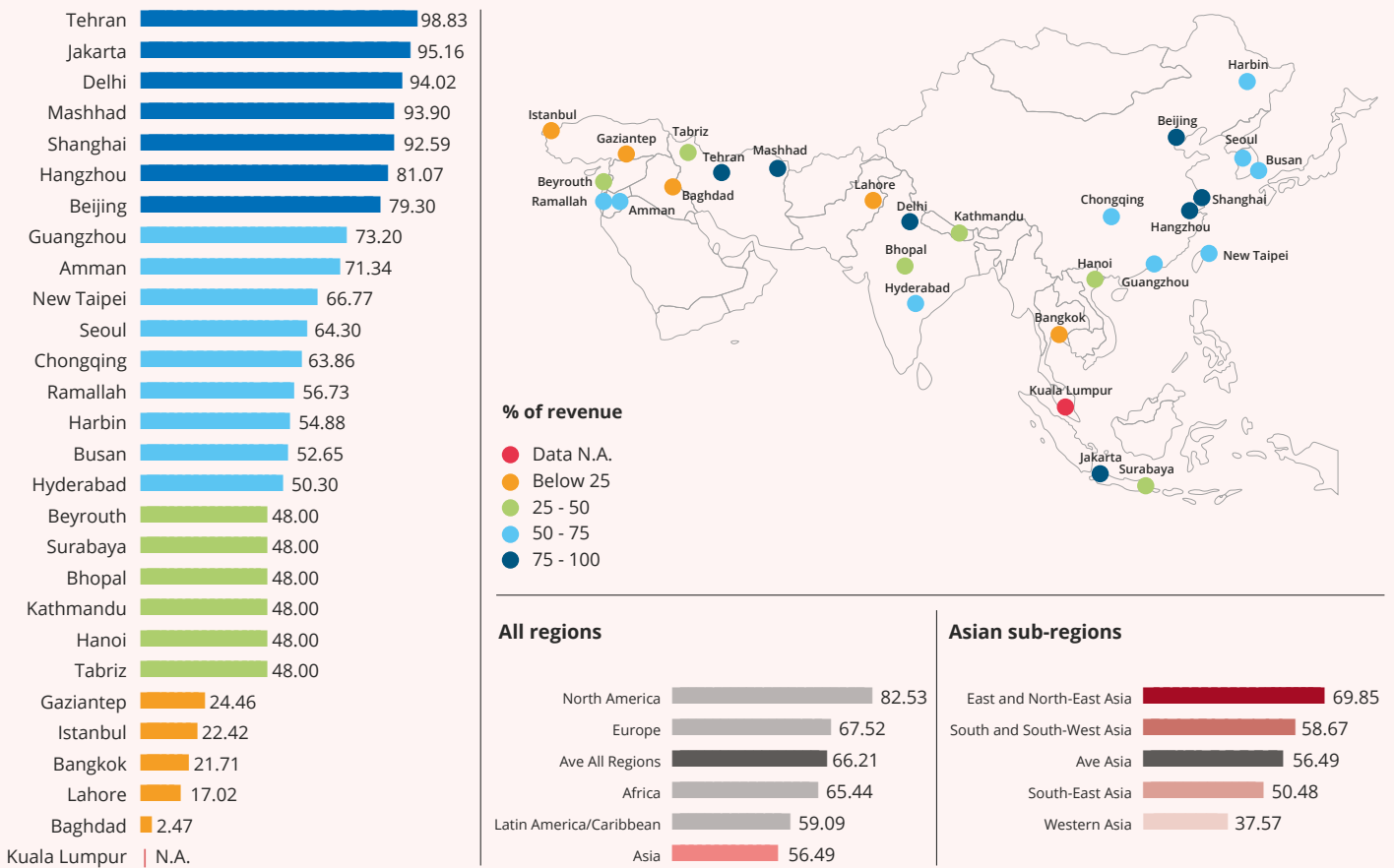


<sup>32</sup> PwC and China Development Research Foundation (2019).

<sup>34</sup> Ibid., p.41.

<sup>33</sup> Ibid.

**Figure 11**  
**fiscal autonomy**



industry; and nominal growth rate of gross regional domestic product).<sup>35</sup> The same report ranks Shanghai as first amongst 38 cities in China vis-à-vis the ‘major regional cities’ dimension (a composite of five indicators: star-graded hotels; length of stay per capita of international inbound visitors; inbound and outbound flights; passenger capacity [related to railroads, civil aviation, highways and water transport]; and exhibition/convention economy development index).<sup>36</sup>

The Metropolis Observatory indicator of **fiscal autonomy** that measures a metropolitan government’s own source revenue as percentage of the total metropolitan revenue. The indicator reveals a metropolitan government’s ability

to raise and expend revenues on its own. Fiscal autonomy of a metropolitan government will be high if (i) it has the legislative authority to raise and expend its own resources, (ii) it does not depend on sub-national and/or national governments for its budget, and (iii) it is able to deploy effective and innovative strategies to raise revenue—all of these to tackle metropolitan challenges, develop necessary urban infrastructure and services, and improve the quality of life for its citizens.

Asian metropolises in the database have the lowest fiscal autonomy across the world’s major regions; in the region, fiscal autonomy stands at 56.49% compared to the international

<sup>35</sup> Ibid., p.45.

<sup>36</sup> Ibid., p.42.



BANGKOK's Makkasan Interchange at night. Photo by Mark Fischer

---

↑ In **BANGKOK**, where some of the lowest figures of fiscal autonomy are observed, the urban expressway infrastructure is mainly funded by the Thai national government

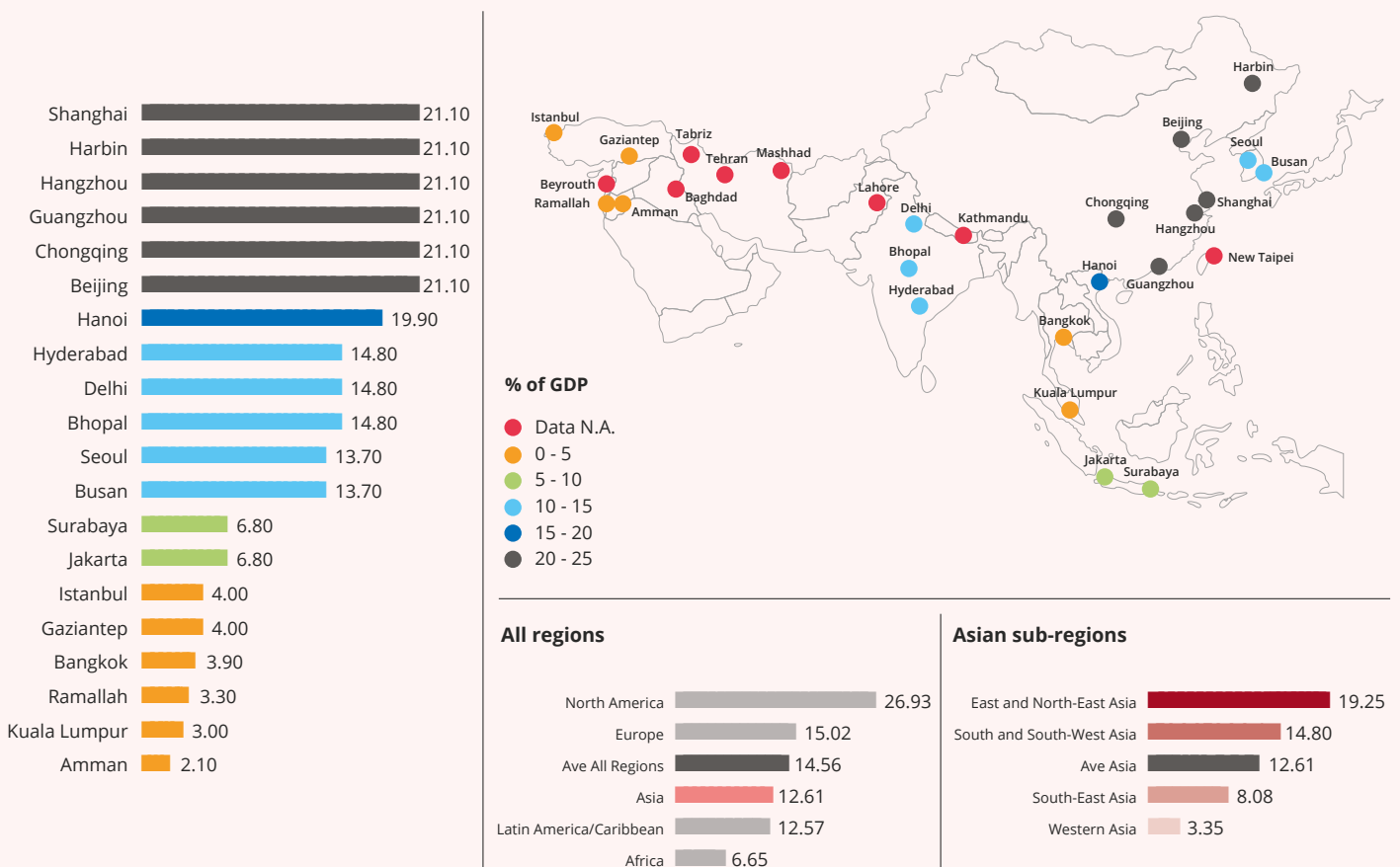
---

average of 66.21% (Figure 11). Within the region, metropolitan cities in East and North-East Asia (69.85%) and South and South-West Asia (58.67%) have higher fiscal autonomy. Among the Asian metropolitan cities, Tehran (98.83%), Jakarta (95.16%), and Delhi (94.02%) have the highest fiscal autonomy, while Bangkok (21.71%), Lahore (17.02%) and Baghdad (2.47%) have the lowest figures.

Related to total budget per capita is the Metropolis Observatory indicator of fiscal decentralisation that measures the sub-national government expenditure as a percentage of the country's total gross domestic product (GDP). Asia with a **fiscal decentralisation** value of 12.61% tracks closely behind the international average of 14.56%<sup>37</sup> (Figure 12). Similar to the fiscal autonomy indicator, North and North-East Asia (19.25%) and South and South-West Asia (14.80%) have higher levels of fiscal decentralisation compared to the other two subregions.

The sub-national government expenditure depends on “whether the country is federal or unitary, its size and territorial organisation, the level of decentralisation and the nature of responsibilities for certain sectors.”<sup>38</sup> This is reflected in the Metropolis Observatory data where cities within a country have identical figures for fiscal decentralisation. For example, the fiscal decentralisation values are highest (21.10%) for the six metropolitan cities in China, followed by the three cities in India where these values stood at 14.80%.

**Figure 12**  
**fiscal decentralisation**



<sup>37</sup> Metropolis data is available for 20 out of 28 metropolitan spaces in Asia.

<sup>38</sup> OECD (2016), p.96.

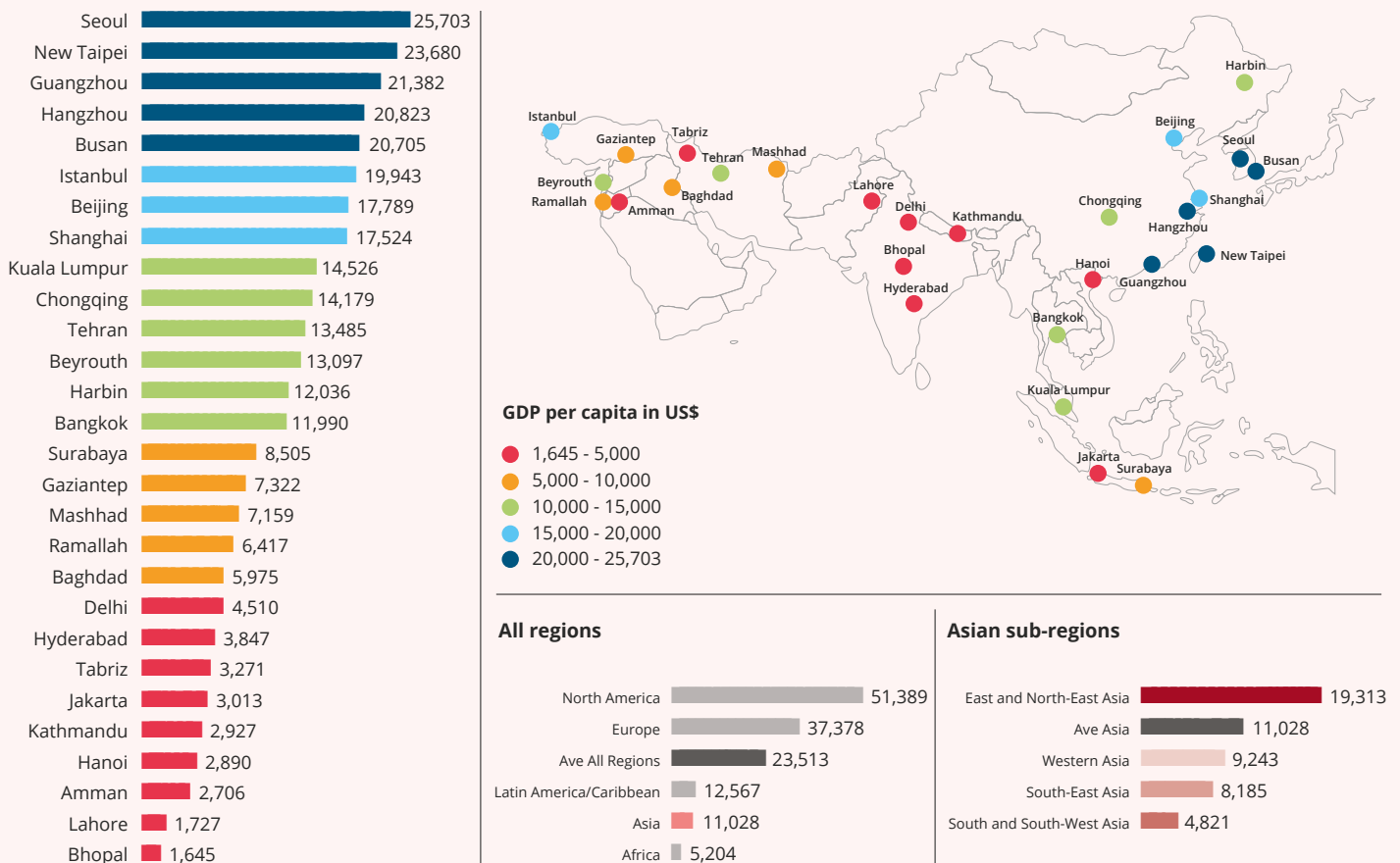
# economic development

As engines of economic growth and centres of employment generation, large metropolitan areas have historically served as socioeconomic equalizer.<sup>39</sup> The agglomerations of specialized economic activity in spatial clusters enhances worker productivity and lasting economic growth that creates opportunities for all, particularly new migrants. The world's most productive cities, such as London, New York and Tokyo, deliver first-rate public service delivery that enables residents to maximize economic benefits while suppressing the costs of congestion.

Within the vast continent of Asia where subregions have experienced

varying levels of economic growth over the last three decades, **GDP per capita** levels vary considerably. This ranges from over US\$ 20 000 per capita in places like Seoul and New Taipei City to just under US\$ 2 000 per capita in Bhopal, India and Lahore, Pakistan (Figure 13). These striking variations are driven by East and North-East Asia's "growth miracle"<sup>40</sup> that induced unprecedented economic growth during the 1990s, during which time other regions like South and South-West Asia only managed modest growth. After igniting growth through massive public investments that helped create efficiently functioning governance

**Figure 13**  
**GDP per capita**



<sup>39</sup> Glaeser (2011).

<sup>40</sup> Campos and Root (1996).



Asian metropolises with striking variations on GDP per capita:

—————→  
**BHOPAL** (\$1 645)

—————→  
and **SEOUL** (\$ 25 703)



BHOPAL. Photo by Mudrit Burad.



SEOUL. Photo by Max Pixel.

institutions, East and North-East Asian countries have since seen dramatic improvements in physical infrastructure which have further propelled income generating capacities in metropolitan spaces.

The extent to which these metropolitan areas dominate their respective national economies can

be judged by the percentage of each country's GDP being contributed by them. With the exception of prominent South-East Asian metropolitan cities like Bangkok (46.5%) and Kuala Lumpur (38.1%), economic activities in most other regions are more distributed around the country. But in multiple regions

across Asia, such as Bangladesh (91%), Cambodia (91%) and Indonesia (76%), large segments of the economy are known to operate informally which suggests that GDP per capita data across the board could in fact be underestimated.<sup>41</sup>

This feature of urbanisation in Asia is another reminder that economic inequalities within cities is above all an indication of the economic promise of urban life. Every year, tens of thousands of new migrants arrive in these cities, from rural areas or from other countries, hoping to become participants in their dynamic economic systems, which translate into

greater employment prospects.<sup>42</sup> Throughout the world, areas with more productive workforces exhibit not only greater overall prosperity, thus they also attract more migrants, boosting both population and economic density.

Regardless, metropolitan spaces in lower quality infrastructure regions such as Delhi (India) and Mashhad (Iran) report some of the highest economic densities, measured by US\$ of GDP per square kilometre. But because density is accompanied by costs like congestion, which has, for instance, direct impacts on air quality and health, the full benefits

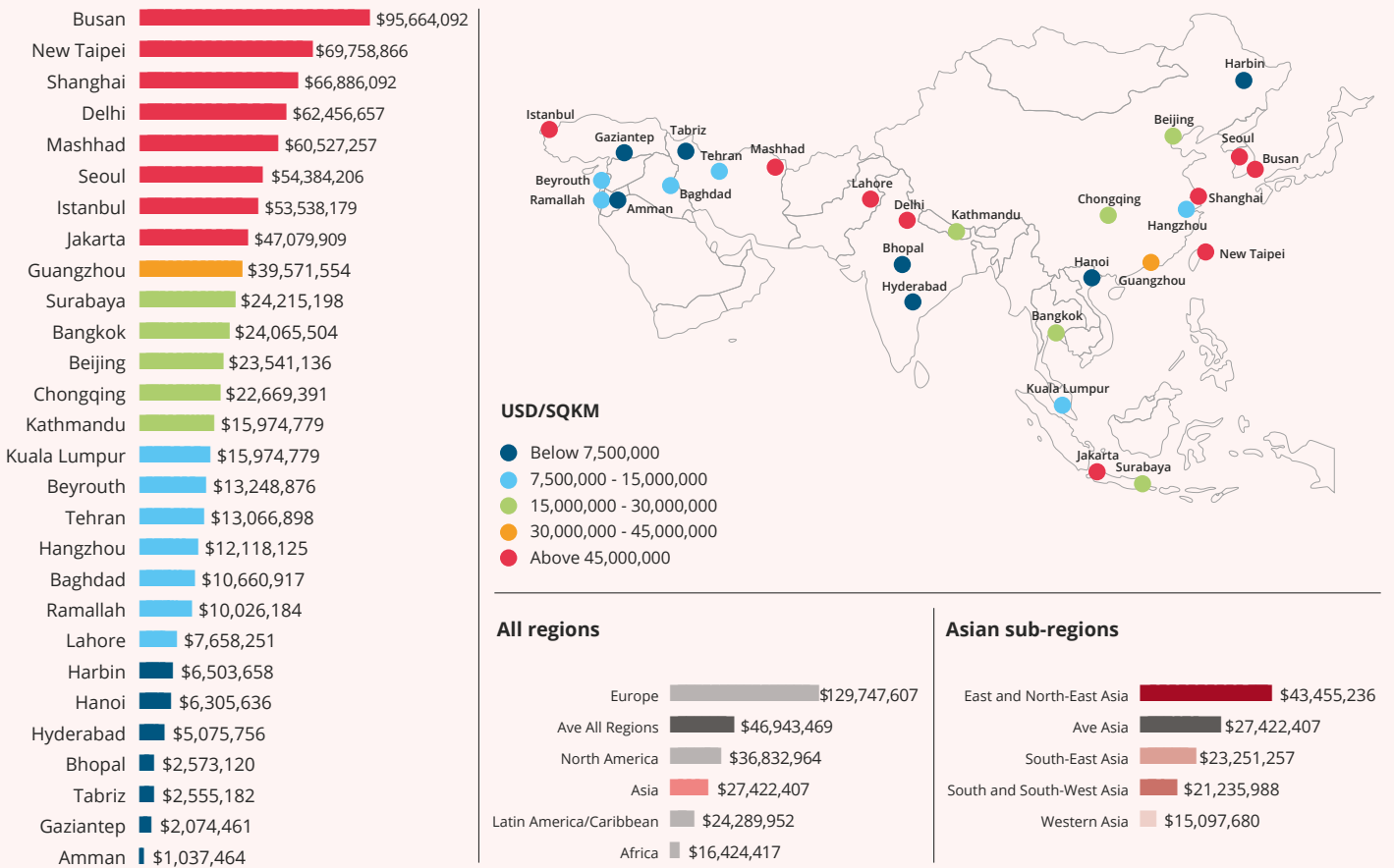


TEHRAN. Photo by Borna Mirahmadian on Shutterstock

<sup>41</sup> World Bank (2020).

<sup>42</sup> World Bank (2015).

**Figure 14**  
**economic density**



→ **Asia's topmost economically dense areas also offer some of the best transport connectivity and quality of urban public services**

of agglomeration in the form of prosperity cannot be achieved until the quality of public services can be improved through public investments.<sup>43</sup> For example, if better public transport can enable more workers to reach their

destination with lower time and cost savings, it would increase work productivity and quality of life by leaving workers with more time and disposable income. Asia's topmost economically dense areas like Busan, Taipei City and Shanghai also offer some of the best transport connectivity and quality of urban public services, making **economic density** an advantage for its population as more businesses can be located in smaller areas and thus more jobs are accessible within smaller commuting distances (Figure 14).

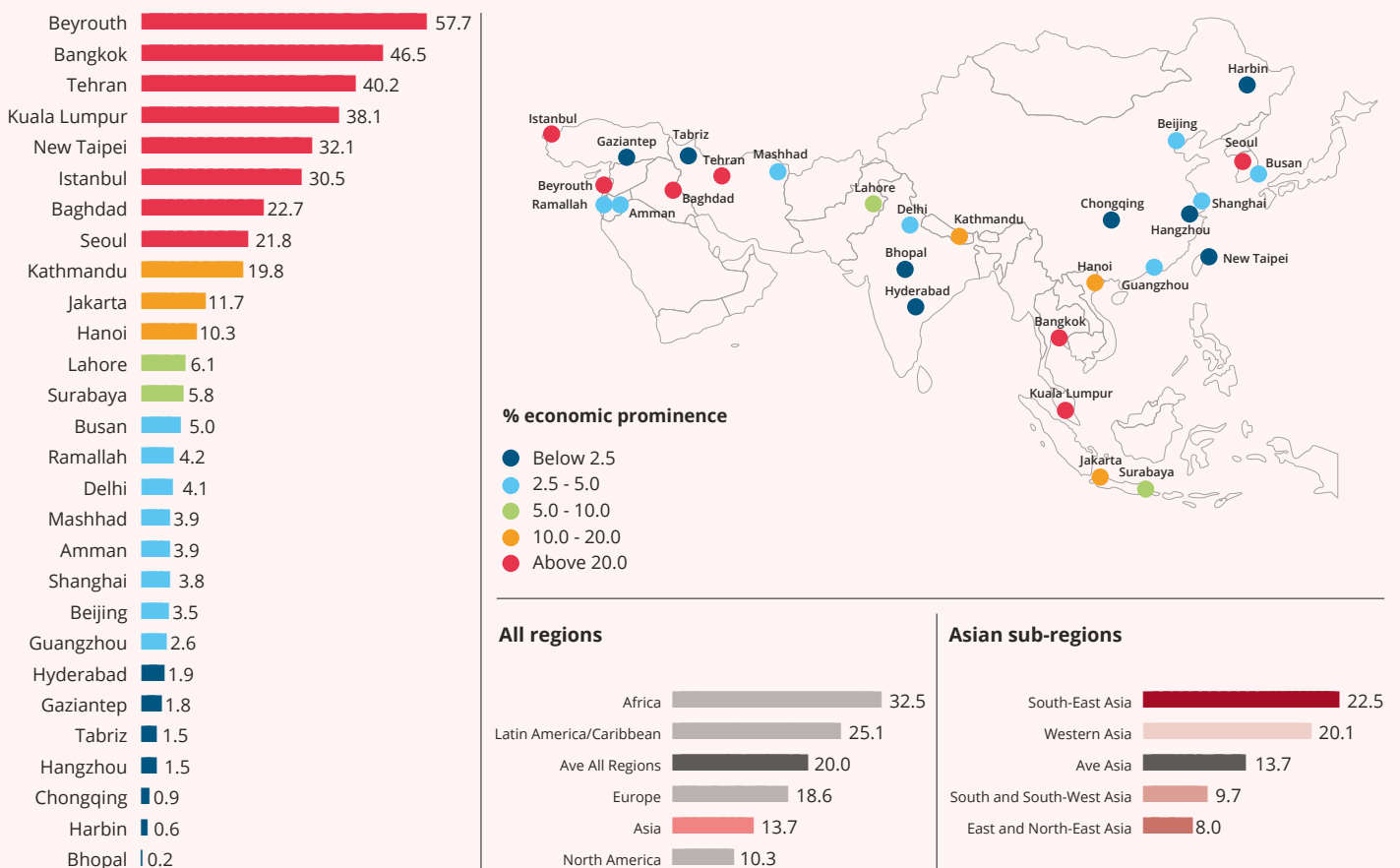
<sup>43</sup> Puga (2010).

It is a well-known fact that cities are the engines of economic prosperity and growth, which is why large segments of national GDPs are driven by urban economies. But excessive concentration of economic activity in a single large urban area can be problematic for multiple reasons, including practical issues like greater congestion on the city's roads and the uneven distribution of economic activities, which relate to political problems, public safety and development issues. In Asia, metropolitan areas which are also capital cities, like Bangkok (46.5%) and Tehran (40.2%), are single-handedly driving national economies whereas others like Gaziantep, Turkey (1.8%) and Hangzhou, China (1.5%) have

much smaller roles to play either due to their locations, or because they are one of many large cities located within their country (Figure 15). As compared to other regions of the world however, average **economic prominence** levels in Asia (14.7%) are well below the global average (20.2%) and the comparable region of Latin America (25.1%). This is likely due to many Asian countries' large populations, which are spread across them along riverbeds, in coastal areas and even upcountry such as in mountainous terrain.

Having said this, significant numbers of working age adults in Asian metropolitan areas are searching for work, reflecting both natural tendencies in worker-firm matching and in some cases,

**Figure 15**  
**economic prominence**



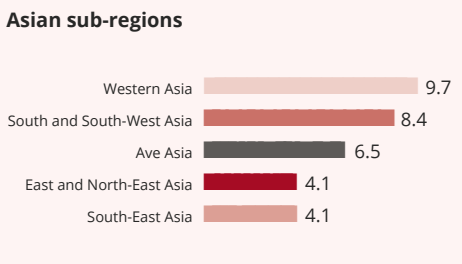
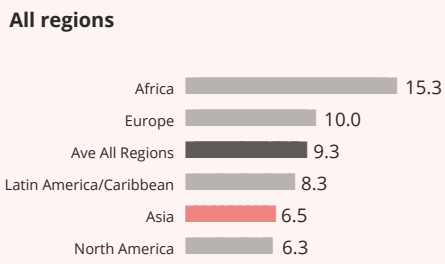
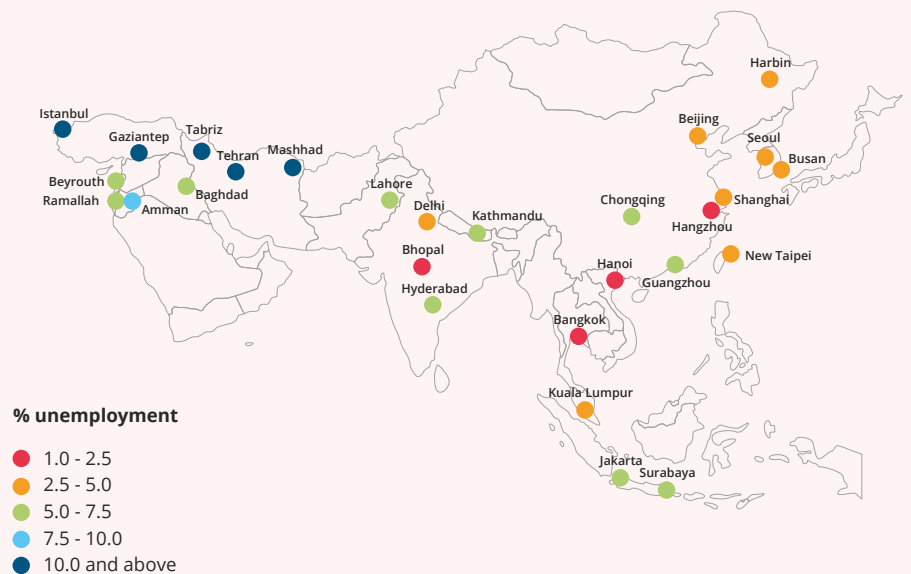
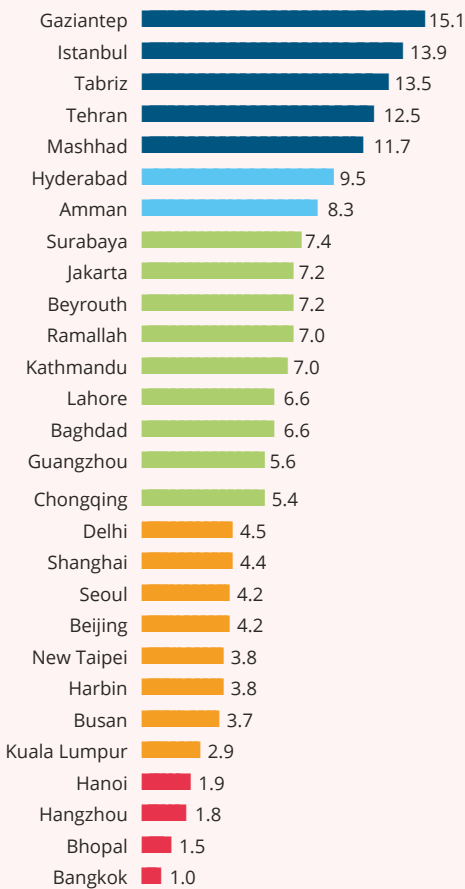


depressed economic conditions that suppress labour markets. But **unemployment** levels across the region average 6.6%, well below the global average of 9.3%, likely due to rapid growth in service sector jobs in recent years across Asia (Figure 16). Here too there is significant regional variation, with lower unemployment in the developed economies of South-East Asia (4.1%) as compared to more than double of that in South and South-West Asia (8.4%). Metropolitan areas located in growing and high productivity countries such as Hangzhou (1.8%) and Busan (3.7%) understandably report much lower unemployment levels than those in economically depressed places like Tehran (12.5%)

and Ramallah (7.0%).

But in many cases, high unemployment could be due to high inward migration due to conflict, e.g. Syrian refugees in Gaziantep (15.1%) and Amman (8.3%), or simply the economic promise of their economies' labour absorption potential due to which large numbers of new migrants land there every year.<sup>44</sup> Within larger countries like India and Thailand, metropolitan areas like New Delhi and Bangkok have for decades remained magnets for millions of rural-urban migrants due to a combination of push (e.g. falling agricultural productivity) and pull (e.g. greater jobs) factors. Thus, in recent years, sustained economic growth and availability of jobs in

**Figure 16**  
**unemployment**



<sup>44</sup> Landry (2000).

**Figure 17**  
**unemployment by gender and youth**



**Averages alone do not paint the full picture of how unemployment rates impact societies. Almost all metropolitan spaces are witnessing higher levels of unemployment among women and youth**

urban labour markets across Asia, but particularly in East and North-East Asia and South-East Asia, have triggered waves of migration. Metropolitan averages alone do not paint the full picture of how unemployment rates impact societies. In reality, almost all metropolitan spaces are witnessing higher levels of **unemployment among women and youth** (Figure 17). Discussed further in this report, persistently high female unemployment rates are indicative of the peculiar barriers women face in access employment opportunities, such as poor childcare and transport services.<sup>45</sup> Official statistics aside, studies have shown that particularly

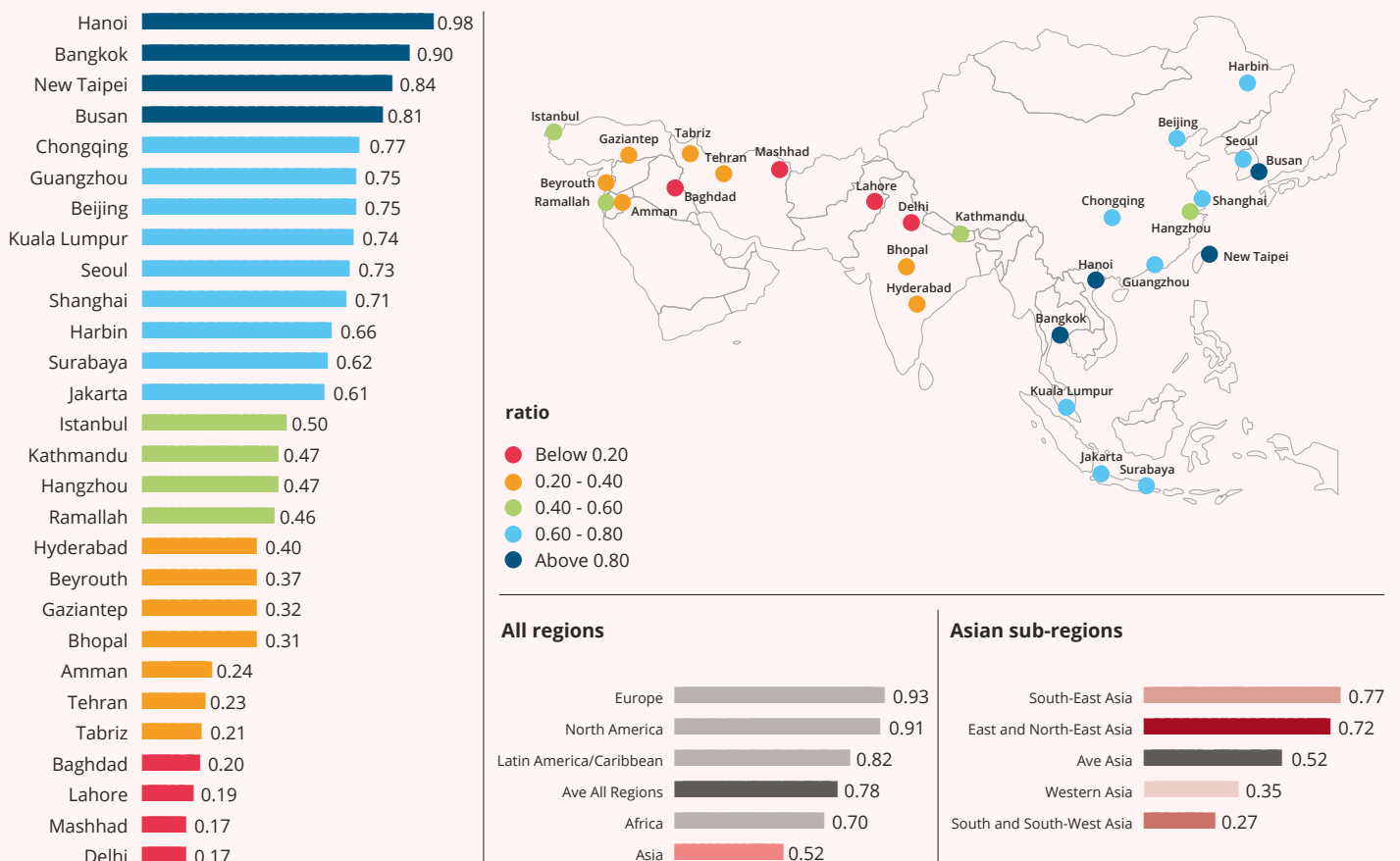
in high informality settings and even otherwise, the true extent of women’s economic contributions is never properly documented, even in industrialized economies.<sup>46</sup> The world over, they are much more likely to work part-time, from home and in the informal economy, thus in more precarious employment situations. In general, the proportion of jobs in the informal sector are inversely proportional to the degree of economic development, but data at the metropolitan level is scant. If national data is an indicator, Asia’s metropolitan spaces would generally have high degrees of informality, as compared to counterparts in Europe and North America.

<sup>45</sup> Peters *et al.* (2019).  
<sup>46</sup> Malik *et al.* (2015).

Youth unemployment is also concerning, particularly in environments facing socioeconomic and political instability, where it could contribute to the boiling over of discontent into activism.<sup>47</sup> The highest levels of youth unemployment in Asia are reported in Ramallah (23.8%) and Kathmandu (18.5%) with much lower numbers in more prosperous areas like Beijing (4.3%) and Busan (7.2%). Studies show that formative years—immediately following graduation—are critical for workers to acquire new technical and interpersonal skills, including forming aspirations and shaping behaviours that determine key employment outcomes in later life.<sup>48</sup>

The greater participation of women in the workforce, particularly when they have high human capital endowments, is well known for bolstering the economic performance on entire countries.<sup>49</sup> Asia (0.52) lags all other regions and is thus well below the global average (0.78) of **women in the workforce** due to traditional social norms restricting women's role to certain occupations considered acceptable (Figure 18). South Asian metros like Lahore (0.19) and New Delhi (0.17) stand at the bottom of the pile due to this reason, where Southeast Asian metropolitan cities like Kuala Lumpur (0.74) and Hanoi (0.98) stand shoulder to shoulder with leading regions like Europe (0.93).

**Figure 18**  
**women in workforce**



<sup>47</sup> Brownlee et al. (2015).

<sup>49</sup> Peters et al. (2019).

<sup>48</sup> Schoon and Parsons (2002).

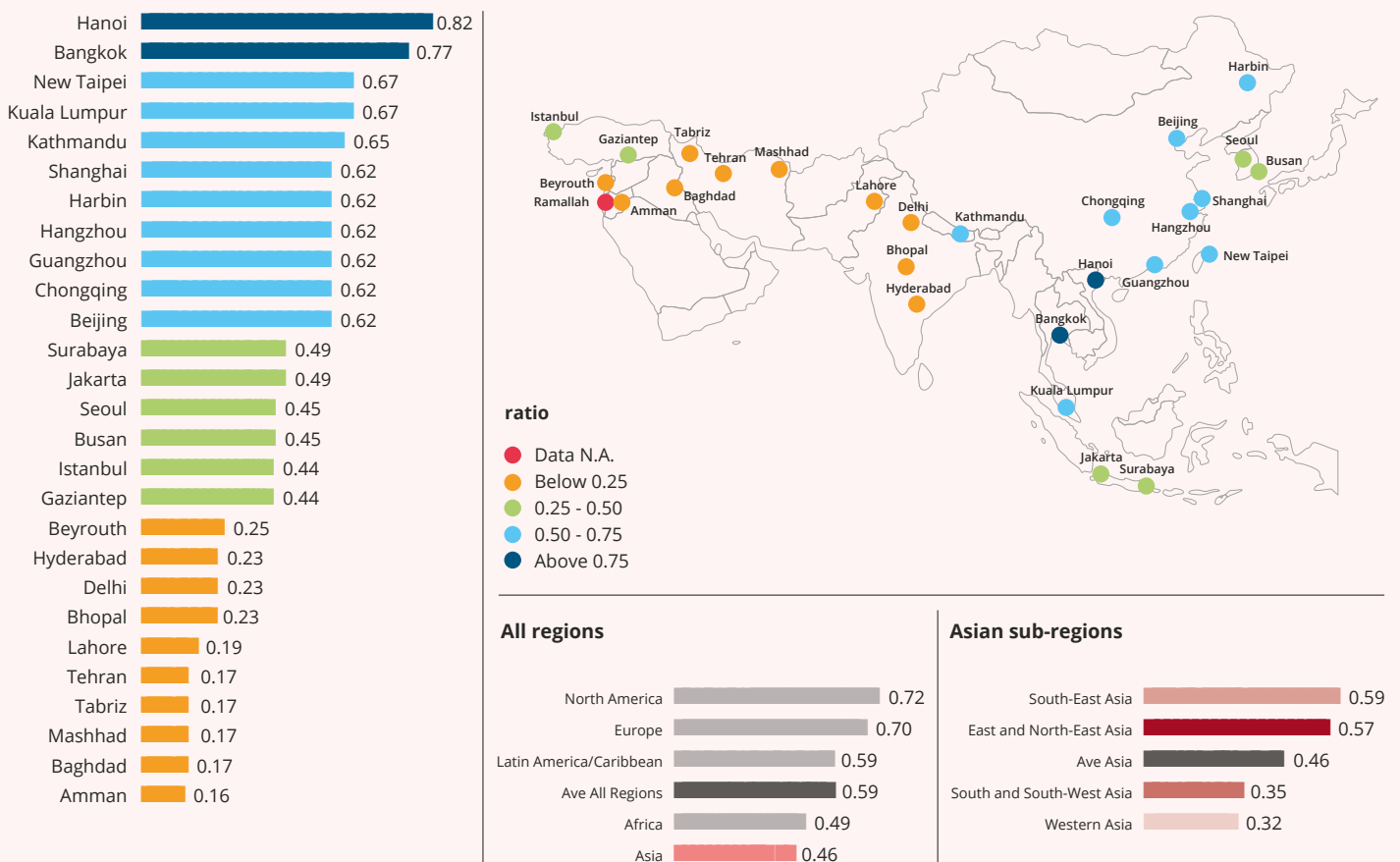
→ **With women earning, on average, merely 46% of men's income, the Asian gender pay gap lags behind the global average**

But when women do participate in the labour, they tend to receive lower compensation for the same position. As compared to men, women in North America receive 0.72 of the salary, but the **gender pay gap** in Asia is merely 0.46, which lags well behind the global average of 0.59 (Figure 19). Like in other

indicators, the sub-regional trend is similar in that metropolitan spaces in East Asia (including southeast and northeast) have greater gender parity in income levels. But surprisingly in this case, Southeast Asia's largest metropolitan spaces like Bangkok (0.77) and Hanoi (0.82) have far better gender parity than more prosperous East Asian places like Seoul and Shanghai.

The **shares of employment into economic sectors** provides key insights into the economic structures and efficiencies of metropolitan economies. In Asia, the share of jobs in the primary sector where employment is linked to agricultural activities, averages only 5% but is more than the

**Figure 19**  
**gender pay gap**

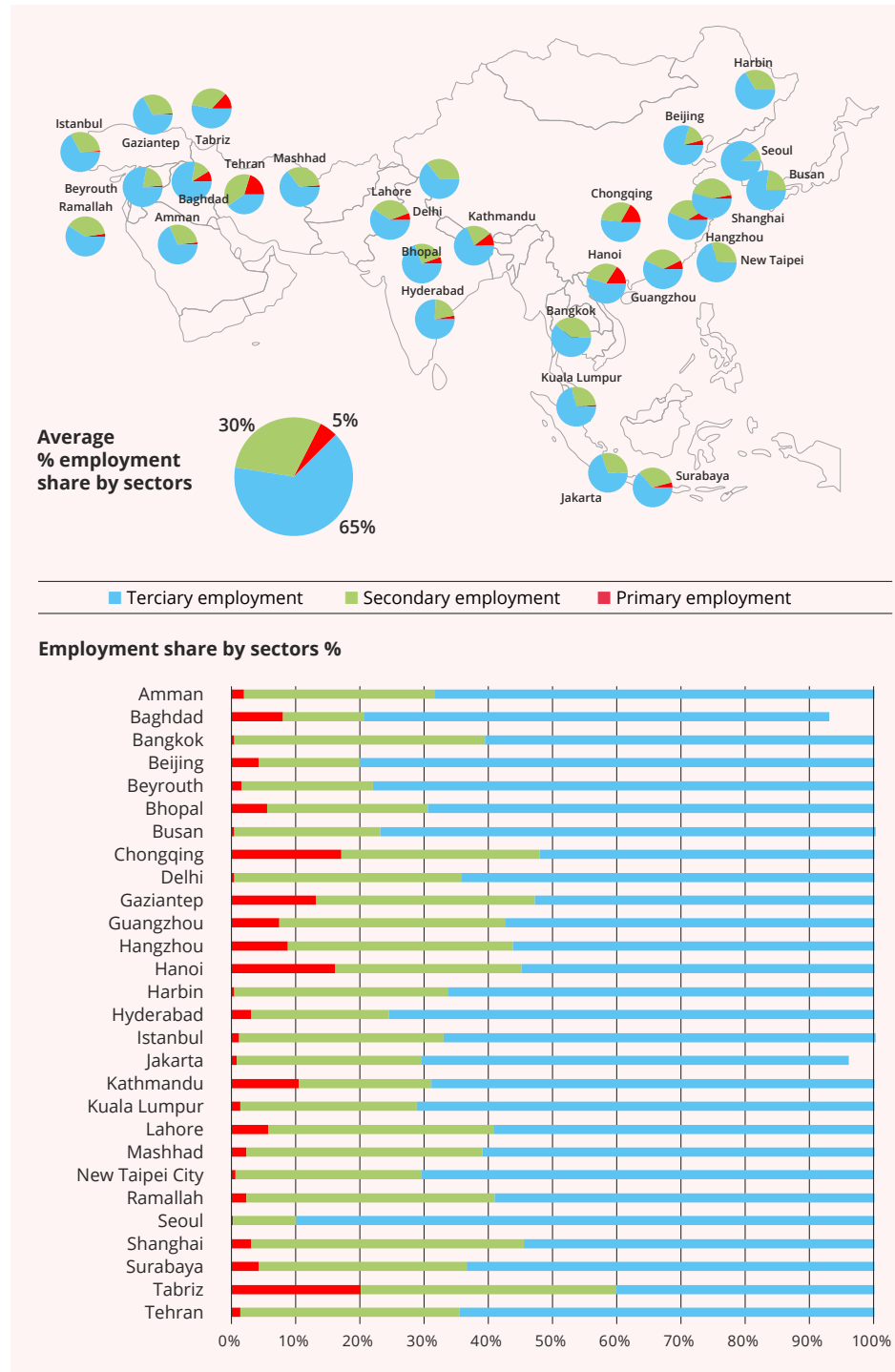




global average of 2.8% (Figure 20). Unlike other indicators discussed in this section, variation across Asia's subregions is significantly less, ranging from 4.5% in South-East Asia to 6.1% in South and

South-West Asia. At the level of metropolitan areas, unsurprisingly, more industrialized places have much lower primary sector employment such as only 0.1% in Seoul or 1.2% in Istanbul.

**Figure 20**  
**employment share by sectors**





→ Residential buildings and agricultural gardens on the banks of the Yangtze River in **CHONGQING**, one of the Asian metropolises with the highest share of people employed in the primary sector (17.1%)

---

## social cohesion

In addition to being economic systems, metropolitan areas are also incredibly complex social systems, particularly when they attract fresh migrants from large catchment areas. The interplay between the economy and society is mediated by the availability of opportunity, e.g. large universities or manufacturing establishments attract students and factory workers respectively, which in turn increases residential neighbourhoods' diversity. While the previous section discussed physical infrastructure and public service delivery, this section will emphasize the need for social services that city and regional governments must address in order to maintain social cohesion. A first common axis of inequality is being a new economic migrant, abandoning prior social support structures to settle into urban areas. Migrant people, depending on the social groups to

which they belong, are likely to be additionally affected by other axes of inequality which are intersected, such as sexual and gender diversity, age, disabilities, religion, and others.<sup>50</sup> For instance: a single person can be migrant, woman, young, have children and disabilities, and be in immediate search for support structures for services like childcare, socio psychological support and social protection in case of economic disasters.<sup>51</sup>

Without these protections, the promise of prosperous urban life and ample economic opportunity could quickly turn into frustration and distress at the microlevel, and social instability or upheaval at the macrolevel. The clearest manifestation of the depravity is **income inequality**, which is simply the gap between the haves and the have-nots. While economists have long argued about the causes



JAKARTA. Photo by Wulandari Wulandari/ Shutterstock

---

<sup>50</sup> Metropolis (2019a).

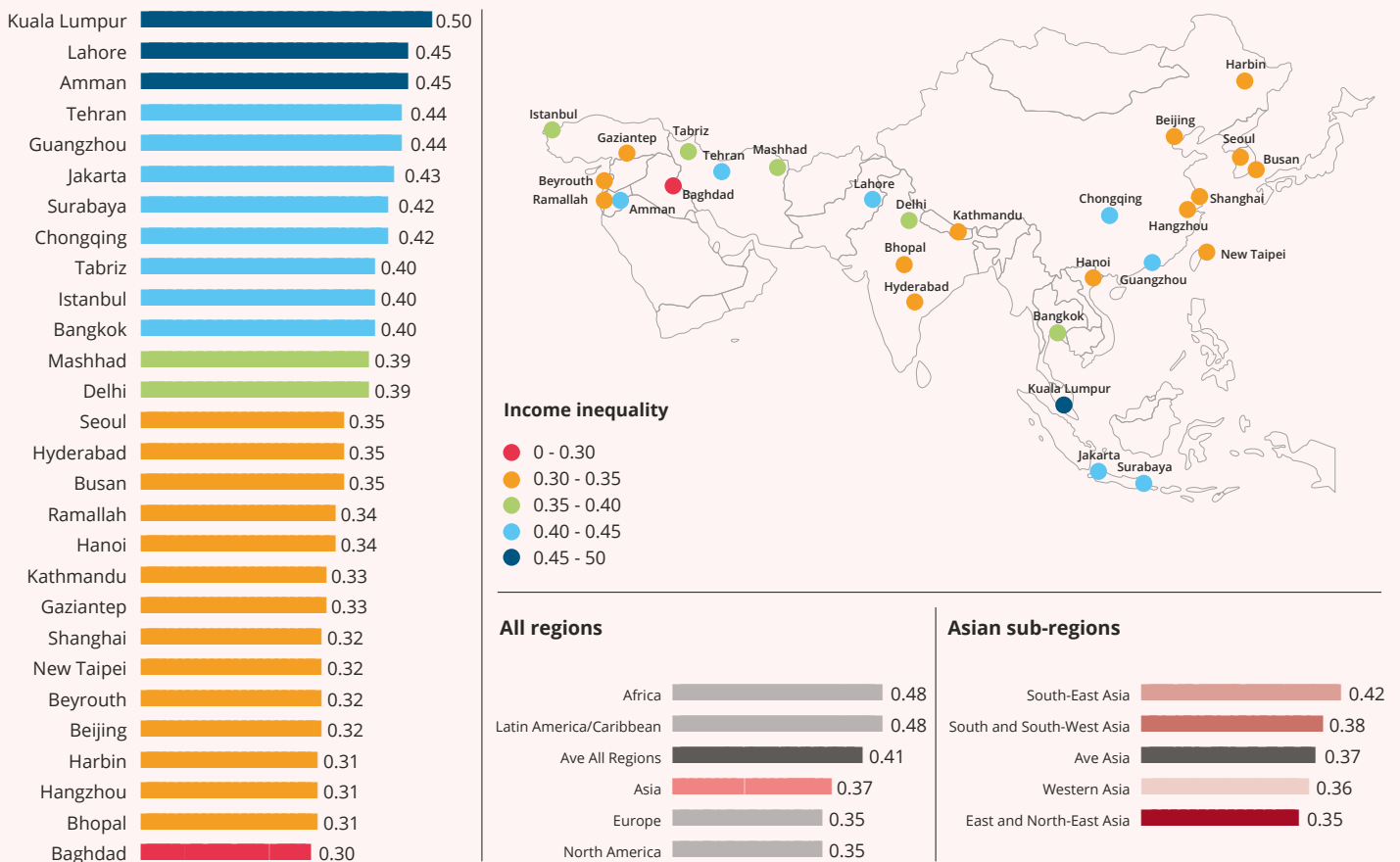
<sup>51</sup> Evans (2018).

and consequences of inequality, with some urban economists even arguing that they are merely a sign of upward economic mobility, in urban neighbourhoods where density is high, it creates social tensions. The standard international measure of income inequality is the Gini coefficient for any given population, which ranges from 0 to 1 where the former represents complete equality and the latter complete inequality. It is noteworthy that this is simply a measure of relative income or wealth; but taken in the context of GDP per capita and other measures of social and human developments, it helps paint a comprehensive profile of metropolitan areas.

In Asia, the overall Gini coefficient value of 0.37 is only ahead of Africa and Latin America and the Caribbean, but slightly worse than advanced economies in Europe and North America, which are both at 0.35 (Figure 21). Asia also boasts slightly more income equality than the global average of 0.41, though as discussed in the prior section, in absolute terms per capita income remains relatively modest, particularly in a few subregions. In terms of income inequality though, there is limited variance across subregions, though South-East Asia's 0.42 stands out.

Interestingly, East and North-East Asia's 0.35 puts it exactly at

**Figure 21**  
**income inequality**



par with industrialized economies, likely due to those economies' ability to create inclusive prosperity through large-scale job creation that has taken millions out of poverty in China alone. As illustration of the earlier point regarding relative and absolute depravity, it is significant to note that within the Metropolis Observatory's sample, some low-income metropolitan areas like Baghdad and Bhopal are the most equal whereas others like Lahore and Amman are among the most unequal. Similarly, income inequality among higher income areas varies widely as well, with several Chinese cities like Beijing and Shanghai reporting much lower income inequality than Kuala Lumpur and Guangzhou.

This mixed picture nonetheless indicates that several Asian metropolitan spaces require steps to address this issue in order to avoid some of the challenges this can create in the future. This is particularly true for places experiencing rapid growth and economic development because they are most likely to witness correspondingly quick changes in social structures that can create unwanted stressors on community level cohesion which in turn forms the backbone of metropolitan areas' social cohesion. Unless these places continue absorbing pools of top talent arriving in their

midst, their economic machinery's ability to outperform their peers would be endangered. From hosting hi-tech professionals like software engineers to seemingly modest jobs such as restaurant servers, their economies are dependent on the steady stream of individuals motivated to achieve a better life. But it is also a reality that as incomes rise, they begin by disproportionately benefiting certain segments of the population at the expense of others, before eventually the later start catching-up.

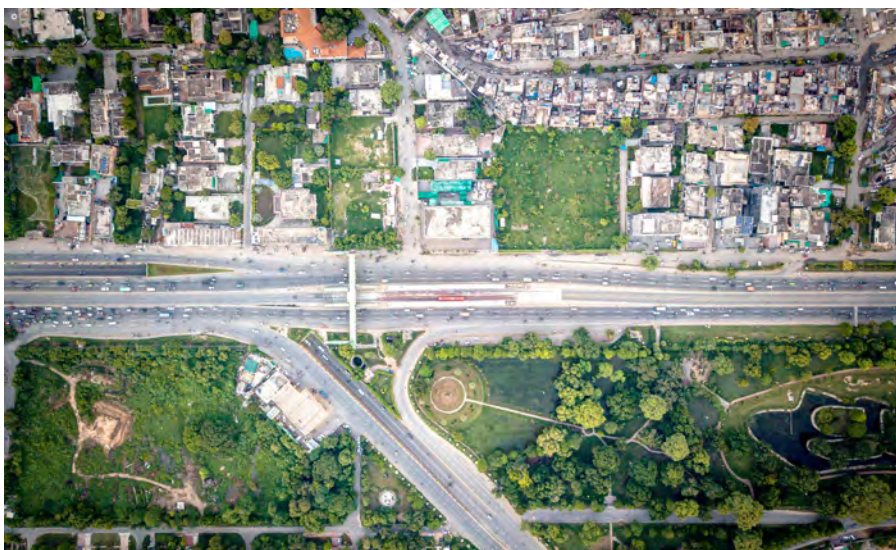
As compared to villages or smaller towns, the problem of income inequality is particularly stark in metropolitan areas packed with dense housing as signs of economic well-being in the form of luxury vehicles, fancier housing and higher-end restaurants are much more obvious to the less fortunate. This is why maintaining social cohesion, where these migrants can assimilate without problems into previously homogenous neighbourhoods, is of paramount importance for administrators. This naked manifestation of income inequality is known as a key driver of theft and violent crimes, often committed by local youth who are frustrated by their lack of access to high performing segments of the economy, often despite having invested in higher education.

This is why metropolitan area murder rate is a useful indicator of social cohesion, or the lack thereof. It could be considered a proxy for income disparities and social instability, but also of high degrees of frustration among disenfranchised members of society, presence of abject poverty and, in general, lawlessness or poor law enforcement. Not surprisingly, in Asia there is a positive relationship between income inequality and murder rates at the metropolitan area level (Figures 22 & 23, next page). While this underlying message is unambiguous and intuitively understandable, the slope of the positive sloping line is relatively

---

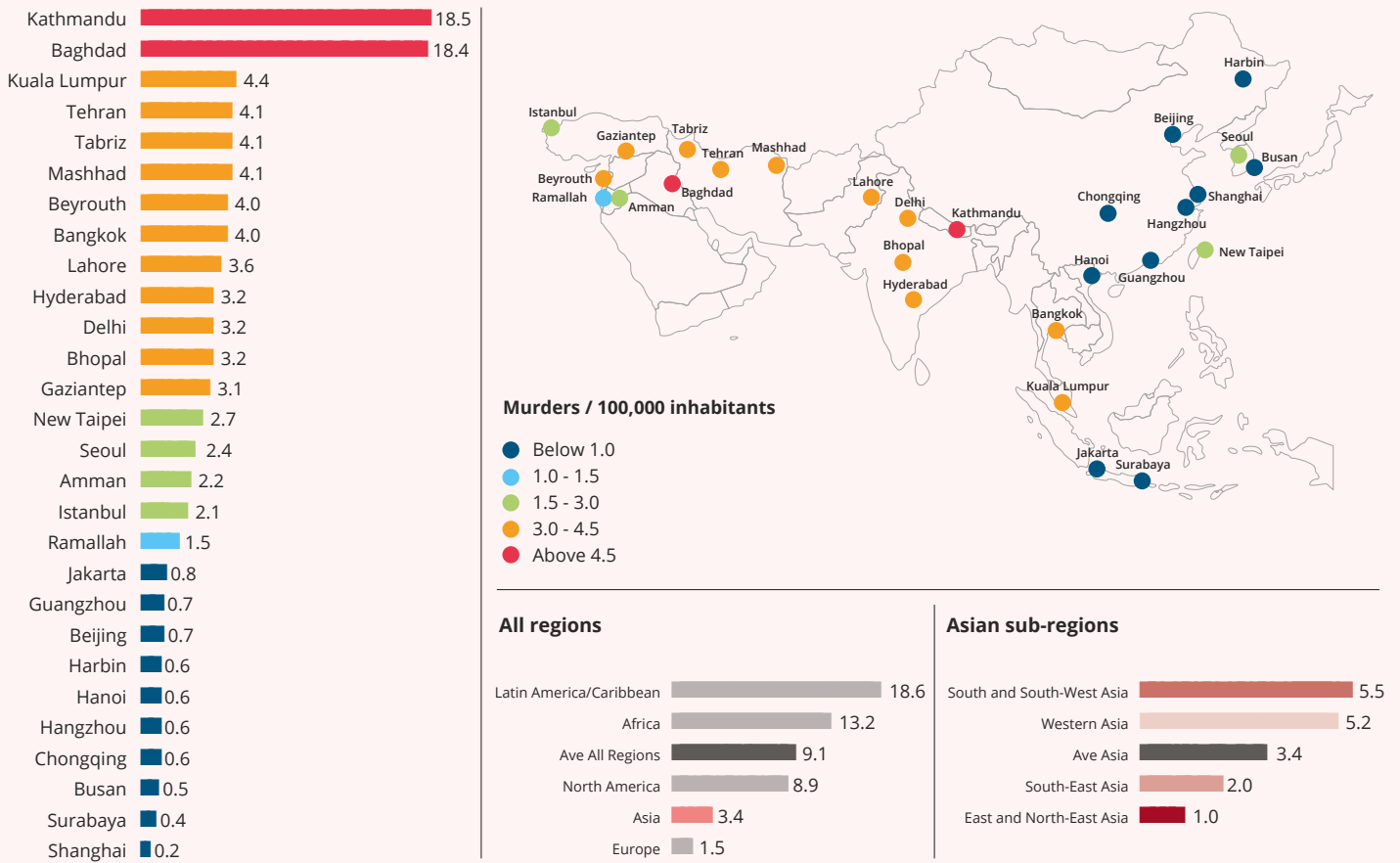
↓ **LAHORE**  
**is among the most**  
**unequal metropolitan**  
**spaces in Asia, with a**  
**Gini coefficient of 0.45**

---

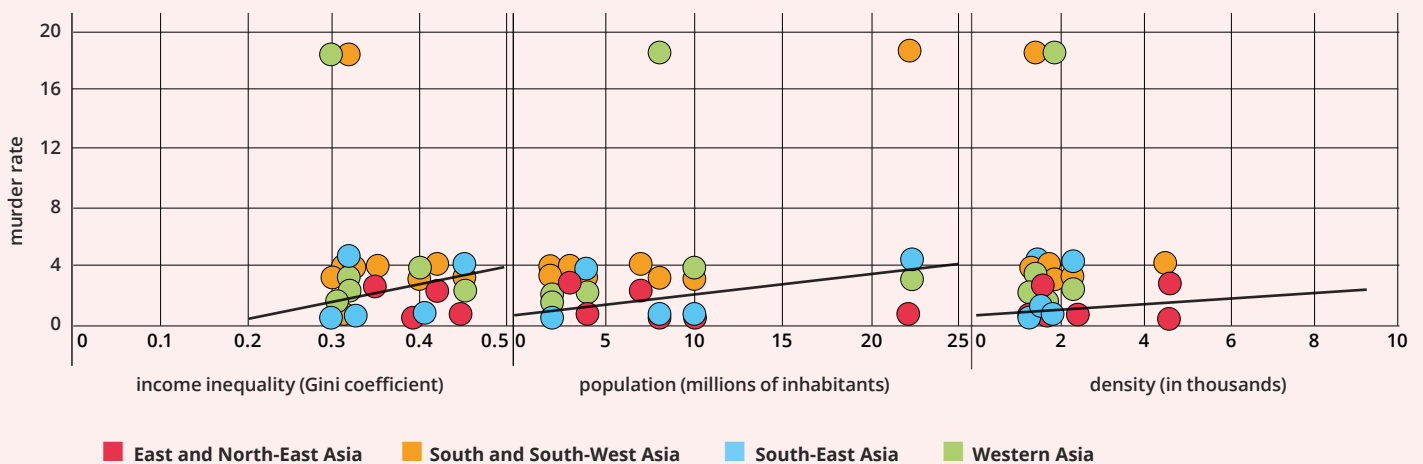


LAHORE. Photo by Abdulliah Imra on Shutterstock

**Figure 22**  
**murder rate**



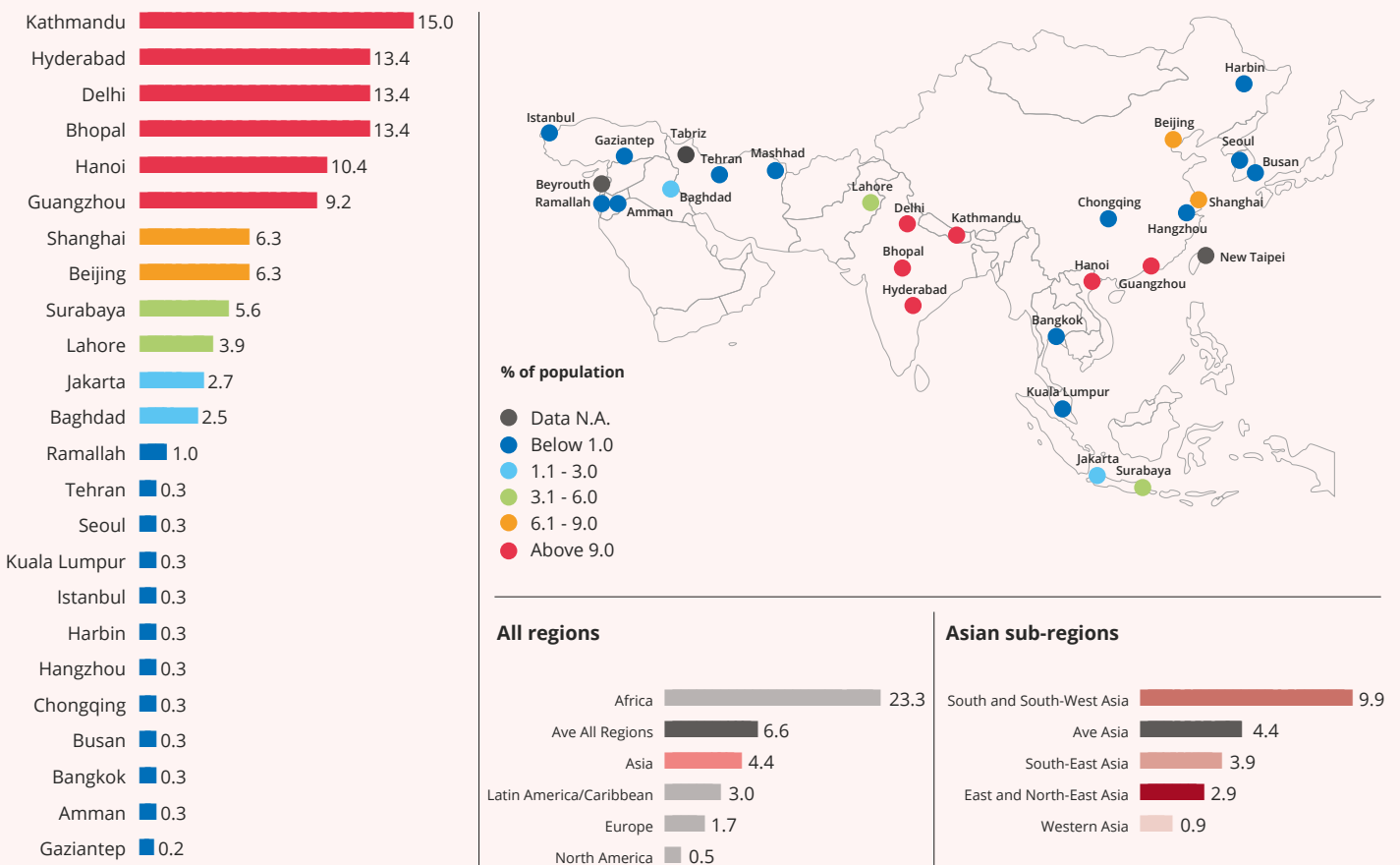
**Figure 23**  
**murder rates by income inequality, population and density**



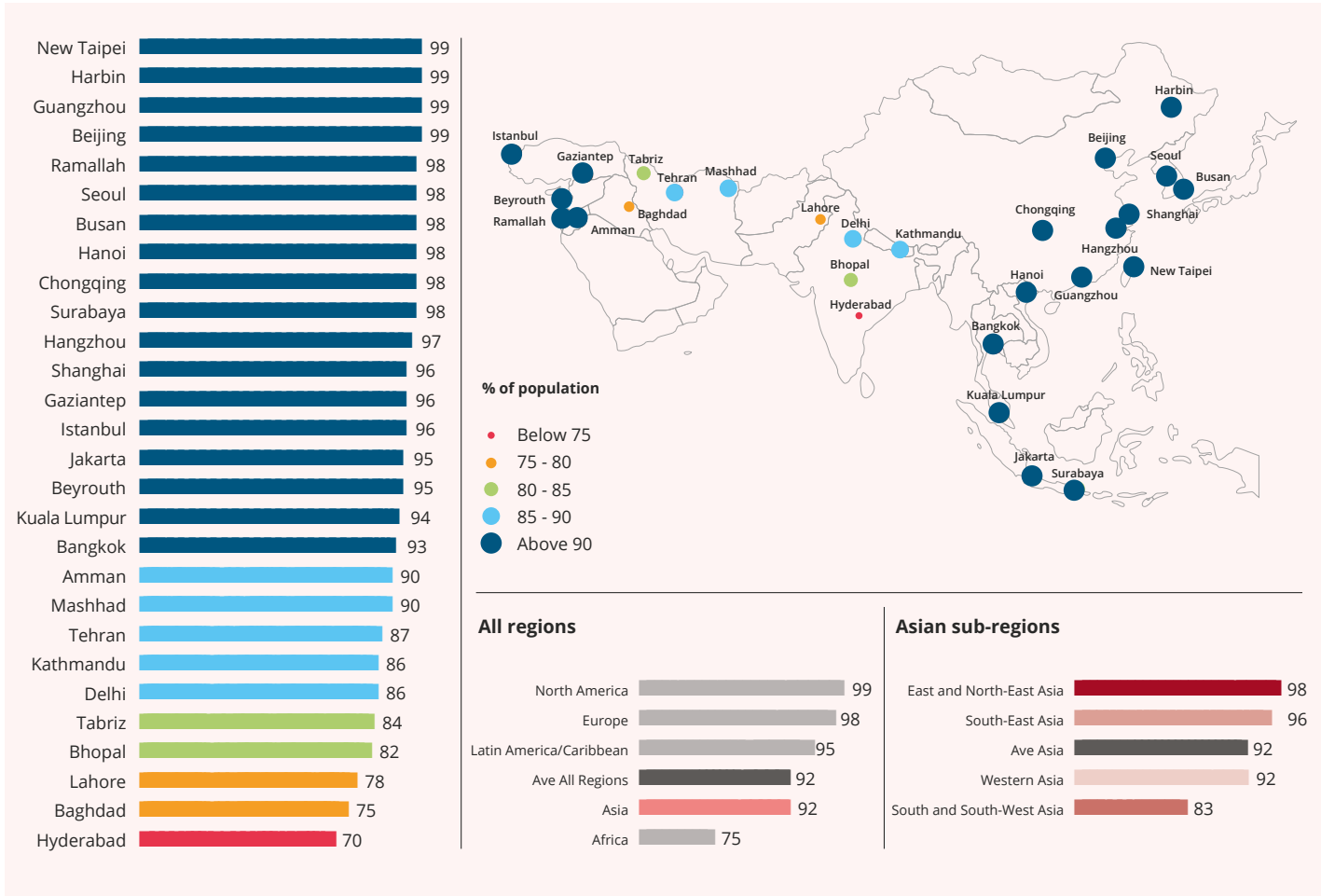
flat and the spread of the dots are relatively wide, which indicates that there are outliers to this general association. Places where murder rates are incredibly high (e.g., Kathmandu, Nepal), or almost non-existent (e.g., Shanghai), indicates that strong localized factors such as longstanding ethnic strife or robust civil sense might be playing a role as well. It is also interesting to note that all metropolitan areas in South and South-West Asia are above the best fit line, indicating that murder rates are higher than income inequality alone would predict. This could simply be due to weakness of law enforcement, such as lack of resources or institutional corruption.

Similarly, murder rate's relationship with population and population density are both positive, though the former is stronger than the latter. The slope of the density relationship is significantly flatter, suggesting that it alone is not responsible for high crime rates. Here too all cities from South and South-West Asia are above the best fit line, reaffirming the earlier conclusion regarding institutional weaknesses. Another factor explaining this is poverty, on which scores places like Kathmandu (15.0%) and Hanoi (10.4%) report much higher proportions of the **populations living below the poverty line** than the continent's average of 4.2% (Figure 24). One

**Figure 24**  
**poverty rate**



**Figure 25**  
**literacy rate**



key underlying factor explaining both economic development and social cohesion conditions in any given area is the attainment of human capital development, measured by levels of education.

While there are many indicators of the educational attainment of a population, the most basic marker is **literacy rate**. In Asia, the Metropolis Observatory indicators reveal generally very high levels of literacy throughout the continent, with near universal literacy rates across sub-regions and particularly in East Asia ((Figure 25, above, & Figure 26, p. 50). This is clearly an outcome of this region's strong investments in

human capital acquisition starting in the 1960s, which ultimately bore fruit in the subsequent decades when their educated and productive workforces became the undercurrent of their miraculous growth. But on the flip side, there are still metropolitan spaces in Asia where literacy rate is below 80%, this includes Baghdad and Lahore, both major economic hubs with rich histories of being seats of power to prominent regional empires of yesteryears. Similarly, in almost all metropolitan spaces, male literacy rates are slightly higher than female literacy, pointing to persistent gender disparity even in the most basic indicator of human capital acquisition.

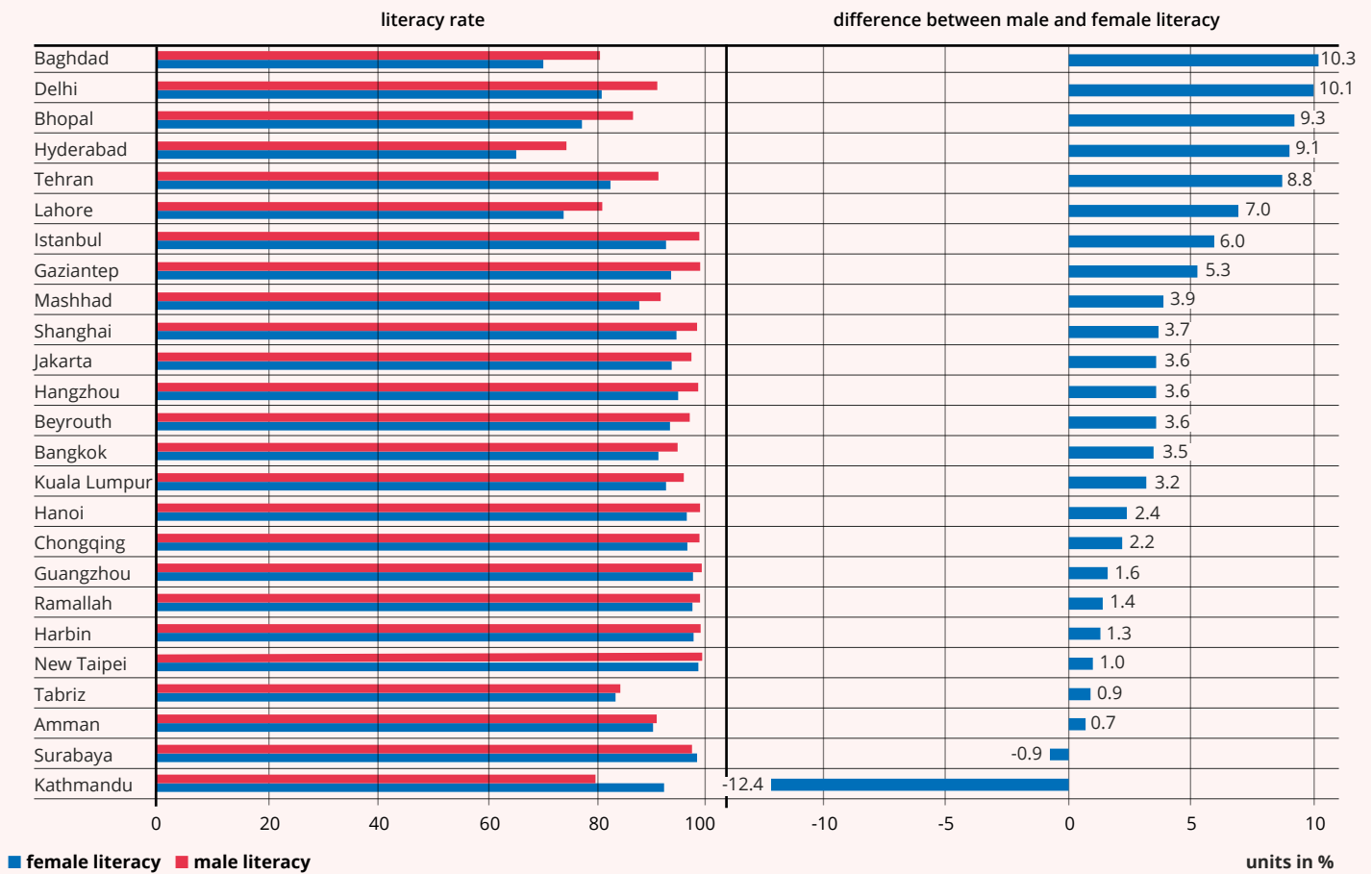


→ Young readers wait for the library's open time in **GUANGZHOU** (2018)



GUANGZHOU. Photo by Chintung Lee on Shutterstock.

**Figure 26**  
**literacy rate female and male**



→ **In almost all metropolitan spaces, literacy rates are higher in the case for men as compared to women, with millions of girls out of school**

In terms of **gender gaps**, there is a stark and disturbing reality, i.e. in almost all metropolitan spaces in this report, literacy rates are higher in the case for men as compared to women. The only exceptions to this rule are Surabaya and Kathmandu, situated in middle- and low-income countries respectively. Highest gender gaps in literacy are reported in South and South-West Asia and the Western Asia subregions,

including prominent economic hubs like Istanbul (6%) and Delhi (10.1%). Most East and North-East Asian metropolitan spaces report less than 4% gender gaps in literacy attainment, painting a picture of rapidly growing areas with high education levels and relative equal access to opportunities regardless of gender.

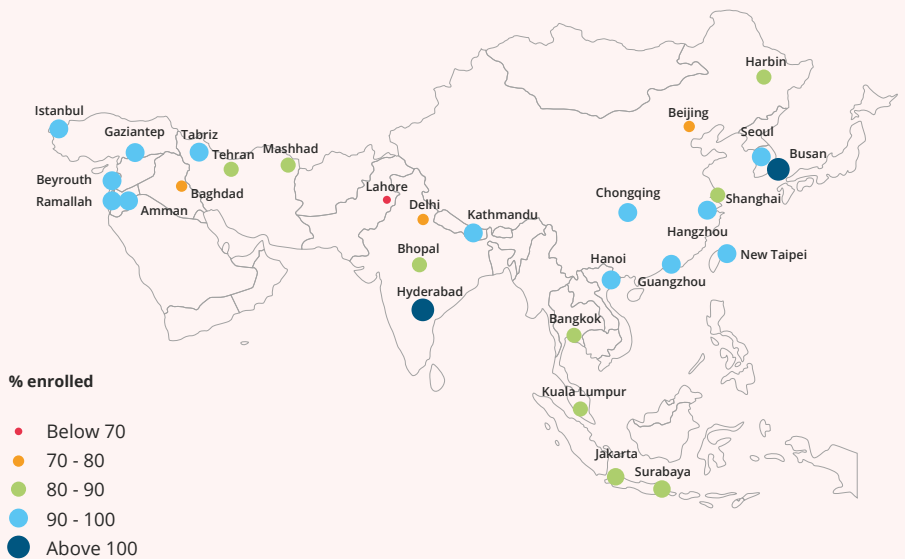
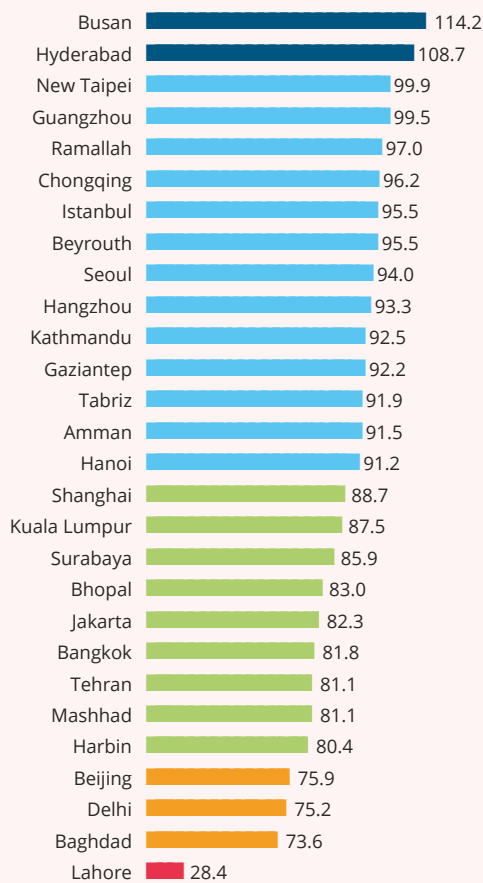
Educational attainment is a key part of human development, with strong longer-term consequences not just for individuals, but for entire families and communities. Due to prevalent cultural norms in certain places and barriers to access due to child labour and early marriage etc., millions of girls are out of school around the world,

and many others are receiving substandard education. A key measure of gender disparities in education is the proportion of **female school-aged population enrolled in schools**. As compared to the global average (87.6%) and particularly Africa (71.8%), Asian metropolitan cities report that 87.8% of all school-aged girls are enrolled in schools (Figure 27). At the metropolitan level, even laggards like New Delhi (75.2%) and Harbin (80.4%) boast high degrees of coverage in absolute terms. Perhaps unsurprisingly given East Asia's strong economic performance in recent decades, this percentage is by far highest

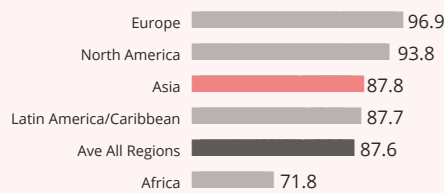
in the East and North-East Asia region (93.6%) within the continent, well above South-East Asia (85.7%) where despite recent improvements in human development numbers, fewer school-aged girls are attending school.

Another useful measure of a metropolitan area's dynamism and its openness to accepting new ideas and ways of life, is the proportion of its **population born outside their home country**. This could be expected to be largest in economically diverse metropolitan spaces like Kuala Lumpur (8.5%) where large universities and multinational corporations attract migrants, or in cities hosting large

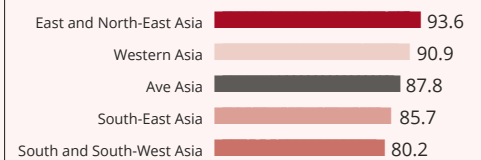
**Figure 27**  
**female school-aged population enrolled**



**All regions**



**Asian sub-regions**

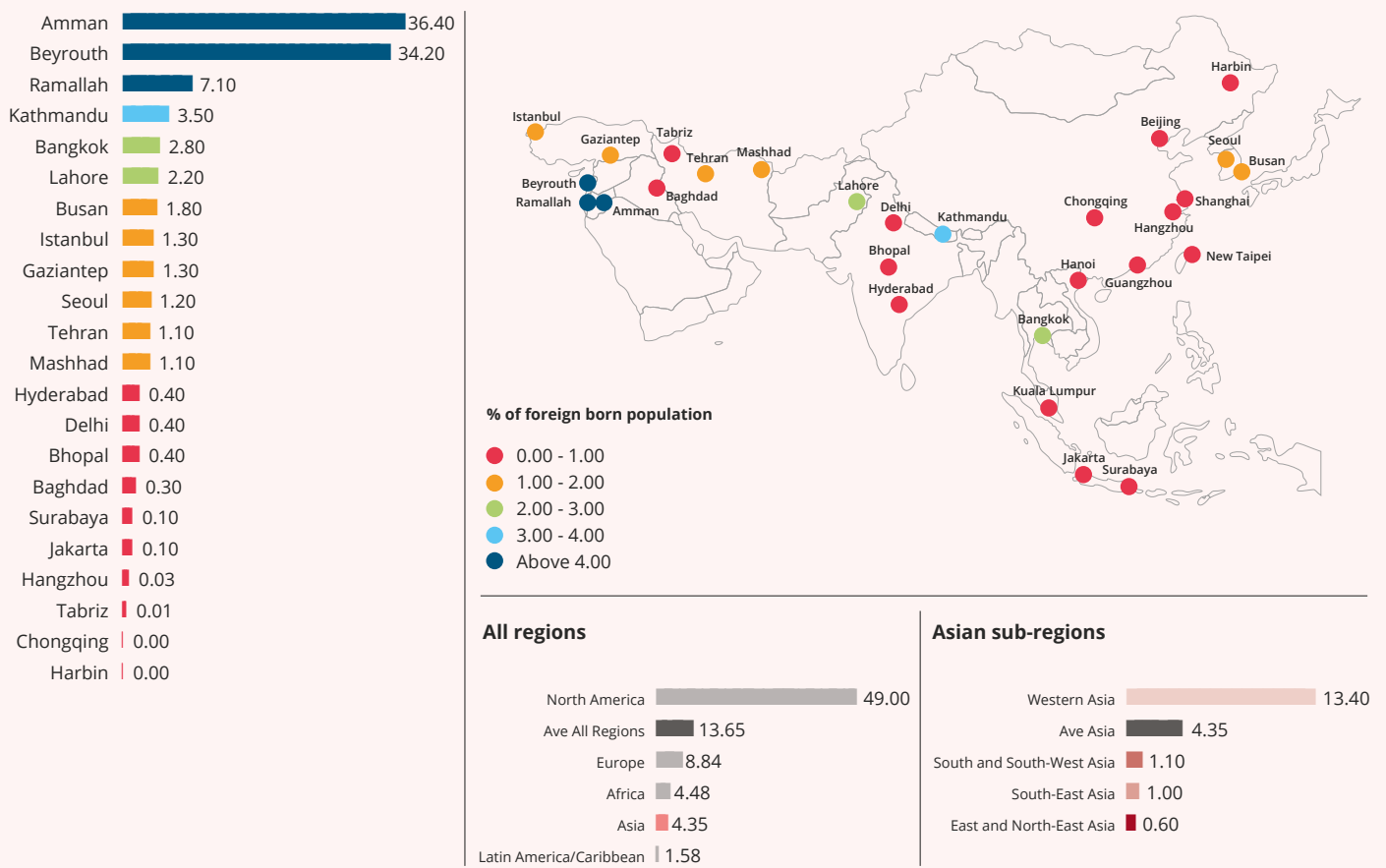


refugee populations like Amman (40%) (Figure 28). As compared to the Asian average of 3.6%, metropolitan areas such as Tehran (1.2%) and Gaziantep (1.4%) report lowest numbers of foreign-born populations which indicates homogeneity in populations. Community-led initiatives in places like Amman, Jordan are

being attempted to improve social cohesion by encouraging greater positive social interactions between refugees and host communities as a means for reducing tensions and improving quality of life for all.<sup>52</sup>

Foreign born population rates are higher in metropolises that are more economically diverse, or with initiatives to host refugee populations

Figure 28 foreign born population



<sup>52</sup> Source: <https://use.metropolis.org/case-studies/building-social-cohesion-in-the-badr-nazzal-district-of-amman>

---

## environmental sustainability

Urban environment in Asia presents ‘a tale of two types of city.’<sup>53</sup> On the one hand, there are the well-served high- and middle-income areas of a city; on the other hand, there are low-income settlements that often have lower levels of infrastructure and service provision, and poor living conditions.

Traditionally known as the ‘brown agenda’, urban environmental problems include “access to basic environmental infrastructure and services; pollution from urban wastes and emissions; resource losses such as ground water depletion and land degradation; and natural and man-made environmental hazards.”<sup>54</sup> In view

of the increasing frequency and intensity of natural disasters and the impacts of climate change, the World Bank developed an “expanded brown agenda,” which includes four urban environmental goals: (i) protect and enhance environmental health; (ii) protect water, soil, and air quality from contamination and pollution; (iii) minimise the impact of urban areas on natural resources on a regional and a global scale; and (iv) prevent and mitigate the impacts of natural disasters and climate change on urban areas.<sup>55</sup>

Cognisant of these issues, most national governments in Asia have confirmed their commitments to the global sustainable development agendas such as the Addis Ababa Action Agenda, the Sendai Framework for Disaster Risk Reduction, the 2030 Agenda for Sustainable Development, the Paris Agreement, and the New Urban Agenda. Fulfilling these commitments will require national as well as local and regional governments to develop and implement integrated approaches towards achieving urban environmental sustainability.

The Metropolis Observatory tracks seven indicators of environmental sustainability: (i) air quality (PM<sub>2.5</sub> concentration); (ii) CO<sub>2</sub> emissions (tonnes per inhabitant); (iii) car ownership; (iv) green space (sq. m. per inhabitant); (v) waste generated per capita; (vi) population served by wastewater collection (%); and (vii) renewable energy use.

One of the effective measures of metropolitan **air quality** is the ‘annual mean concentration of particulate matter of less than 2.5 microns (PM<sub>2.5</sub>) in the metropolitan area’. The airborne particulate matter predominantly affects the respiratory and cardiovascular systems. The World Health Organization (WHO) recommends the air quality guideline of annual mean concentration of

---

→ **Amid the increasing frequency and intensity of natural disasters and the impacts of climate change, fulfilling the commitments of the global agendas will require national as well as local and regional governments to develop and implement integrated approaches towards achieving urban environmental sustainability**

---

<sup>53</sup> UN-HABITAT & UN-ESCAP (2010). <sup>55</sup> Bigio & Dahiya (2004).

<sup>54</sup> Bartone et al (1994, p. 11).

10 microns per cubic meter ( $10 \mu\text{g}/\text{m}^3$ ).<sup>56</sup> Compared to the air quality guideline, all 28 metropolitan spaces in the database for Asia have poor air quality (Figure 29).

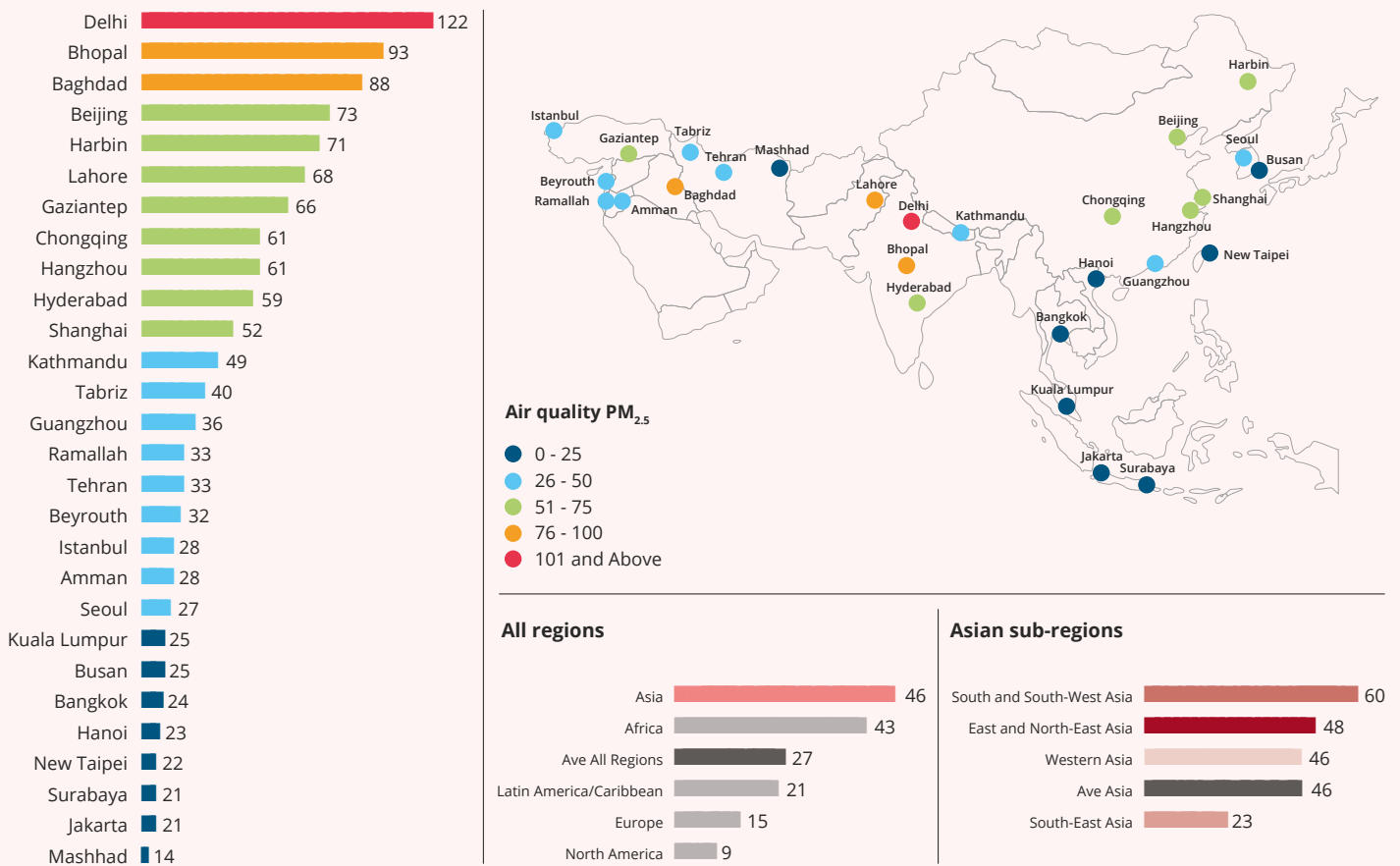
On the one hand, Delhi ( $122 \mu\text{g}/\text{m}^3$ ), Bhopal ( $93 \mu\text{g}/\text{m}^3$ ), and Baghdad ( $88 \mu\text{g}/\text{m}^3$ ) have the poorest air quality. Air pollution in Delhi is caused by 'fumes from its sclerotic traffic and accentuated by diesel generators and the burning of fossil fuels in cooking by less-well-off families.'<sup>57</sup> On the other hand, Mashhad ( $14 \mu\text{g}/\text{m}^3$ ), Jakarta ( $21 \mu\text{g}/\text{m}^3$ ), and Surabaya ( $21 \mu\text{g}/\text{m}^3$ ) have the lowest values for air pollution.

Among the world's regions, Asian metropolises have the poorest air

quality with average figures of 46 microns per cubic meter (or  $46 \mu\text{g}/\text{m}^3$ ) compared to the international average of  $27 \mu\text{g}/\text{m}^3$ . Within Asia, South and South-West Asia subregion has the poorest air quality ( $60 \mu\text{g}/\text{m}^3$ ) compared to the regional average of  $44 \mu\text{g}/\text{m}^3$ .

The WHO air quality guidelines further state that any level of annual mean concentration of  $\text{PM}_{2.5}$  above  $35 \mu\text{g}/\text{m}^3$  is associated with about a 15% higher long-term mortality risk relative to the air quality guideline level.<sup>58</sup> With regard to this measure, 14 out of 28 cities have annual mean  $\text{PM}_{2.5}$  concentration above  $35 \mu\text{g}/\text{m}^3$ . Poor air quality is a cause of major concern for Asian metropolises and their inhabitants. In fact, air pollution

**Figure 29**  
**air quality**



<sup>56</sup> WHO (2006).

<sup>58</sup> WHO (2006).

<sup>57</sup> Broom (2020).

is a global problem as 90 per cent of the global population is exposed to polluted air.<sup>59</sup>

In 2019, the global carbon dioxide (CO<sub>2</sub>) emissions stood at a record high of 43.1 billion tonnes.<sup>60</sup> Cities produce over 70% of the world's greenhouse gas emissions.<sup>61</sup> CO<sub>2</sub> emissions not only affect urban liveability but also contribute to global warming. The Metropolis Observatory indicator of **CO<sub>2</sub> emissions** tracks these annual emissions in metric tonnes per capita.

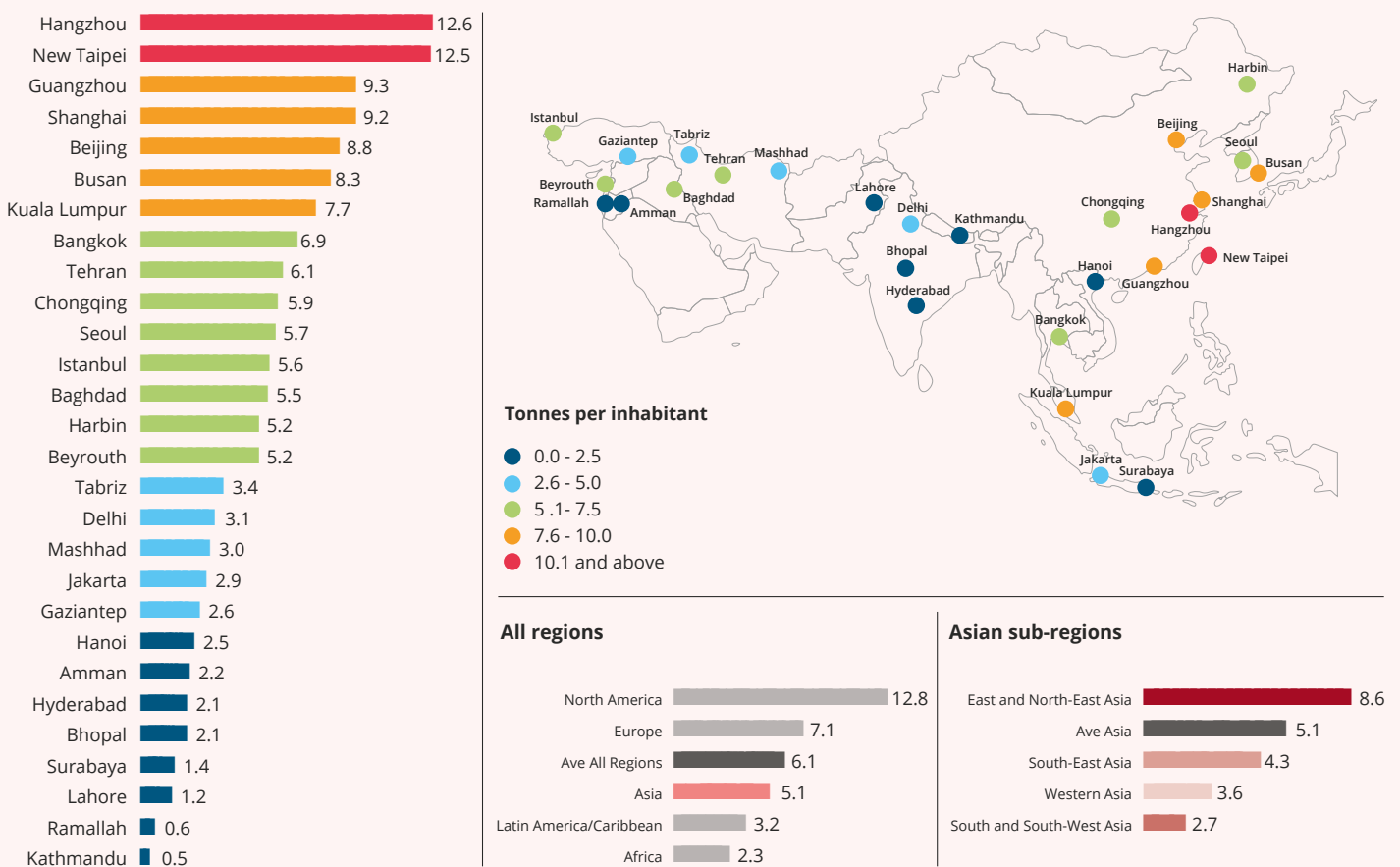
Among the Asian metropolises, Hangzhou and New Taipei had the highest values of 12.6 and 12.5 metric tonnes of CO<sub>2</sub> emissions per capita respectively; they are followed by Guangzhou, Shanghai and Beijing

with 9.3, 9.2 and 8.8 metric tonnes of CO<sub>2</sub> emissions per capita respectively. The lowest CO<sub>2</sub> emission values were recorded in Surabaya, Lahore, Ramallah and Kathmandu that were 1.4, 1.2, 0.6 and 0.5 metric tonnes per capita respectively.

Asia has an average CO<sub>2</sub> emission of 5.1 metric tonnes per capita, which is lower than the international average of 6.1 metric tonnes per capita (Figure 30). Within the region, East and North-East Asia subregion has the highest CO<sub>2</sub> emission of 8.6 metric tonnes per capita; South and South-West Asia has the lowest CO<sub>2</sub> emission of 2.7 metric tonnes per capita.

A major contributor to CO<sub>2</sub> emissions is **car ownership**. The

**Figure 30**  
**CO<sub>2</sub> emissions**



<sup>59</sup> UN News (2018).

<sup>61</sup> Habitat III (2020).

<sup>60</sup> Jackson et al (2019).

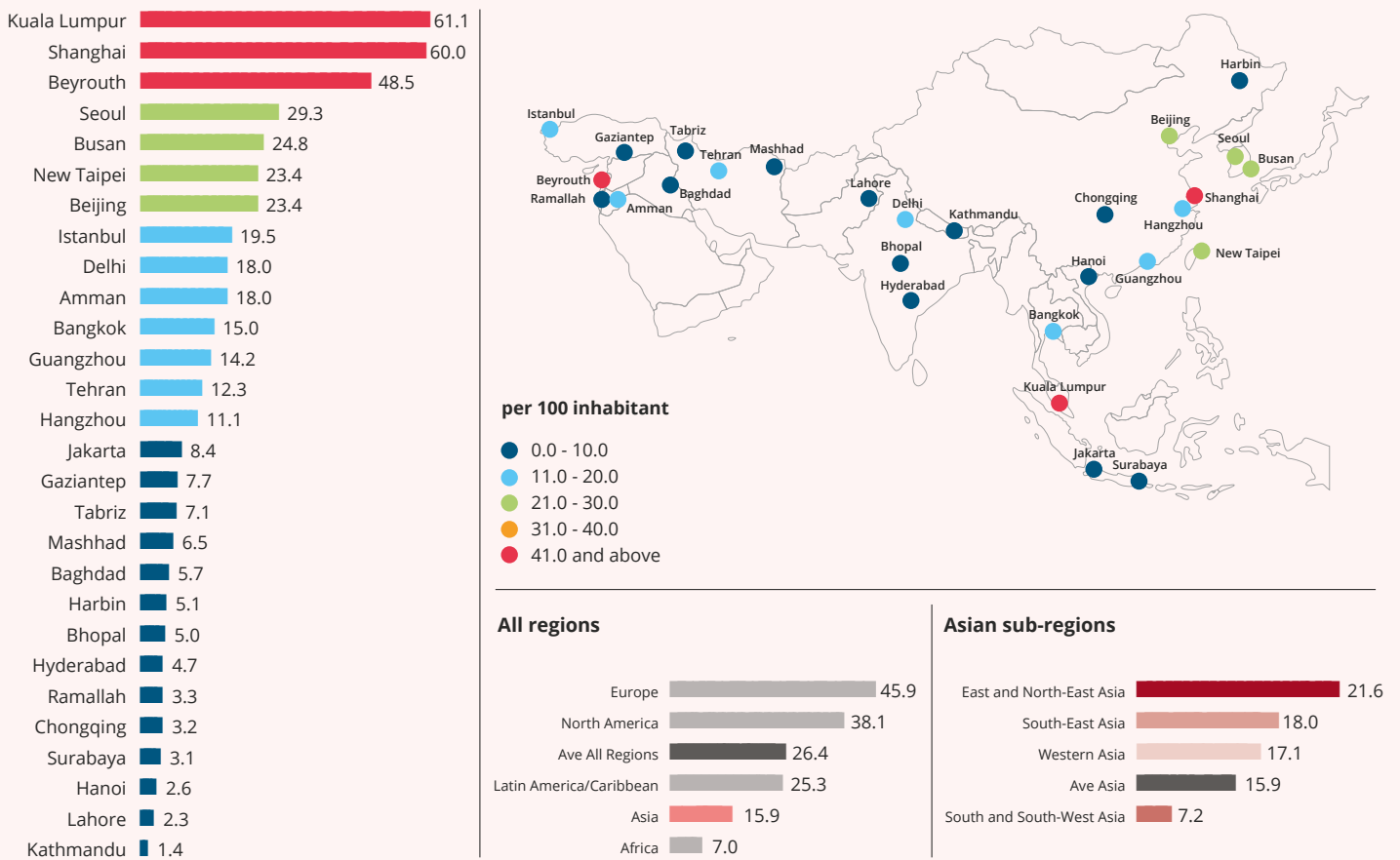
Metropolis Observatory indicator of car ownership measures the 'number of passenger cars registered in the metropolitan area per 100 inhabitants.' Within the region, East and North-East Asia accounted for highest car ownership of 21.6 cars per 100 inhabitants. Among the world's regions, Asian metropolises had second lowest car ownership at 15.9 cars per 100 inhabitants, which was much below the international average of 26.4 cars per 100 inhabitants (Figure 31).

In Asia, the highest values for car ownership were recorded in Kuala Lumpur, Shanghai and Beyrouth at 61, 60 and 48.5 cars per 100 inhabitants. Surabaya, Hanoi,

Lahore and Kathmandu had the lowest figures of car ownership with values of 3.1, 2.6, 2.3 and 1.4 cars per 100 inhabitants. The lowest values of CO<sub>2</sub> emissions per capita and car ownership per 100 inhabitants for Lahore and Kathmandu hint at some association between these two indicators.

In metropolitan spaces, the conventional approaches to improve air quality, reduce CO<sub>2</sub> emissions, and contain car ownership include the improved public transportation systems, car-pooling, mixed land use approaches in urban planning, the provision of accessible green space, and the expansion of vegetation cover.

**Figure 31**  
**car ownership**



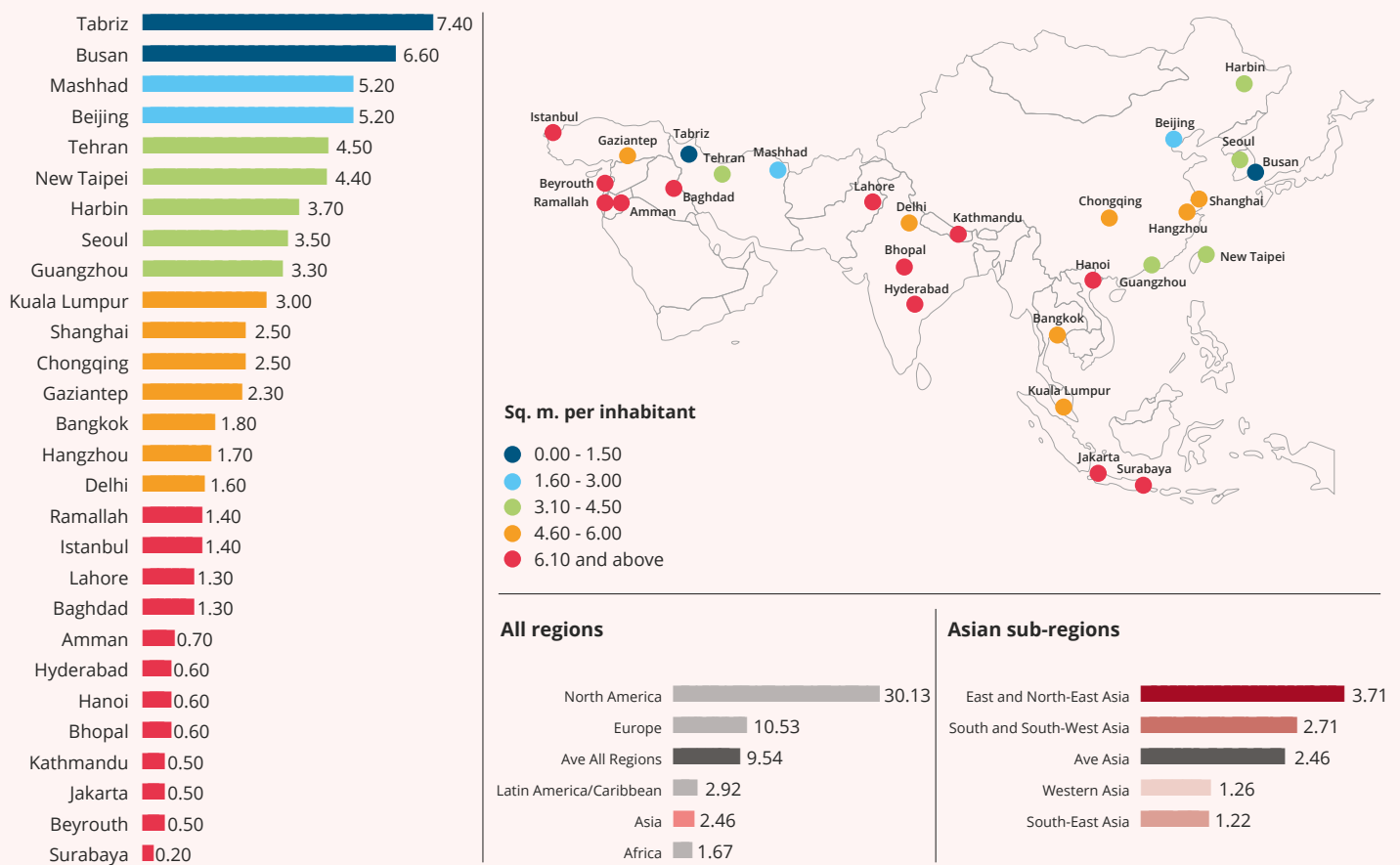


An important contributor to the environmental sustainability of metropolitan cities is the availability of green space to urban dwellers. The Metropolis Observatory indicator of **green space** provides a measure of accessible green space (sq. m.) within the metropolitan area per inhabitant. Among the major regions, Asian metropolises have much lower green space of 2.46 sq. m. per inhabitant compared to the international average of 9.54 sq. m. (Figure 32). Within Asia, metropolises in East and North-East Asia enjoy the highest amount of green space (3.71 sq. m.) per inhabitant; the South-East Asia subregion has the lowest values

for green space at 1.22 sq. m. per inhabitant.

Among the Asian metropolitan cities, on the one hand, Tabriz and Busan have the highest values for green space of 7.40 and 6.60 sq. m. respectively. This indicates the priority given by their respective metropolitan governments to this important urban amenity. Busan Metropolitan City has invested in expanding urban green spaces and established nine major parks.<sup>62</sup> On the other hand, Surabaya (with 0.20 sq. m.) and Beyrouth, Jakarta and Kathmandu (all three cities with 0.50 sq. m.) have the lowest green space available per inhabitant.

**Figure 32**  
**green space**



<sup>62</sup> Busan Metropolitan City (2020).



BUSAN. Daejeo Ecological Park. Photo by Appleysj on Wikimedia

The Metropolis Observatory indicator of **waste generated per capita** measures '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', expressed in generation rate in kilograms per capita per annum (kg/capita/annum).

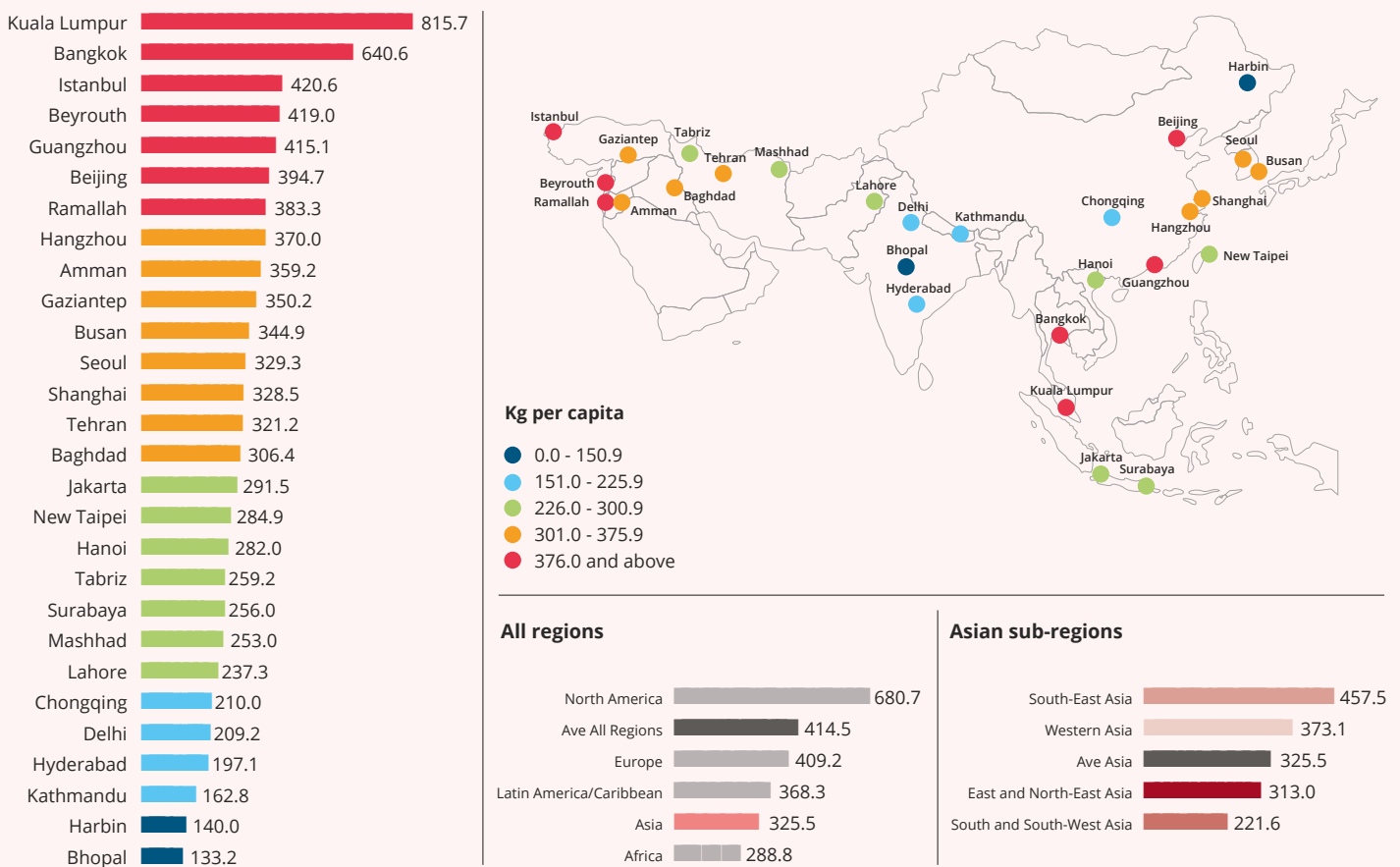
Among the world's regions, Asian metropolises have the second lowest waste generated figure of 325.5 kg/capita/annum, which is much lower than the international average of 414.5 kg/capita/annum. Within Asia, the subregion of

South-East Asia has the highest waste generation of 457.5 kg/capita/annum, which is higher than that for Europe. The lowest waste generation among Asian subregions is in South and South-West Asia (221.6 kg/capita/annum).

In Asia, Kuala Lumpur and Bangkok produce the highest amount of solid waste generation with figures of 2.23 and 1.76 kg/capita/annum respectively (Figure 33). Bhopal, Harbin and Kathmandu have the lowest values of waste generation of 0.36, 0.38 and 0.45 kg/capita/annum.

Solid waste generation in a metropolis is a measure of how prosperous its residents are as there is often a positive correlation

**Figure 33**  
**waste generated per capita**



→ 3R  
(reduce, reuse, recycle)  
programme in Surabaya



SURABAYA. Photo by Surabaya City Government

between per capita income and the amount of waste generated per capita, unless the waste is segregated (at source), recycled and/or reused. It also underlines the importance of solid waste management as an urban service to be provided at the metropolitan scale. In Indonesia, the 'reduce, reuse, recycle' or 3R programme led by the Surabaya City Government with the involvement of private sector and community/citizen groups has been successful in many ways.<sup>63</sup> The community participation in the 3R programme increased from 29,512 citizens in 2014 to that of 30,240 citizens in 2015, and the number of waste banks increased from 220 in 2016 to 296 in 2017.<sup>64</sup>

Another component of environmental sustainability in metropolitan cities is the provision of wastewater collection service. The lack or limited provision of wastewater collection service in a city could negatively affect the public health and/or spread disease vectors. The Metropolis Observatory indicator of **wastewater collection coverage** measures the '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'.

<sup>63</sup> See: <https://use.metropolis.org/case-studies/3r-reduce-reuse-recycle>

<sup>64</sup> Ibid.

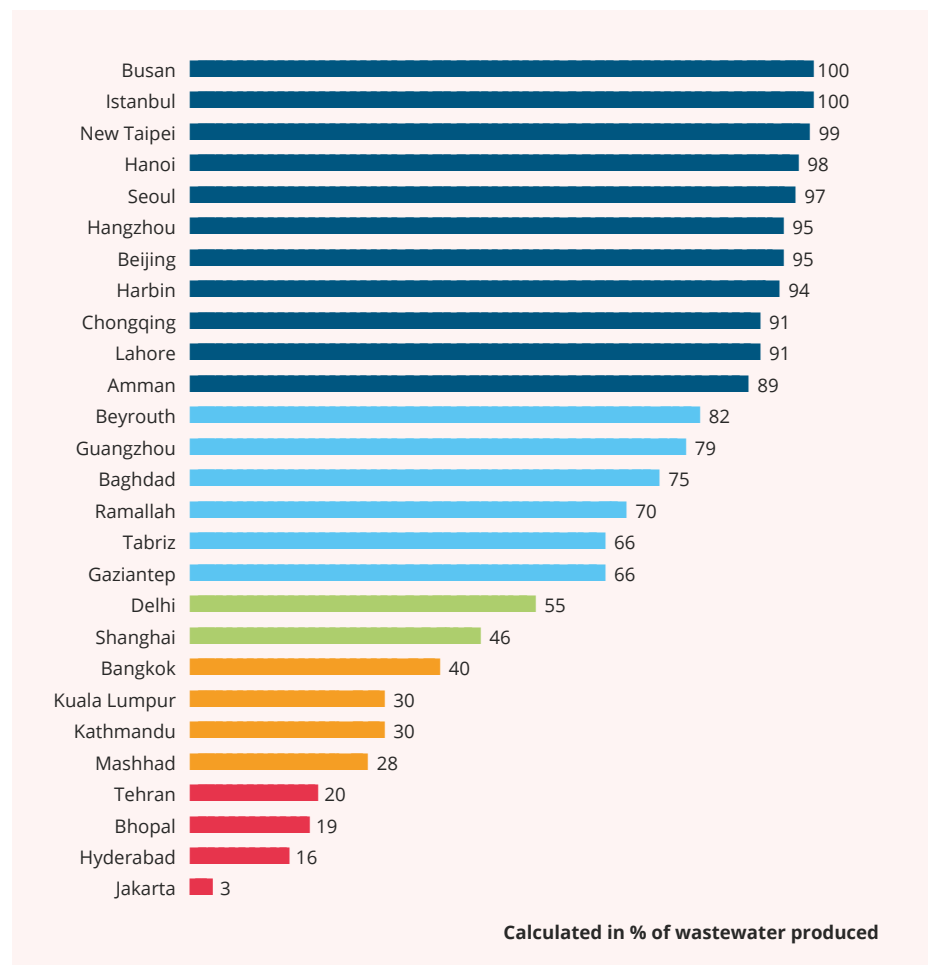
From among the Metropolis members in Asia, Busan and Istanbul are the only two that provide wastewater collection service to all their residents (**Figure 34**). Jakarta, Hyderabad and Bhopal are able to provide wastewater collection services to 3%, 16% and 19% of their population respectively. The provision of wastewater collection service requires huge investments in as well as land for urban sewerage infrastructure. Many cities in developing countries are unable to make such investments and/or to provide urban land for sewerage infrastructure.

Energy is a key input to economic growth and development. Despite all the technological progress achieved, the main source of energy on our planet are fossil

fuels, including gasoline and natural gas. Cities account for over 60% of global energy consumption.<sup>65</sup> Taking stock of renewable energy use in metropolitan cities can shed light on the efforts their governments have made towards energy transition from fossil fuels to renewable sources of energy.

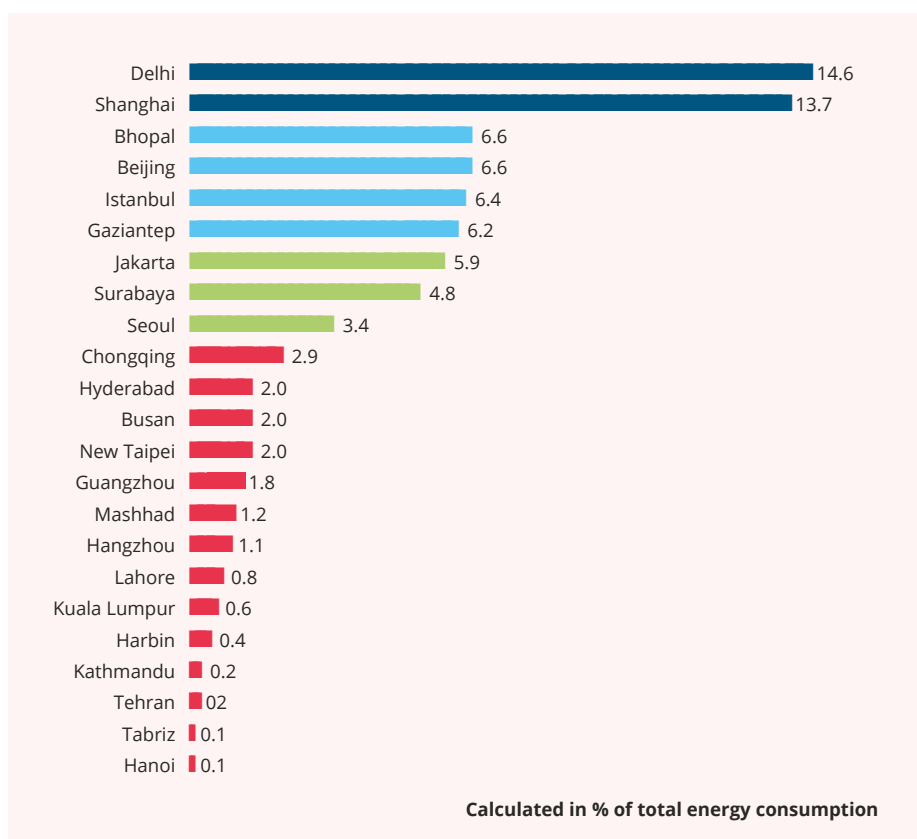
The Metropolis Observatory indicator of **renewable energy use** measures the 'share of a metropolitan area's total energy consumption derived from renewable sources' (as percentage). In Asia, Delhi and Shanghai lead in the usage of renewable energy with 14.6% and 13.7% of their respective total energy use is derived from renewable sources (**Figure 35**, next page). In September 2016,

**Figure 34**  
**wastewater collection coverage**



<sup>65</sup> Habitat III (2020).

**Figure 35**  
**renewable energy use**



the Government of the National Capital Territory of Delhi notified the 'Delhi Solar Energy Policy, 2016'; of this policy's 10 objectives, one aims to "[r]educe Delhi's reliance on conventional energy while increasing its energy security and lowering average energy prices in the long term. Promote rapid growth of rooftop solar power via a combination of generation targets, regulations, mandates and incentives."<sup>66</sup>

There are several factors that inhibit the expansion of renewable energy use in metropolitan cities. First, the cost of fossil fuels is lower than that of renewable energy sources. Second, institutional bottlenecks with regard to the increase of renewable energy use need to be resolved, for instance, regulatory mechanisms for solar energy related feed-in tariffs. Third

is the infrastructure needed for the enhanced uptake of renewable energy, for example, electric vehicles.

The foregoing shows that Asian metropolises, in countries with different levels of development, have been making efforts towards achieving sustainability. However, they need to apply innovative and effective urban environmental planning, management and governance strategies to make the much-needed progress that is expected of them.

<sup>66</sup> Government of India (2016), p.19.



SHANGHAI. Photo by Denys Nevozhai on Unsplash

## quality of life

From the citizen's perspective, a key measure of life quality is the expectation of living a long, healthy life with the absence of the threat of conflict, violence and in general, ability to afford basic needs such as nutrition, housing, education and health. Residing in higher-income places with stable systems of government, efficiently functioning economic systems and stable political apparatuses means that the vast majority of citizens enjoy their innate human desire of long and healthy lives, free from the threat of violence or experiencing deaths of

loved ones, particularly offspring.<sup>67</sup> In recent years, several countries have passed legislation against gender violence, paving the way for law enforcement to play their due role in enforcement.<sup>68</sup> Around the world, there are examples of local governments teaming up with telecom operators, law enforcement agencies and researchers to identify hotspots of harassment.

This is usually done through smartphone applications, designed to facilitate reporting of harassment incidences so that law enforcement agencies can stage more effective



HANGZHOU. Photo by Creativa Images on Shutterstock

<sup>67</sup> Banerjee and Duflo (2015).

<sup>68</sup> Metropolis (2018c).



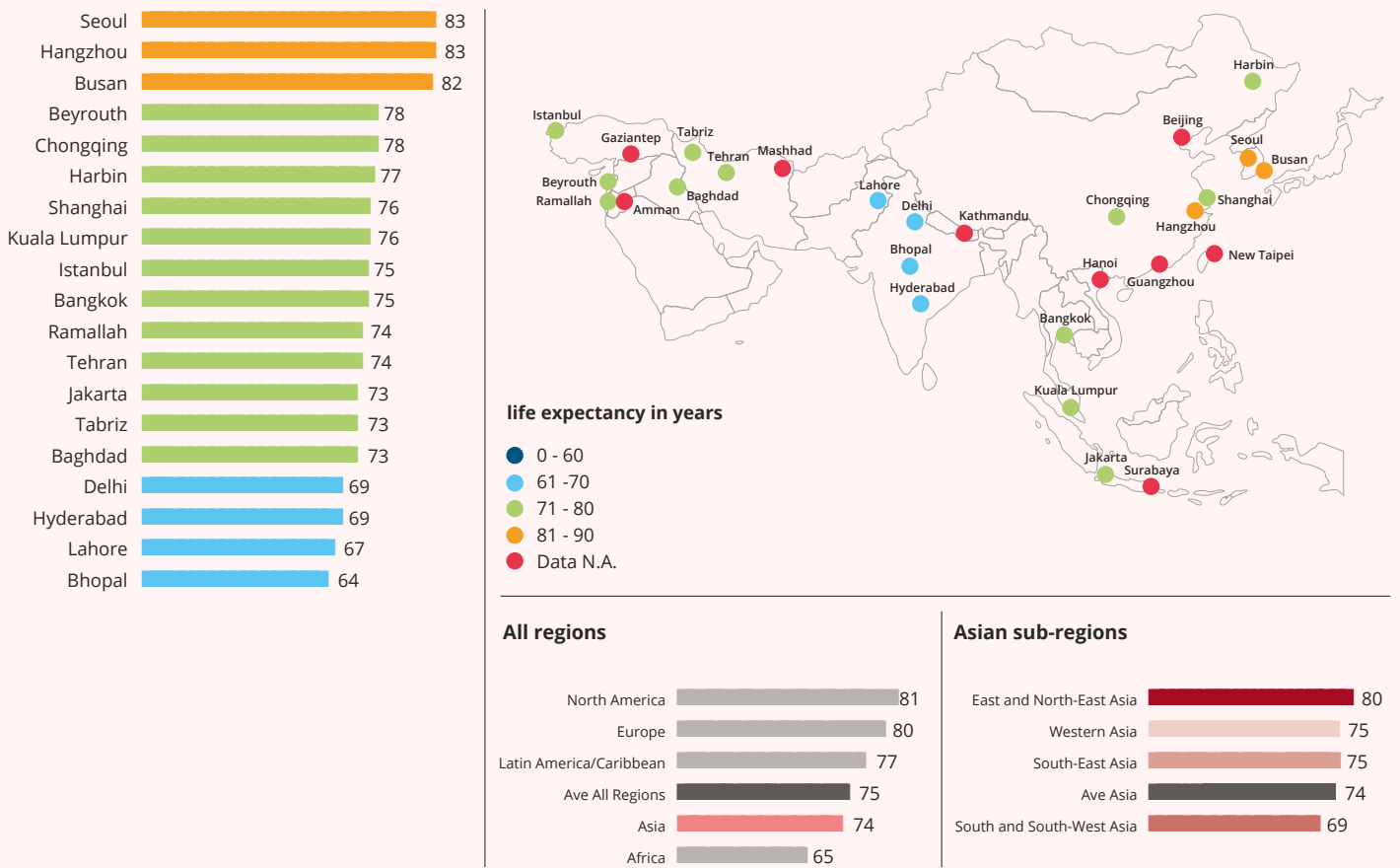
responses. In New Delhi for instance, the well-known platform Safetipin enables greater data sharing from victims to law enforcement agencies through a platform originally created for women to informally share information on unsafe areas. This model is now being implemented all over the world, including Barcelona, Gauteng Province and Seoul.<sup>69</sup>

For these reasons, **life expectancy at birth**, i.e. the number of years that an individual is expected to live, is a key established indicator for quality of life. On average, across all metropolises in Asia, average life expectancy is 74 years, only 1 year less than the global average of 75 (Figure 36). Within Asia though, not

surprisingly due to higher income levels, people in East and North-East Asia subregion can expect to live on average for 80 years but those in South and South-West Asia subregion this number is only 69. This large range is both in-line with trends in GDP per capita and other indicators discussed earlier, and indicative of the disparities within the region's inhabitants. It is also an outcome of the public health spending by certain governments, which have both the resources and administrative capacity to deliver social services at a large-scale.

The largest driver of life expectancy is access to quality healthcare for all, regardless of socioeconomic status and

**Figure 36**  
**life expectancy**



<sup>69</sup> Ibid (2018c).

the ability to pay. Many leading metropolises in this regard are located in countries like South Korea and China where public hospitals provide high quality care for all, regardless of paying ability or employment status. Whereas in lagging countries like India and Pakistan, only those with access to private health services, which are often prohibitively expensive, can expect high enough quality of service that would be comparable to international standards. If South and South-West Asia's leading metropolises like Lahore (67 years) and Delhi (69 years) do not even grant life expectancy of 70 years, it is worrying because average citizens living in smaller towns and rural areas are likely in the bottom of the pile and in the same league as citizens of Africa, which concentrates most of the world's developing economies according to United Nations classification.<sup>70</sup>

To make matters worse, in recent years both Lahore and Delhi have declared annual public health emergencies on account of poor air quality during winter months when emissions from vehicular traffic, fuel burning, and industrial

pollution combine to create dangerous conditions for breathing. The inability of these regions to resolve this longstanding, and highly worrisome situation, is indicative of their lack of ability to design and enforce fairer regulatory systems that balance economic needs with their public's health and wellbeing.

In response to COVID-19, lockdowns have crippled economic lives of cities, including in Asia. Due to rapid contact tracing, data analytics based smart lockdowns and strict enforcement of social distancing regulations, many metropolises in East and North-East Asia that were hotbeds of the virus were able to quickly control spread. Their "success" is now being studied by western governments and researchers keen to replicate lessons into their own policies.<sup>71</sup> **Despite having some of the world's highest population densities, strong and early action in East and North-East Asia has led to positive impact, but at the time of writing this report, cities in South Asia (particularly in India) are suffering some from some of the worse spread rates.**

Besides years of life, the ability to have a roof over one's head is another quintessential marker of quality of life around the world. Having enough resources at the household level to afford decent housing, which is accompanied by kitchen and toilet facilities, and is located in a place where violence does not threaten the safety of family members, is a fundamental human right. But in reality, many residents of Asia, particularly in Western Asia subregion, are simply unable to afford decent housing due to economic depravity and lack of housing stock to maintain higher levels of affordability.

When measured as the ratio of house price to household income, the **affordability of housing** indicator offers a clear and consistent assessment of the citizen's ability to

---

→ **Despite having some of the world's highest population densities, strong and early responses to COVID-19 in East and North-East Asia have led to positive impact**

---

<sup>70</sup> United Nations (2020).

<sup>71</sup> New York Times (2020).

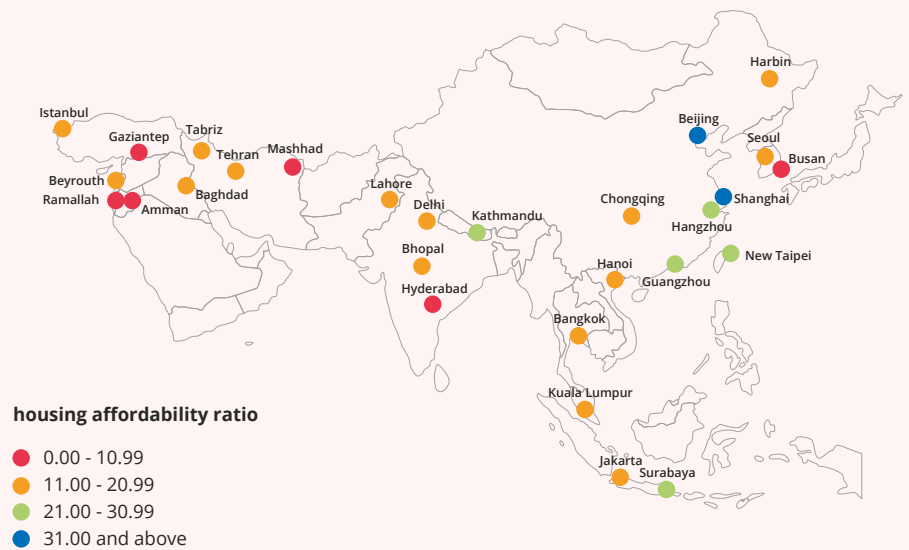
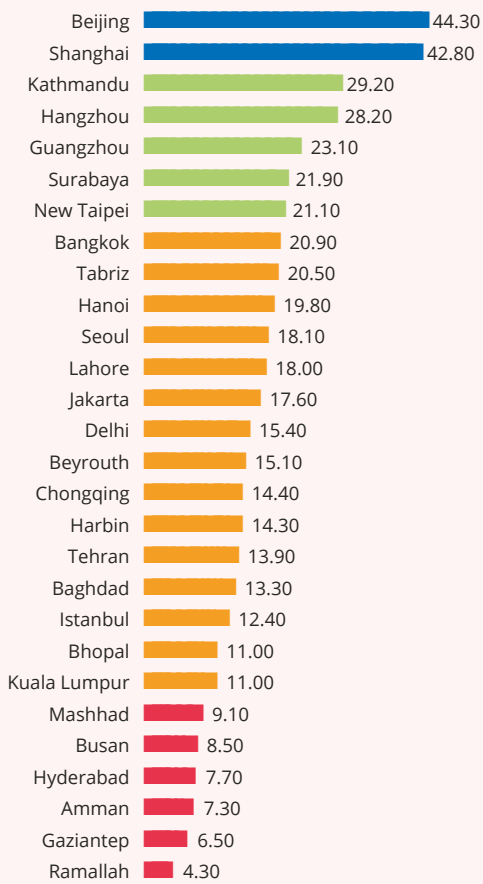
afford decent housing. As compared to the worldwide average of 12.72, Asia's affordability ratio of 17.49 is highest in the world by a distance, followed by Latin America at 14.44 (Figure 37). This implies that housing is relatively large in comparison to income levels, thus least within the range of average families. It is also worth considering that Asian culture dictates joint family structures whereby intergenerational and large households reduce per person housing costs. In other words, the high ratio does not necessarily imply depravity, but rather simply reflect a living situation which in reality might be desirable for many. Having said this, recent reports have indicated that women face peculiar and

stark challenges when it comes to housing finance, making them more vulnerable to housing depravity.<sup>72</sup>

But from another dimension, Chinese cities of Beijing (44.30) and Shanghai (42.80) which have expensive housing due to high demand and thriving economies, present the highest housing price as a ratio of income out of all metropolises part of this report. In comparison, places like Ramallah (4.3) and Gaziantep (6.50) have significantly better housing affordability despite their respective experiences with conflicts that have created resettlements in both places.

Another marker of the quality of urban life comes from the

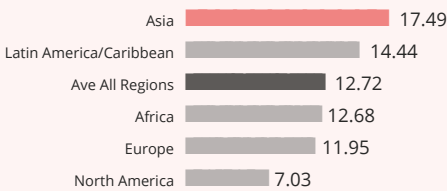
**Figure 37**  
**housing affordability**



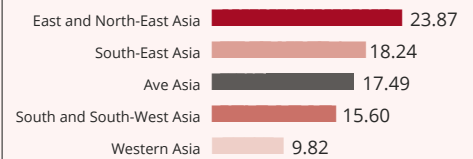
**housing affordability ratio**

- 0.00 - 10.99
- 11.00 - 20.99
- 21.00 - 30.99
- 31.00 and above

**All regions**



**Asian sub-regions**



<sup>72</sup> IFC (2019).

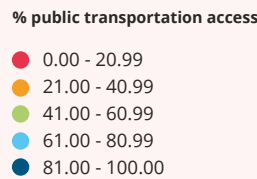
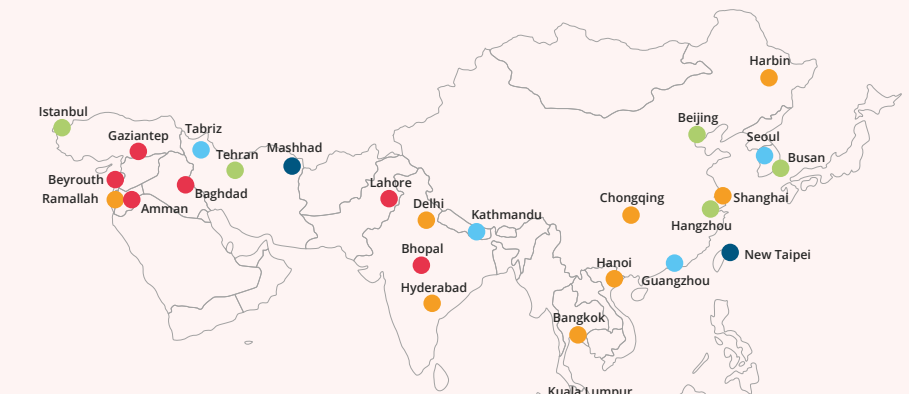
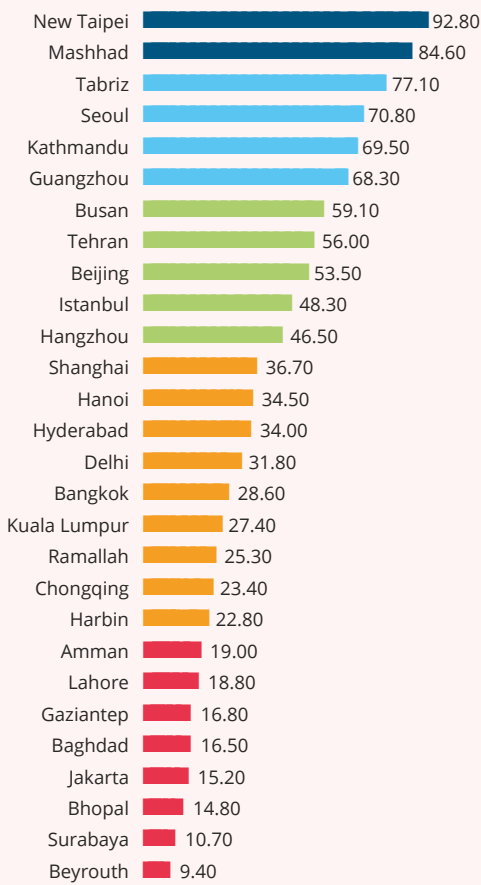
**access to public transportation.**

At least in theory, effective public transportation in large metropolises signals the ability of most residents to safely, affordable and seamlessly, access any part of their metropolitan region without worrying about the hassles of driving on crowded roads, paying tolls on highways, or worrying about finding parking. Asia's average of 39.7% is well below the global average of 53.9% and only above Africa's 32.1%, indicating a much larger car dependence than in Europe where nearly 89% of residents can access public transport (Figure 38).

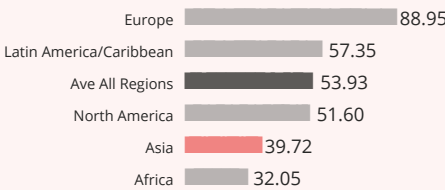
This is due to variations in every region's urban design and planning ethos, and not

necessarily a reflection of citizens' affordability of private vehicles or cultural preferences toward car ownership. Europe's historical city centres have always been densely populated, with narrow streets and density of economic activity along with mixed land-use which enables professionals to reside in close proximity to workplaces. This not only eliminates the need to own motorized vehicles, but encourages greater uptake of public transportation options, which in turn encourages governments to build and subsidize public transportation services which are environmentally friendlier and more affordable at an aggregate level. For example, Hangzhou, China introduced a major

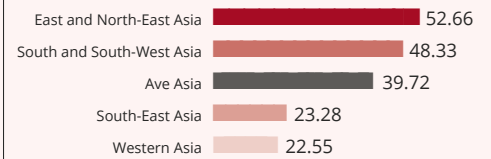
**Figure 38**  
**access to public transportation**



**All regions**



**Asian sub-regions**

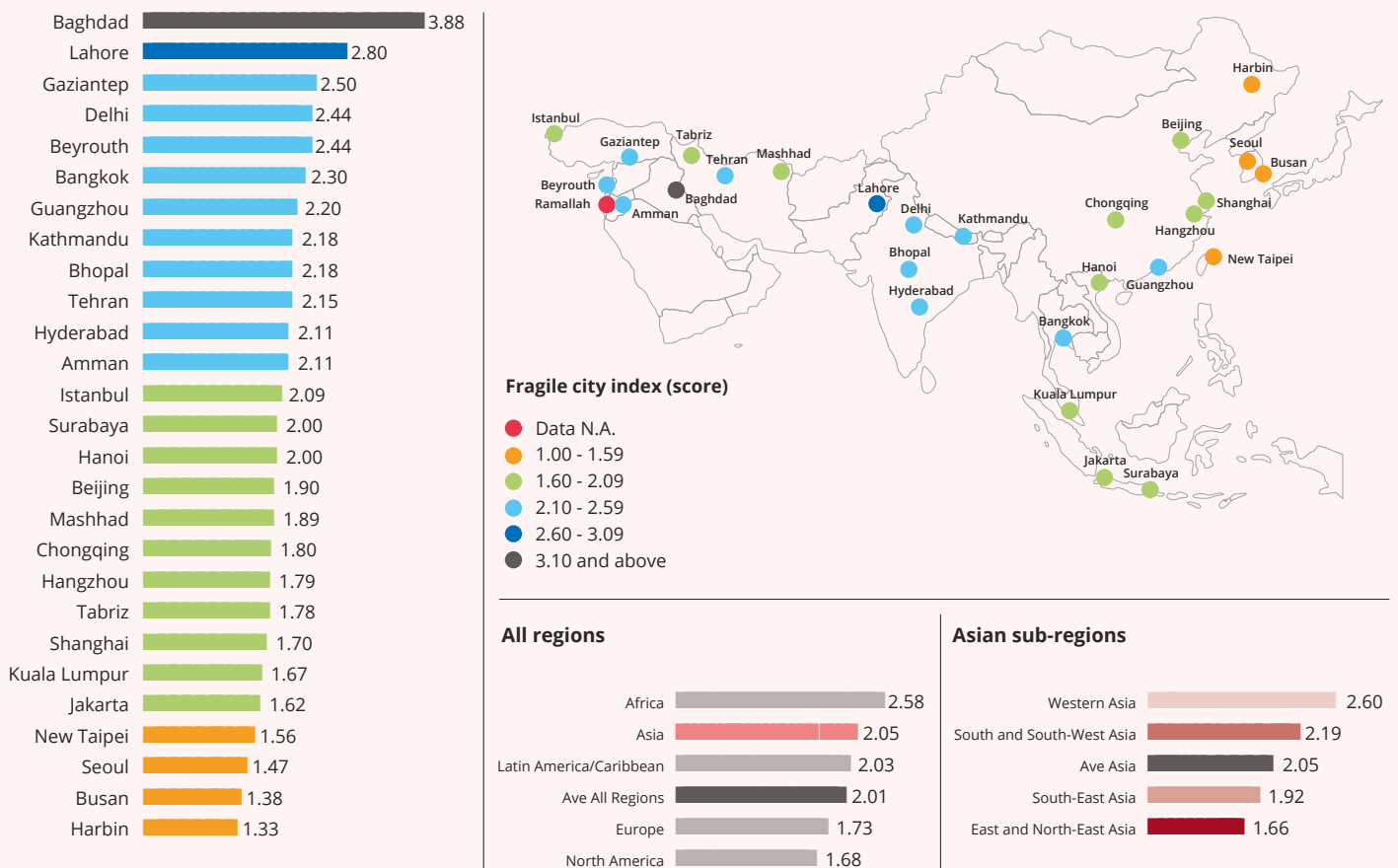


public bicycle project to augment the city's congestion transportation system, providing residents with their first-ever green alternative to vehicles.<sup>73</sup>

To further focus on these issues, the **urban fragility index** is presented that measures every metropolis's vulnerability through a composite of factors including land-use regulation, unemployment, risk of natural disasters etc., eventually giving a score between 1 to 5. Even though in this report these are allocated to metropolitan areas, much of their scores are driven by supra-urban level issues including national security policies and broader economic deprivation experienced by the population.

On this score, at 2.05 Asia's metropolises are slightly above the global average of 2.01 but below the most fragile region, Africa (Figure 39). At the subregional level, Western and South and South-West Asian metropolises like Baghdad (3.88) and Lahore (2.8) are driving these numbers. On the flip side, East and North-East Asia is well below the Asia wide average with cities like Busan (1.38) and New Taipei City (1.56) scoring well below the average. The latter have low fragility due to their government's efficient administrative systems and their regions' strong stability levels that prevent conflict and create lasting peace and prosperity for most residents.

**Figure 39**  
**fragile cities index**

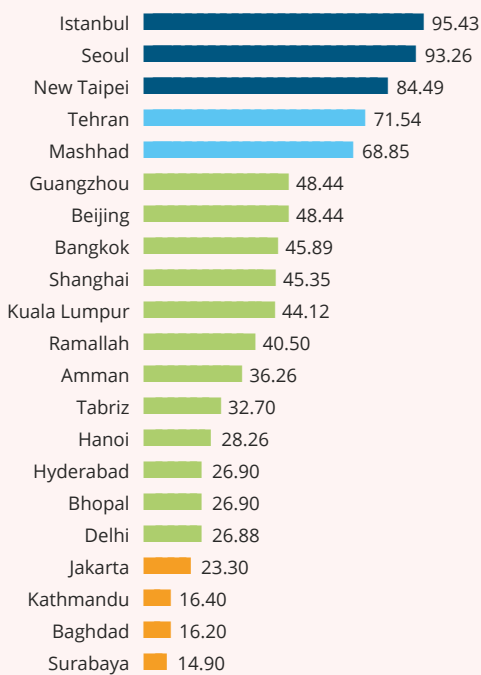


<sup>73</sup> <https://use.metropolis.org/case-studies/hangzhou-china-urban-public-bicycle-sharing-program>

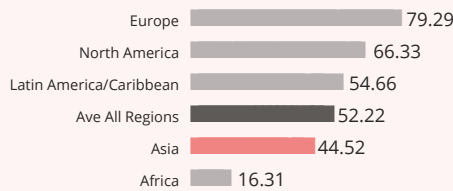
Best paying jobs throughout the world are generally taken by those with advanced degrees, obtained at institutions of higher education. For this reason, metropolitan populations' higher education enrolment is a key indicator of the productivity of their economies and the quality of life they offer to incoming migrants (Figure 40). Metropolises that offer the best educational opportunities, in the form of undergraduate colleges and specialized professional schools, become magnets of talent from around the region. Due to this accumulation of human creative endowments, their economies can get bolstered through the

emergence of highly productive innovation clusters.<sup>74</sup> Unexpectedly, cities like Seoul (93.3%) and Istanbul (95.4%) located in advanced economies boast populations with near universal higher education enrolment. But overall, Asia (44.5%) is still below the global average (52.2%) and way below leaders Europe (79.3%) and North America (66.3%).

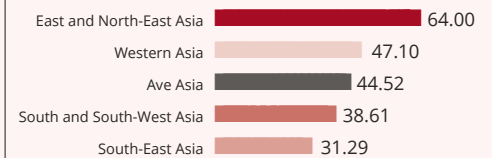
**Figure 40**  
**higher education enrolment**



**All regions**



**Asian sub-regions**



<sup>74</sup> Florida (2009).



Graduation ceremony in ISTANBUL (2020). Photo by istanbulfotoğraf on Shutterstock

# conclusions

Metropolisation is an important part of Asia's urban story. Metropolises in Asia act as engines of economic growth and drive the urbanisation process forward. Rapid urbanisation in Asia creates a number of challenges, which range from those related to metropolitan coordination and governance, urban economic development, social cohesion, environmental sustainability, and the quality of life.





As the metropolitan indicators' project evolves in the future, there are strong possibilities of expanding and deepening our understanding of how the social and economic realities of Asian metropolitan spaces are shaped. **This is perhaps the only reliable and official data set of indicators of metropolitan areas in the continent, and likely one of the rarest ones from anywhere around the world.** First, efforts could be made to improve the consistency with which various national statistical agencies define the boundaries of urban areas in general and large metropolitan areas in particular. While much effort has been made by Metropolis

and the research team on this, the proper alignment of boundary definitions would likely require national-level engagement since in many countries these are defined by law and simply enforced by executive agencies. Second, through partnerships with national statistics offices which routinely collect labour force surveys and even national census, there is a need to expand the range of sex-disaggregated data available. This applies to all key indicators reported at the individual level, including income and quality of life, since there are reportedly large gender differences in these statistics at the national and international level. Third, efforts should be made to expand the list of metropolitan areas in the future, particularly in East and South Asia, where in major countries like China and India, there are literally hundreds of cities and dozens of metropolitan areas with multi-million populations.

As all national governments spent considerable effort toward achieving SDGs, they are also setting up statistical capacity to collect and report data at the sub-national level. In large and small countries alike, large metropolitan areas are key components for such reporting, not only related to SDG11 (Urban Goal) but on dozens of other indicators such as those related to quality of life or gender equality (SDG5). Because SDGs are by definition being reported as average statistics at the country level, Asian countries' average populations are so large that arguably, they do not accurately reflect the realities facing all citizens. In any event, **the state of social and economic development of the residents of large metropolitan areas is likely more improved than their compatriots in smaller cities, towns and villages. For this reason, one worthwhile endeavour could be for countries to not only report national averages, but also share the same SDG indicator statistics for their**



KATHMANDU. Photo by Michael Romanov/Unsplash

---

## → The three main challenges of metropolitan governance in Asia are related to lack of coordination among city governments, lack of proper urban-regional planning, and horizontal fiscal disparities

---

**top three largest metropolitan areas.** This will provide readers a more comprehensive picture about the true state of their countries' development trajectories vis-à-vis the SDGs.

In recent months, cities such as Taipei and New Taipei have put out Voluntary Local Review reports in which they are not only outlining visions of their future but doing so on the basis of robust data sets. Typically, these **Voluntary Local Review reports include surveys of the state of development in their jurisdictions, including vital public service delivery and its impact on citizens' well-being at-large.** They then dive into critical governance issues, including outlines of their institutional governance systems, sharing information on upcoming reforms and priority areas. If such reports can be structured around common data sets organized in identical or even similar ways, and reporting can be standardized through key policy priority areas, significant improvements could be made to the quality of future city-level indicator sets.

Given the rapid metropolitan growth in Asia, it is important to track trends in inclusive and sustainable urban development that could be helpful in improving policy formulation and decision-making.

**A few countries in Asia have made attempts at establishing national urban observatories;** these countries include India,<sup>75</sup> Japan,<sup>76</sup> Saudi Arabia<sup>77</sup> and Viet Nam.<sup>78</sup> At the metropolitan level, Saudi Arabia has initiated the development of

Riyadh Urban Observatory with the following objectives: "Establishing urban follow-up systems to support strategic planning, local administration and data linkage to policies; Produce and analyse urban indicators to verify achievement and progress towards goals; Facilitate data collection at city and sub-city levels."<sup>79</sup> Metropolitan governments in Asia need to pay more attention to the development of local metropolitan observatories.

**As the metropolitan cities in Asia grow, new spatial configurations such as mega urban regions, urban corridors and city-regions have emerged. They pose daunting challenges with regard to metropolitan governance.** According to the World Bank, there are three main governance issues that these spatial configurations face. First challenge is related to lack of coordination among the various city governments to tackle which "it is important to conceive of the development of cities in parallel with the development of regions and subregions, rather than as isolated nodes in economic space."<sup>80</sup> Second problem is that of the lack of proper urban-regional planning; "Better regional spatial planning often requires dispersing specific urban functions (such as solid waste treatment, airports, and skills and training centres) within a contiguous region, rather than crowding them in a large city."<sup>81</sup> Third challenge is related to "horizontal fiscal disparities"<sup>82</sup>: "mechanisms to transfer fiscal resources among urban governments in a region"<sup>83</sup> are required for the adequate provision of infrastructure across the urban region.

---

<sup>75</sup> Government of India (2020).

<sup>77</sup> Riyadh Urban Observatory (2020b).

<sup>79</sup> Riyadh Urban Observatory (2020a).

<sup>81</sup> Ibid., p.250.

<sup>76</sup> Global Development Research Center (2020).

<sup>78</sup> UN-HABITAT (2020).

<sup>80</sup> Gill & Kharas (2007), p.250.

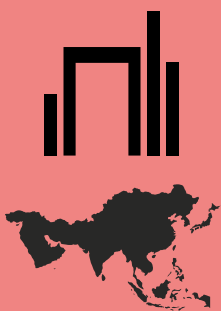
<sup>82</sup> Ibid., p.250.

<sup>83</sup> Ibid., p.250.

## Metropolitan Asia in a nutshell

- 1** The average size of the 28 Asian metropolises studied is 8.81 million—largest in the world—which is 2.6 million higher than the global average of 6.21 million.
- 2** In recent decades, Asia has witnessed the emergence of three major types of metropolitan spatial configurations: mega urban regions, urban corridors and city-regions. These urban regions dominate the economic geography at sub-national as well as national levels.
- 3** Although declining gradually, the urban growth rates in Asia have been continuously higher than that for the world since 1950, and pose major challenges of metropolitan coordination, planning, management and governance.
- 4** Asian metropolises are some of the most densely populated large cities in the world. In 2020, out of the 312 metropolitan cities in Asia, 89 had a population density of over 10,000 persons per sq. km.
- 5** Asian metropolises have a slightly higher degree of metropolitan coordination and lower degree of territorial fragmentation, compared to the respective international averages.
- 6** Asian metropolises have recorded the lowest score in the share of elected women among all major regions in the world; their average share of 24.9% is lower than the global average figure of 30.2%.
- 7** Asian metropolises enjoy the highest levels of national prominence—with the average sum of their budgets at 3.93% compared to that of the national governments—which is significantly higher than the international average of 3.18%.
- 8** Asian metropolises have the highest average budget per capita of US\$ 1,073, which is highest among the three developing regions, but lower than the international average of US\$ 1,718.
- 9** Asian metropolises feature highest levels of fiscal decentralisation with the regional average of 12.61%, which is highest among the three developing regions, but lower than the international average of 14.56%.
- 10** On most scores, particularly those related to economic outcomes, there is clear heterogeneity within the vast Asian continent – with East and North-East Asia driving most positive scores and South and South-West Asia and, in some cases, Western Asia, driving the average continent-wide scores down significantly.
- 11** The per capita income levels in East and North-East Asia match those of industrialized countries in the West, but the overall numbers across the continent are brought down significantly by abject poverty in South Asia.
- 12** The degree of social cohesion, measured by the degree of income inequality, in Asia remains at par with the global average which is in fact driven by the rapidly growing and higher income areas of East and North-East Asia – which can be considered as an obvious downside of economic prosperity which can result in concentration of wealth.
- 13** Asian metropolises are generally more fragile than the global average, but this is mostly driven by instability in South and South-West Asia and Western Asia, where cities have been ravaged by home-grown insurgencies and foreign occupation induced civil wars.
- 14** In terms of gender equality, educational attainment across all Asian metropolitan spaces shows women lagging behind men, which has important implications for longer-term social and economic development outcomes.
- 15** On average, only 3.6% of these metropolitan areas' population were born outside of their home country, with the highest percentage only 8.5% in Kuala Lumpur. This indicates that due to the youthful working age populations of Asian countries, there is not yet a large flow of international migrants as toward Europe or North America.
- 16** On average, people residing in these metropolitan areas have a life expectancy of 74 years, which is only 1 year less than the global average of 75 years and is much improved from only a generation ago. But these improvements are mostly driven by successes in East and North-East Asia, particularly in countries like South Korea and China, where public health infrastructures have improved dramatically.
- 17** In response to the ongoing COVID-19 pandemic, many Asian metropolises' strong policy responses to the crisis featuring strict and swift lockdowns, large-scale testing and sanitization of streets and walkways, has not only been lauded around the world but is also being studied as a model of success worthy of emulating in other contexts.
- 18** Women's participation in the labour market, which is a key indicator of their empowerment, shows that Asia overall still lags significantly behind other regions. As compared to regions with similar levels of economic prosperity, social norms particularly in South Asia appear to be blocking progress toward women's greater participation in the economy.
- 19** Citizens of Asian metropolises have on average 2.46 sq. m. of green space per capita—much lower than the international average of 9.54 sq. m.—which requires urgent attention of their metropolitan governments.
- 20** Asia has an average CO<sub>2</sub> emission of 5.1 metric tonnes per capita, which is lower than the international average of 6.1 metric tonnes per capita. Within the region, East and North-East Asia subregion has the highest CO<sub>2</sub> emission of 8.6 metric tonnes per capita.

# appendices



# bibliography

- African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, Inter-American Development Bank. 2019. *Creating Livable Cities: Regional Perspectives*. Asian Development Bank: Mandaluyong City, Philippines.
- Asian Development Bank. 2008. *Managing Asian Cities: Sustainable and inclusive urban solutions*. Asian Development Bank: Mandaluyong City, Philippines.
- Asian Development Bank (ADB) and Inter-American Development Bank (IDB). 2014. *Sustainable Urbanization in Asia and Latin America*. Asian Development Bank: Mandaluyong City, Philippines.
- Banerjee, Abhijit, and Esther Duflo. 2012. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. Public Affairs: New York.
- Bartone, Carl, Bernstein, Janis, Leitmann, Josef, and Eigen, Jochen. 1994. *Toward Environmental Strategies for Cities: Policy Considerations for Urban Environmental Management in Developing Countries*. Urban Management Program Paper No. 18. World Bank: Washington D.C.
- Bigio, Anthony G. and Dahiya, Bharat. 2004. *Urban Environment and Infrastructure: Toward Livable Cities*. Directions in Development Series. World Bank: Washington DC (ISBN: 0821357964).
- Bouskela, M., Casseb, M., Bassi, S., De Luca, C., and Facchina, M. 2016. *The Road toward Smart Cities: Migrating from Traditional City Management to the Smart City*. Inter-American Development Bank (IDB): Washington D.C.
- Broom, Douglas. 2020. '6 of the world's 10 most polluted cities are in India'. World Economic Forum: Cologny.
- Brownlee, J., Masoud, T., and Reynolds, A. 2015. *The Arab Spring: Pathways of Repression and Reform*. Oxford University Press.
- Busan Metropolitan City. 2020. *Busan Metropolitan City: Parks*. Retrieved from <https://english.busan.go.kr/parks>
- Campos, Jose Edgardo, and Hilton L. Root. 1996. *The Key to the Asian Miracle: Making Shared Growth Credible*. Brookings Institution Press: Washington, D.C.
- Dahiya, Bharat. 2012a. *21st Century Asian Cities: Unique Transformation, Unprecedented Challenges*, Global Asia, Vol.7, No.1, pp. 96-104 (ISSN: 1976-068X).
- Dahiya, Bharat. 2012b. *Cities in Asia, 2012: Demographics, economics, poverty, environment and governance*, Cities: The International Journal of Urban Policy and Planning, Vol. 29, Supplement No. 2, pp. S44-S61. DOI: <https://doi.org/10.1016/j.cities.2012.06.013>
- Dahiya, Bharat. 2014. *Southeast Asia and Sustainable Urbanization*, Global Asia, Vol. 9, No. 3, pp. 84-91 (ISSN: 1976-068X).
- Dahiya, Bharat. 2016. *ASEAN Economic Integration and Sustainable Urbanization*, Journal of Urban Culture Research, Vol. 12, pp. 8-14, <https://doi.org/10.14456/jucr.2016.10>
- Dahiya, Bharat and Das, Ashok. 2020. 'New Urban Agenda in Asia-Pacific: Governance for Sustainable and Inclusive Cities', In Dahiya, B. and Das, A. (Eds.) *New Urban Agenda in Asia-Pacific: Governance for Sustainable and Inclusive Cities*, Springer: Singapore. [https://doi.org/10.1007/978-981-13-6709-0\\_1](https://doi.org/10.1007/978-981-13-6709-0_1)
- Dahiya, Bharat, and Pugh, Cedric. 2000. "The Localization of Agenda 21 and the Sustainable Cities Programme." In Cedric Pugh, ed. *Sustainable Cities in Developing Countries: Theory and Practice at the Millennium*. Earthscan: London, pp. 152-184.
- Delhi Metro Rail Corporation Limited. 2020. *Delhi Mass Rapid Transport System*. Retrieved from [http://www.delhimetrorail.com/about\\_us.aspx](http://www.delhimetrorail.com/about_us.aspx)
- Florida, Richard. 2008. *Who's your city? How the Creative Economy Is Making Where to Live the Most Important Decision of Your Life*. Basic Books: New York.
- Florida, R., Gulden, T., and Mellander, C. 2007. *The rise of the mega-region*. Retrieved from: [http://creativeclass.typepad.com/thecreativityexchange/files/florida\\_gulden\\_mellander\\_megaregions.pdf](http://creativeclass.typepad.com/thecreativityexchange/files/florida_gulden_mellander_megaregions.pdf)
- Gazette of India. 1993. *The Constitution (Seventy Fourth) Amendment Act, 1992, April 30*.
- Ghesquiere, Francis and Andersson, Mats. 2020. *International Practices of Metropolitan Governance: A Compendium of Collaborative Arrangements in Metropolitan Areas*. World Bank: Washington, D.C.
- Ginsburg, Norton. 1991. 'Extended Metropolitan Regions in Asia: A New Spatial Paradigm', In: Ginsburg N., Koppel B., and McGee T.G. (eds.) *The Extended Metropolis: Settlement Transition in Asia*. University of Hawaii Press: Honolulu, pp. 27-46.
- Gill, Indermit Singh and Kharas, Homi. 2007. *An East Asian Renaissance: Ideas for Economic Growth*. The World Bank: Washington, DC. <https://openknowledge.worldbank.org/handle/10986/6798>
- GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) and UN-HABITAT. 2015. *Unpacking Metropolitan Governance for Sustainable Development*. Retrieved from: <http://unhabitat.org/books/unpacking-metropolitan-governance-for-sustainable-development/>
- Glaeser, Edward L. 2011. *Triumph of the City: How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier*. Penguin Press: New York.
- Global Development Research Center. 2020. *Japan Urban Observatory: A repository of Information on Urban Japan*. Retrieved from <https://www.gdrc.org/uem/observatory/index.html>

- Government of India. 2016. Delhi Solar Energy Policy, 2016. Retrieved from <http://web.delhi.gov.in/wps/wcm/connect/bb5cea004e8b571fad8ef8cde80066d/172036.pdf?MOD=AJPERES&lmod=-276071204>
- Government of India. 2020. Indian Urban Observatory. Ministry of Housing and Urban Affairs, Government of India. Retrieved from <https://iuo.mohua.gov.in/portal/apps/sites/#/data/pages/iuo>
- Haase, D, Guneralp, B, Dahiya, B, Bai, X, and Elmqvist, T. 2018. 'Global Urbanization: Perspectives and Trends', In T. Elmqvist, X. Bai, N. Frantzeskaki, C. Griffith, D. Maddox, T. McPhearson, S. Parnell, P. Romero-Lankao, D. Simon, and M. Watkins (Eds.) *Urban Planet: Knowledge Towards Sustainable Cities*, Cambridge University Press: Cambridge, pp.19-44. <https://doi.org/10.1017/9781316647554.003>
- Habitat III. 2020. The New Urban Agenda. Retrieved from <http://habitat3.org/the-new-urban-agenda/>
- IFC (International Finance Corporation). 2019. Her Home: Housing Finance for Women. Retrieved from: <http://documents1.worldbank.org/curated/en/505551587106658623/pdf/Her-Home-Housing-Finance-for-Women.pdf>
- Jackson R.B., Le Quéré C., Andrew R.M., Canadell J.G., Korbakken J.I., Liu Z., Peters G.P., Zheng B., and Friedlingstein P. 2019. Global Energy Growth is Outpacing Decarbonization. A special report for the United Nations Climate Action Summit September 2019. Global Carbon Project, International Project Office: Canberra.
- Jacobs, Jane. 1961. *The Death and Life of Great American Cities*. Random House: New York.
- Kumar, Ashutosh. 2020. Rapid Response: Success story of Dharavi against COVID-19. *British Medical Journal (BMJ)* 2020;370:m2817. <https://www.bmj.com/content/370/bmj.m2817/rr>
- Landry, Charles. 2000. *The Creative City: A Toolkit for Urban Innovators*. 2nd ed. Earthscan: London.
- Laquian, Aprodicio. 2005. *Beyond Metropolis: The Planning and Governance of Asia's Mega urban regions*. Woodrow Wilson Center Press & Johns Hopkins University Press: Washington, DC and Baltimore, MD.
- Malik, Ammar A., Majid, Hadia, Fateh, Husnain, and Perera, Iromi. 2016. *Women in Pakistan's Urban Informal Economy*. Urban Institute: Washington D.C. Retrieved from <https://www.urban.org/research/publication/women-pakistans-urban-informal-economy>
- Metropolis. 2016. *Metropolitan trends in the world*. Issue Paper 01. November. Metropolis: Barcelona.
- Metropolis. 2017. *Metropolises addressing the global agendas*. Issue Paper 02. June. Metropolis: Barcelona.
- Metropolis. 2017. *The metropolitan scale of resilience*. Issue Paper 03. November. Metropolis: Barcelona.
- Metropolis. 2018a. *Egalitarian metropolitan spaces*. Issue Paper 04. June. Metropolis: Barcelona.
- Metropolis. 2018b. *Blockchain, a tool for metropolitan governance?* Issue Paper 05. June. Metropolis: Barcelona.
- Metropolis. 2018c. *Safety and public space: Mapping metropolitan gender policies*. October. Metropolis: Barcelona.
- Metropolis. 2018d. *Financing metropolitan public policies and services*. Issue Paper 06. November. Metropolis: Barcelona.
- Metropolis. 2018e. *Gentrification and impoverishment in the metropolis*. Issue Paper 07. December. Metropolis: Barcelona.
- Metropolis. 2019a. *Guide to include intersectionality in gender and sexual diversity policies*. April. Metropolis: Barcelona
- Metropolis. 2019b. *The digital transformation of metropolises*. Issue Paper 08. November. Metropolis: Barcelona.
- Metropolis. 2019c. *The internationalisation of metropolitan spaces*. Issue Paper 09. December. Metropolis: Barcelona.
- Metropolis. 2020a. *Rights and claims for metropolitan mobility*. Issue Paper 10. May. Metropolis: Barcelona.
- Metropolis and UCLG. 2020. *The Localization of the Global Agendas: How local action is transforming territories and communities – The GOLD V Thematic Report on Metropolitan Areas*. Metropolis and UCLG: Barcelona.
- New Taipei City Government. 2019. *New Taipei: A Livable & Thriving City*. New Taipei City – Voluntary Local Review for Sustainable Development Goals 2019. New Taipei City Government.
- New York Times. 2020. *Tracking the Coronavirus: How Crowded Asian Cities Tackled an Epidemic*. Retrieved from <https://www.nytimes.com/2020/03/17/world/asia/coronavirus-singapore-hong-kong-taiwan.html>
- New York University, UN-HABITAT, and Lincoln Institute of Land Policy. 2016. *Atlas of Urban Expansion*. Retrieved from: <http://www.atlasofurbanexpansion.org>
- OECD. 2015. *The Metropolitan Century: Understanding Urbanisation and its Consequences*. OECD Publishing: Paris. <https://doi.org/10.1787/9789264228733-en>
- OECD. 2016. "Subnational government spending", in *OECD Regions at a Glance 2016*, OECD Publishing, Paris. DOI: [https://doi.org/10.1787/reg\\_glance-2016-32-en](https://doi.org/10.1787/reg_glance-2016-32-en)
- OECD. 2020. *OECD Policy Responses to Coronavirus (COVID-19): Cities policy responses*. Retrieved from <http://www.oecd.org/coronavirus/policy-responses/cities-policy-responses-fd1053ff/>
- OECD/UCLG. 2019. *2019 Report of the World Observatory on Subnational Government Finance and Investment – Key Findings*. Retrieved from [http://www.sng-wofi.org/publications/2019\\_SNG-WOFI\\_REPORT\\_Key\\_Findings.pdf](http://www.sng-wofi.org/publications/2019_SNG-WOFI_REPORT_Key_Findings.pdf)
- Peters H.E., Irvin-Erickson Y., Adelstein S., Malik A.A., Derrick-Mills T., Valido A., and Esplage D. 2019. *Qualitative evidence on barriers to and facilitators of women's participation in higher or growing productivity and male-dominated labour market sectors in low- and middle-income countries*. London: EPPI Centre, Social Science Research Unit, UCL Institute of Education, University College London. Retrieved

- from: <https://www.urban.org/research/publication/qualitative-evidence-barriers-and-facilitators-womens-participation-higher-or-growing-productivity-and-male-dominated-labour-market-sectors-low-and-middle-income-countries>
- PwC (PricewaterhouseCoopers) and China Development Research Foundation. 2019. Chinese Cities of Opportunity 2019. Retrieved from <https://www.pwccn.com/en/research-and-insights/chinese-cities-of-opportunities-2019-report.html>
- Riyadh Urban Observatory. 2020a. Urban Observatory. Retrieved from <http://www.ruo.gov.sa/EN/Observatory>
- Riyadh Urban Observatory. 2020b. National Observatory. Retrieved from <http://www.ruo.gov.sa/EN/NationalObservatory>
- Rojas, E., Cuadrado-Roura, J.R., and Fernández Güell, J.M. (Eds.). 2008. Governing the Metropolis Principles and Cases. Inter-American Development Bank: Washington, D.C.
- Schoon, Ingrid, and Samantha Parsons. 2002. Teenage Aspirations for Future Careers and Occupational Outcomes. *Journal of Vocational Behavior* 60 (2): 262–88. <https://doi.org/10.1006/jvbe.2001.1867>
- Shanghai Metro. 2020. Shanghai Metro. Retrieved from <http://service.shmetro.com/en/index.html>
- Taipei City Government. 2019. 2019 Taipei City: Voluntary Local Review. Taipei City Government.
- Tokyo Metro. 2020. Tokyo Metro. Retrieved from <https://www.tokyometro.jp/en/index.html>
- UCLG (United Cities and Local Governments) and World Bank. 2008. Decentralization and Local Democracy in the World: First Global Report by United Cities and Local Governments. World Bank: Washington D.C.
- UCLG (United Cities and Local Governments). 2010. GOLD II 2010 – Local Government Finance: The Challenges of the 21st Century. Edward Elgar: Cheltenham.
- UCLG. 2013. GOLD III 2013 – Basic Services for All in an Urbanizing World: Third Global Report of United Cities and Local Governments on Local Democracy and Decentralization. UCLG: Barcelona.
- UCLG. 2017. GOLD IV 2016 – Co-Creating the Urban Future: The Agenda of Metropolises, Cities and Territories. UCLG: Barcelona.
- UCLG. 2020. GOLD V 2019 – The Localization of the Global Agendas: How local action is transforming territories and communities. UCLG: Barcelona.
- United Nations. 1995. Beijing Declaration and Platform for Action – Beijing+5 Political Declaration and Outcome. Reprinted in 2014 by UN-Women (ISBN: 9781936291939).
- United Nations. 2019. The Future of Asian & Pacific Cities: Transformative Pathways towards Sustainable Urban Development. United Nations: Bangkok.
- United Nations. 2020. Country Classification: Data sources, country classifications and aggregation methodology. Retrieved from [https://www.un.org/en/development/desa/policy/wesp/wesp-current/2014wesp\\_country\\_classification.pdf](https://www.un.org/en/development/desa/policy/wesp/wesp-current/2014wesp_country_classification.pdf)
- UN-DESA (United Nations, Department of Economic and Social Affairs) Population Division. 2018. World Urbanization Prospects: The 2018 Revision, Online Edition.
- UN-HABITAT. 2008. Gender in Local Government: A Sourcebook for Trainers. UN-HABITAT: Nairobi (ISBN: 9789211319743).
- UN-HABITAT. 2016. World Cities Report 2016—Urbanization and Development: Emerging Futures. UN-HABITAT: Nairobi.
- UN-HABITAT. 2017. Action Framework for Implementation of the New Urban Agenda. UN-HABITAT: Nairobi.
- UN-HABITAT. 2020a. Global State of Metropolis 2020: Population Data Booklet. UN-HABITAT: Nairobi.
- UN-HABITAT. 2020b. Urban Observatory System in Vietnam. Retrieved from [https://fukuoka.unhabitat.org/projects/vietnam/detail04\\_en.html](https://fukuoka.unhabitat.org/projects/vietnam/detail04_en.html)
- UN-HABITAT and UN-ESCAP. 2010. The State of Asian Cities 2010/11. UN-HABITAT: Fukuoka (ISBN: 9789211322743).
- UN-HABITAT and UN-ESCAP. 2015. The State of Asian and Pacific Cities 2015: Urban Transformations Shifting from Quantity to Quality. UN-HABITAT and UN-ESCAP, Nairobi and Bangkok.
- UN News. 2018. 90 per cent of the planet is breathing in polluted air – World Health Organization. May 2. Retrieved from <https://news.un.org/en/story/2018/05/1008732>
- van Leeuwen, K., Sjerps, R. 2016. Istanbul: the challenges of integrated water resources management in Europa's megacity. *Environment, Development and Sustainability*, Vol. 18, 1–17. <https://doi.org/10.1007/s10668-015-9636-z>
- WEF (World Economic Forum). 2019. Global Gender Gap Report 2020. World Economic Forum: Geneva (ISBN-13: 9782940631032).
- Westfall, Matthew S., and Villa, Victoria A. de. 2001. Urban Indicators for Managing Cities. © Asian Development Bank. <http://hdl.handle.net/11540/276>. License: CC BY 3.0 IGO.
- Whebell, C.F.G. 1969. Corridors: A theory of urban systems. *Annals of the Association of American Geographers*, 59(1), 1-26.
- WHO (World Health Organization). 2006. WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide – Global update 2005: Summary of risk assessment. World Health Organization: Geneva.
- World Bank. 2015. East Asia's Changing Urban Landscape. Washington D.C.: The World Bank. [https://www.worldbank.org/content/dam/Worldbank/Publications/Urban%20Development/EAP\\_Urban\\_Expansion\\_full\\_report\\_web.pdf](https://www.worldbank.org/content/dam/Worldbank/Publications/Urban%20Development/EAP_Urban_Expansion_full_report_web.pdf)
- World Bank. 2020. World Development Indicators. Retrieved from <https://data.worldbank.org/indicator/SL.ISV.IFRM.ZS?locations=CN>

# metropolitan indicators

## definitions, metrics, methods 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://indicators.metropolis.org/methodology">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://indicators.metropolis.org/methodology">indicators.metropolis.org/methodology</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

definition	metric	method	reference
Subnational government expenditure as a % of GDP	% of GDP	$100x \frac{\text{subnational government expenditure}}{\text{GDP}}$	<b>OECD</b> <a href="http://www.oecd.org/cfe/region-al-policy/sngs-around-the-world.htm">www.oecd.org/cfe/region-al-policy/sngs-around-the-world.htm</a> <b>World Bank</b> <a href="http://www1.worldbank.org/pub-licsector/decentralization/fiscalindicators.htm">www1.worldbank.org/pub-licsector/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	#	$\frac{\text{Number of local governments}}{100\,000 \text{ inhabitants of the metropolitan area}}$	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 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	$\sum \frac{\text{metro jurisdictions budget}}{\text{national government budget}}$	LSE Cities
			<b>sources</b> Local authorities

## fiscal autonomy

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

## total 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
			<b>sources</b> Local authorities

\*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

## gender equality measures and tools

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
			<b>sources</b> Survey

## share of elected women

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

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

## economic development

### GDP per capita

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	%	$\frac{\text{People employed by sector}}{\text{Total of people employed}}$	LSE Cities
			<b>sources</b> National Statistics Bureau, Regional employment agencies

### economic prominence

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 workforce

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	$\frac{\text{Employed women}}{\text{Employed men}}$	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>
			<b>sources</b> National Statistics Bureau

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

### economic density

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

## unemployment

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

\*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

## gender pay gap

definitions	metric	methods	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) WEF Global Gender Gap Report. <a href="http://www3.weforum.org/docs/WEF_GGGR_2017.pdf">http://www3.weforum.org/docs/WEF_GGGR_2017.pdf</a>
Mean Nominal Monthly Earnings by Female over male value (this can be hourly earnings as calculated by the UK Government)	Ratio	$\frac{\text{Monthly earnings by female}}{\text{Monthly earnings by male}}$	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> ILO. <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

definition	metric	method	reference
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.'	LSE Cities
			<b>sources</b> Survey

**social cohesion** →

**literacy rate**

definition	metric	method	reference
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	%	$100x \frac{\text{Number of literate population 15y and older}}{\text{Total population 15y and older}}$	United Nations (2007), CPI – UN-Habitat (2016), UNESCO
			<b>sources</b> Various

\* 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).	%	$100x \frac{\text{Number of people living below \$ 1.90 PPP/day*}}{\text{Total population}}$	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**

definition	metric	method	reference
Percentage of Foreign Born population	%	$\frac{\text{Foreign born population}}{\text{Total population}}$	<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	$100\,000 \times \frac{\text{murders}}{\text{metropolitan area population}}$	UN CPI (2016: 77)
			<b>sources</b> Various

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

## environmental sustainability

### air quality

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 ( $\mu\text{g}/\text{m}^3$ )	$100 \left\{ 1 - \left( \frac{\text{PM 2.5 concentration} - 10}{10} \right) \right\}$	UN CPI (2016)
			<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>
			<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)
			<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	Total accessible green area within metropolitan region  Metropolitan area population	UN CPI (2016), ISO 37120  <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  Metropolitan area population	World Bank <a href="http://documents.world-bank.org/curated/en/302341468126264791/pdf/68135RE-VISED-What-a-Waste-2012-Final-up-dated.pdf">http://documents.world-bank.org/curated/en/302341468126264791/pdf/68135RE-VISED-What-a-Waste-2012-Final-up-dated.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  100x $\frac{\text{Metropolitan area population}}{\text{Total metropolitan population}}$	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  100x $\frac{\text{Total energy consumption}}{\text{Total consumption of electricity generated from renewable sources}}$	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**

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

**affordability of housing**

definition	metric	method	reference
Housing Price- to-Income Ratio is the nominal house price divided by the nominal disposable income per head (Net household disposable income is used)	Ratio	Nominal house price of metropolitan region	OECD doi: 10.1787/
		Nominal household disposable income per head of metropolitan area population	<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**

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

**fragile cities index**

definition	metric	method	reference
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	Score (1 – 5)	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	Instituto Igarapé
			<b>sources</b> Instituto Igarapé



## gross enrolment rate in higher education

<p><b>definitions</b></p> <p>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>metrics</b></p> <p>%</p>	<p><b>methods</b></p> <p>Population enrolled that belongs in tertiary education</p> <p>100x <math>\frac{\text{Population enrolled that belongs in tertiary education}}{\text{People that belong to the tertiary education age range}}</math></p>	<p><b>reference</b></p> <p>UN CPI (2016:76)</p> <hr/> <p><b>sources</b></p> <p>Various</p>
<p>Total metropolitan population enrolled in tertiary educational institutes per 10,000 inhabitants</p>	<p>#</p>	<p>Population enrolled that belongs in tertiary education</p> <p>10.000x <math>\frac{\text{Population enrolled that belongs in tertiary education}}{\text{Total metropolitan population}}</math></p>	<p><b>reference</b></p> <p>National and metropolitan statistics</p> <hr/> <p><b>source</b></p> <p>(-)</p>

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

## access to public transportation

<p><b>definition</b></p> <p>Proportion of population that has convenient access to public transport</p>	<p><b>metric</b></p> <p>%</p>	<p><b>method</b></p> <p>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:</p> <ol style="list-style-type: none"> <li>1. Spatial Analysis to delimit the built-up area of the urban agglomeration</li> <li>2. Inventory of the public transport stops in the city or service area</li> <li>3. Estimate of urban area with access to public transport</li> <li>4. Estimation of the proportion of the population with convenient access out of the total population</li> </ol>	<p><b>reference</b></p> <p>UN-Habitat, UN SDG's Framework Metadata Indicator 11.2.1</p> <hr/> <p><b>sources</b></p> <p>OSM and LandScan</p>
---	-------------------------------	---	---

# acknowledgments



---

## Research and writing

**Dr. Bharat Dahiya**, Director, Research Center for Sustainable Development and Innovation, School of Global Studies, Thammasat University, Bangkok, Thailand, and Extraordinary Professor, School of Public Leadership, Stellenbosch University, Stellenbosch, Western Cape, South Africa

**Dr. Ammar A. Malik**, Senior Research Fellow, Harvard Kennedy School, Harvard University, Cambridge, MA, USA

## GIS analysis, mapping and graphics

Dr. Mamta Dahiya, Professor - Research Track, Faculty of Engineering & Technology, SGT University, Gurugram, India

## Editing

Metropolis Secretariat General staff (Luca Arbau, Lia Brum, Oscar Chamat and Silvia Llorente)

## Layout and design

ggrafic.com

---

This work is licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.

To view a copy of this license, visit: <https://creativecommons.org/licenses/by-nc/4.0/>

## Suggested citation

Metropolis (2021). Asian Metropolitan Report.

Supported by:



This publication contributes to the implementation of the following Sustainable Development Goals:



---

### Secretariat General

Avinyó, 15. 08002 Barcelona (Spain)  
Tel. +34 93 342 94 60  
Fax: +34 93 342 94 66  
metropolis@metropolis.org  
**metropolis.org**

**#MetroGovernance**

