JLL | *Achieve Ambitions*

City Momentum Index 2020

Creating a Resilient and Responsible City

JLL Global Research

JLL City Momentum Index
Global Top 20

1	Hyderabad
2	Bengaluru
3	Ho Chi Minh City
4	Nairobi
5	Chennai
6	Delhi
7	Hanoi
8	Manila
9	Silicon Valley
10	Shenzhen
11	Chongqing
12	Pune
13	Wuhan
14	Dubai
15	Hangzhou
16	Kolkata
17	Shanghai
18	Riyadh
19	Austin
20	Mumbai

Creating a Resilient and Responsible City

JLL's City Momentum Index 2020 identifies the world's most dynamic cities from a real estate perspective. In its seventh edition, the annual Index combines socio-economic and commercial property metrics to provide fresh insights into the rapidly evolving geography of business activity, covering 130 major established and emerging business hubs across the globe.

While evidence points to the global economy moving into a synchronised slowdown, our latest research highlights several cities that continue to exhibit remarkable dynamism, particularly in Emerging Asia, which once again dominates the Global Top 20:

- Indian cities feature strongly despite a slowing national economy. **Hyderabad** emerges as the world's most dynamic city, pushing last year's Index winner, **Bengaluru**, into second place. Another five Indian cities make the Top 20 – **Chennai** (5th), **Delhi** (6th), **Pune** (12th), **Kolkata** (16th) and **Mumbai** (20th).

- China sees five cities in the Top 20 – **Shenzhen** (10th), **Chongqing** (11th), **Wuhan** (13th), **Hangzhou** (15th) and **Shanghai** (17th). However, this is the weakest showing from China in the premier group since the launch of the Index in 2014.

- South East Asia is represented in the Top 20 by the Vietnamese cities of **Ho Chi Minh City** (3rd) and **Hanoi** (7th), while **Manila** (8th) sits in its highest ever position.

- Once again, **Nairobi** (4th) is Africa's sole representative, while **Dubai** (14th) reappears in the Top 20 for the first time since 2017. The Saudi Arabian capital, **Riyadh** (18th), makes its maiden appearance in the Top 20, as it starts to open up its economy.

- Innovation continues to be a major driver of momentum and is a key contributor to the robust performance of **Silicon Valley** (9th) and **Austin** (19th) in the Index, the only representatives in the Top 20 from the advanced economies.
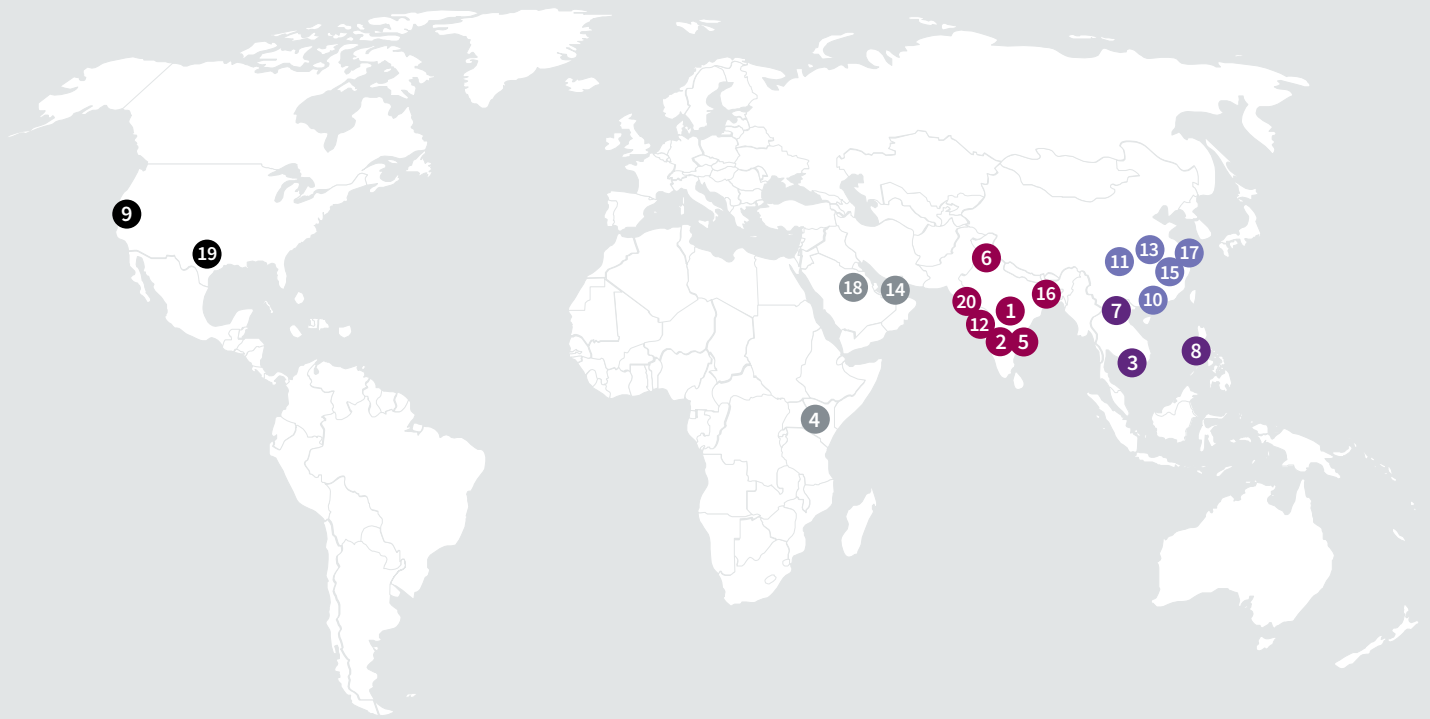
Our Index also highlights emerging cities that are embracing and adapting to the innovation economy – such as **Hyderabad**, **Bengaluru**, **Shenzhen** and **Shanghai** – and which are rising above the parapet and displaying strong dynamism.

But these fast-paced cities in emerging markets are also facing some of the greatest challenges associated with rapid urban growth, like environmental degradation, congestion, overcrowding, social inequality, homelessness, security and affordability.

They are under massive competing pressures to transform their urban environments. On the one hand, they need to become more resilient to climate change, economic shocks and geopolitical disruption. On the other hand, they must act with greater responsibility to reduce carbon emissions, embrace the circular economy, promote a more equitable society, improve personal security and increase biodiversity.

The real estate industry will need to play a greater role in helping to meet these urban challenges through promoting sustainable, scalable and smart development; adopting regenerative construction processes; supporting 'good densification'; improving transparency; encouraging micro-mobility; and creating thriving, inclusive, safe and affordable communities.

JLL City Momentum Index:
The World's Top 20 Most Dynamic Cities

United States

- **9** Silicon Valley
- **19** Austin

Middle East & Africa

- **4** Nairobi
- **14** Dubai
- **18** Riyadh

India

- **1** Hyderabad
- **2** Bengaluru
- **5** Chennai
- **6** Delhi
- **12** Pune
- **16** Kolkata
- **20** Mumbai

South East Asia

- **3** Ho Chi Minh City
- **7** Hanoi
- **8** Manila

China

- **10** Shenzhen
- **11** Chongqing
- **13** Wuhan
- **15** Hangzhou
- **17** Shanghai

JLL City Momentum Index – Key Ingredients

- GDP
- 'Engine room' population
- Air passengers
- Retail sales
- Investment
- Rents
- Occupier demand
- Real estate transparency
- Corporate presence

Note: See page 17 for full methodology
Source: JLL, 2020

The Results: Global Top 20

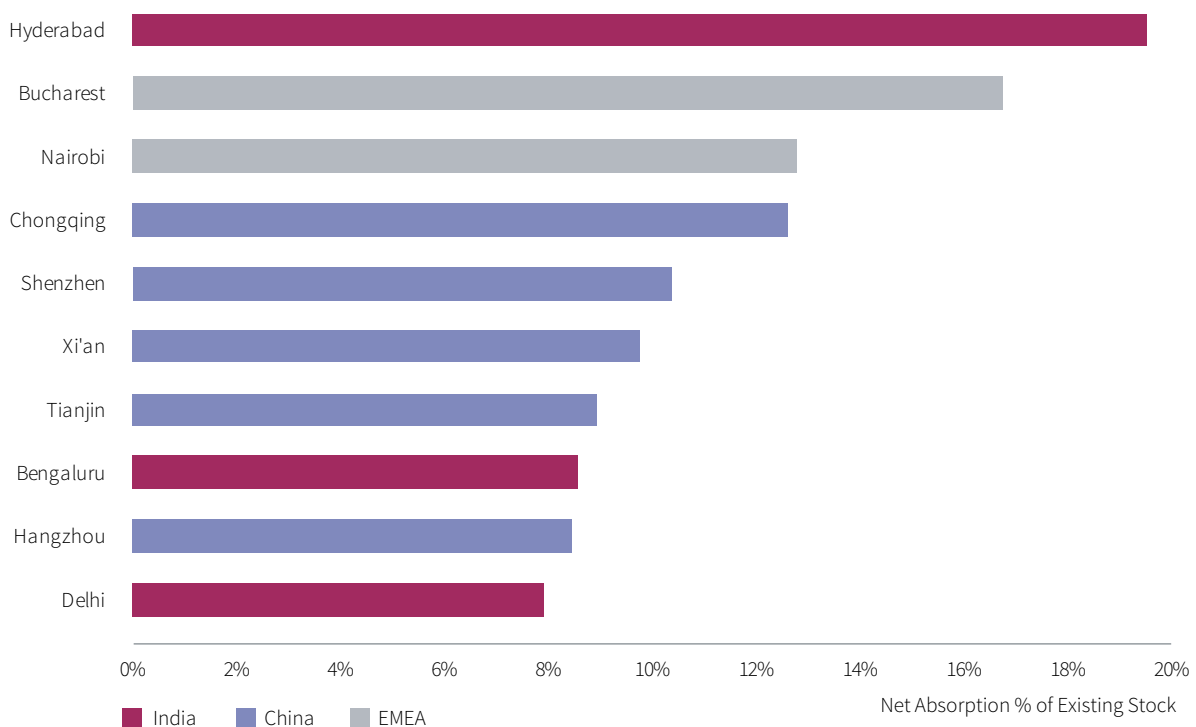## Southern Indian cities have the strongest momentum globally

Hyderabad and **Bengaluru** again vie for top spot in the City Momentum Index 2020, with Hyderabad just edging out its southern Indian neighbour in a reversal of last year's ranking.

While both cities place in the top two globally for socio-economic momentum, a more active real estate market helps elevate **Hyderabad** to first position in the overall ranking. Hyderabad recorded the highest office net absorption in 2019 (as a proportion of existing stock) of any city globally, while it is also among the world's best-performing cities for prime office rental growth. A thriving technology sector is driving this momentum, with the city's reputation receiving a further boost last year with the opening of a large campus by Amazon. It has joined fellow tech giants that include Apple, Google and Facebook, who have all established a presence in Hyderabad in recent years.

While all seven Tier 1 and Tier 2 Indian cities feature in this year's Global Top 20, the southern Indian cities in particular – **Hyderabad**, **Bengaluru** and **Chennai** (5th) – are ahead of their northern peers, supported by favourable demographics and business climates. Their expanding tech industries and start-up cultures make them a magnet for young and ambitious talent from across the country, with Bengaluru having one of the world's largest concentrations of 'engine room' population (20-40 year olds), typically the most dynamic and productive age cohort.

Hyderabad takes the lead in office demand
Office Net Absorption, 2019: Top 10

Net Absorption % of Existing Stock

■ India   ■ China   ■ EMEA

Source: JLL, 2020

Ho Chi Minh City, Hanoi and Manila lead momentum in South East Asia

Vietnam's two principal cities – **Ho Chi Minh City** (HCMC) and **Hanoi** – feature highly in the global ranking and follow a trend set in previous editions. Exports to the U.S. have soared as Vietnam's economy profits from the China-U.S. trade dispute, which is forcing some companies to shift their supply chains. Ho Chi Minh City and Hanoi are set to have among the highest economic growth globally over the next several years. This strong economic momentum is also being reflected in healthy office market dynamics.

Demographics favour **Ho Chi Minh City** over the Vietnamese capital, with HCMC featuring in the global Top 10 for 'engine room' population, a demographic that is expected to continue to grow, in contrast to projected declines in Hanoi, as well as most of China's major cities.

Manila (8th) represents the third South East Asian city in the Global Top 20. Advantageous demographics, a robust domestic economy and a skilled talent base are supporting a dynamic real estate market. Business Processing Outsourcing (BPO) is driving office net absorption, as the sector moves into higher-value activities such as animation, gaming and healthcare.

Economic *Growth* Hierarchy

GDP Change*, 2019

↑ **8%+**   Ho Chi Minh City
Hanoi
Bengaluru

↑ **7-8%**   Hyderabad
Wuhan
Chennai

↑ **6-7%**   Xi'an, Chengdu, Shenzhen, Delhi
Guangzhou, Chongqing, Beijing, Riyadh
Manila, Mumbai, Shanghai

* forecast
Source: Oxford Economics, 2019
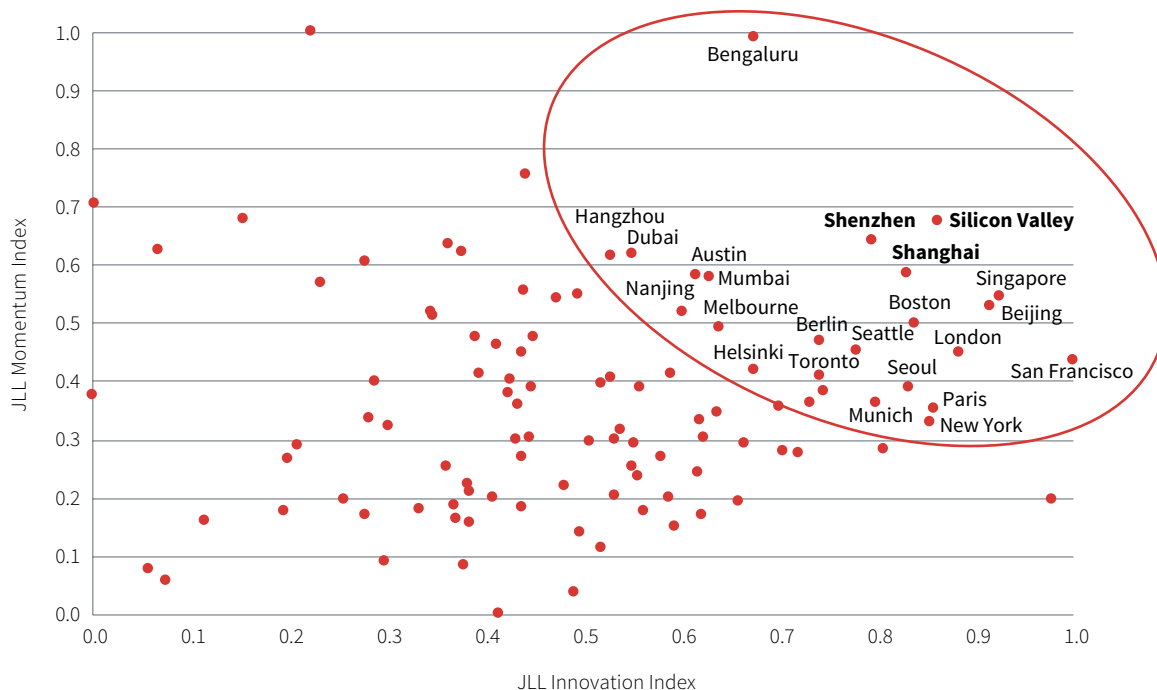
Chinese cities embrace the innovation economy

Despite a slowdown in the economy, five Chinese cities – **Shenzhen** (10th), **Chongqing** (11th), **Wuhan** (13th), **Hangzhou** (15th), **Shanghai** (17th) – feature in this year's Top 20, with a further five cities making the Top 30, including **Xi'an** (21st) and **Guangzhou** (23rd).

Shenzhen is one of the most impressive city success stories of China's economic resurgence. Famously, this megacity is still less than 40 years old and has become a draw for young talent from across China. Nearly two-thirds of its population are aged 20-40, the highest proportion of any city globally. Testimony to its emergence as one of the world's foremost innovation hubs, it is home to the headquarters of several of China's leading tech giants and has a vibrant start-up scene. Shenzhen ranks among the top five cities globally for office net absorption, and the strength of demand has prompted a construction boom and growing investor interest. It is one of only three cities (together with **Shanghai** and **Silicon Valley**) that makes the Global Top 20 of both JLL's City Momentum Index and JLL's Innovation Index.[1]

China's innovation economy is evolving rapidly, not only in its first-tier cities like **Shanghai** and **Shenzhen**, but also in second-tier cities, such as **Hangzhou** and **Wuhan**. Hangzhou, the home of the Alibaba Group, represents the blossoming of China's large second-tier cities on the world stage. Its hosting of the G20 summit in 2016 thrust the city into the global spotlight while further enhancing its growing reputation as a leading destination for conferences and exhibitions. Hangzhou has successfully built on this momentum as it looks ahead to hosting the Asian Games in 2022.

Identifying innovation-rich cities with strong momentum
JLL City Momentum Index versus JLL Innovation Index

Source: JLL, 2020
[1] Innovation Geographies, JLL, May 2019
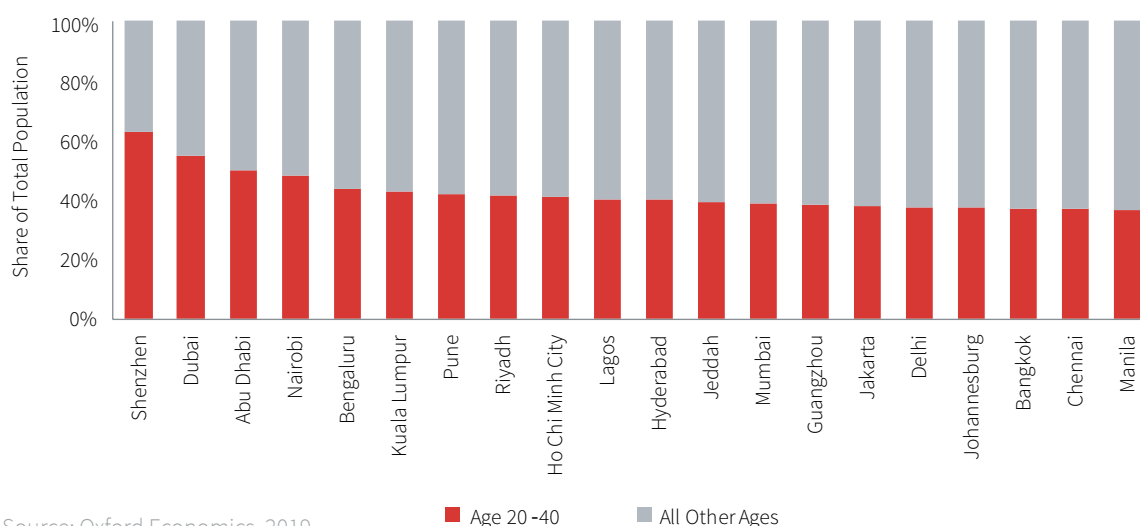
Momentum in the Middle East and Africa

Dubai (14th) appears in the Global Top 20 for the first time since 2017. The Emirate continues to build the necessary critical mass to be the major business hub in the Middle East. Underpinning its appeal is strong demographics, with more than half of the population aged 20-40 (the second highest proportion globally). Although a construction boom in commercial and residential property has resulted in a supply/demand imbalance, the UAE government has responded with initiatives designed to boost demand. Among these have been the relaxation of visa regulations and initiatives to improve transparency. Momentum is expected to be fuelled further in the lead-up to Expo 2020.

Riyadh (18th) enters the Top 20 for the first time. The Saudi capital is benefitting from Saudi Arabia's 'Vision 2030' programme of economic reforms, with its objective of diversifying the economy away from oil. Ongoing initiatives to improve the quality of life through better infrastructure and entertainment, in combination with introducing rules and regulations to expand tourism, are likely to continue having a positive impact on the economy and real estate market.

Nairobi (4th) has made the Top 20 for each of the past six years, reflecting its position as one of Africa's most dynamic city economies. Momentum is supported by favourable demographics (it is predicted to show the fastest growth in 'engine room' population of the 130 cities covered by the Index), infrastructure investment, technology, tourism and retail.

Shenzhen and Dubai have world's largest 'engine room' populations
'Engine Room' Population (Age 20-40), Share of Total Population: Top 20

Source: Oxford Economics, 2019

Innovation and demographics drive U.S. city momentum

Testament to the strength of their innovation-rich economies, **Silicon Valley** (9th) and **Austin** (19th) feature among the world's most dynamic cities, the only representations from the advanced economies in the Top 20.

While Silicon Valley's reputation as a preeminent innovation hub is very well established, recent years have seen mid-sized cities such as **Austin**, **Denver**, **Charlotte** and **Nashville** garner growing reputations as talent-rich tech hubs. Austin, cited for its quality of living, has a young, well-educated and rapidly growing workforce.

Real Estate *Momentum*

Reflecting the vigour of the tech sector, three U.S. cities –**Silicon Valley** (1st), **Boston** (4th) and **Austin** (6th) – appear in the Top 10 for Real Estate Momentum, with **Charlotte** sitting just outside the top group. They all saw double-digit growth in prime office rents in 2019, highlighting the strength of demand from companies coveting access to highly skilled labour markets.

Two German cities – **Frankfurt** (2nd) and **Berlin** (3rd) – are among the top 3 cities for Real Estate Momentum, underpinned by strong corporate occupier and investor demand. In Berlin's case, this was signified by record cross-border investment activity in 2019.

Europe is further represented in the Top 10 by **Helsinki** (5th) and **Warsaw** (10th), which have both experienced heightened investor activity and offer relatively affordable options for corporate occupiers.

World's most dynamic real estate markets
Global Top 10

1 Silicon Valley   6 Austin
2 Frankfurt   7 Osaka
3 Berlin   8 Jeddah
4 Boston   9 Singapore
5 Helsinki   10 Warsaw

● U.S.   ● Europe   ● Asia   ● Middle East
Source: JLL, 2020

Having headed last year's ranking for Real Estate Momentum, **Osaka** is set to maintain its dynamism into 2020 as one of the most buoyant commercial real estate markets globally. It is benefitting from a global trend of investors increasingly targeting secondary cities in mature and transparent markets. Osaka's profile received a boost last year as it played host to the 2019 G20 summit, while further buzz is expected to build ahead of the World Expo, which the city will hold in 2025.

The inclusion of **Jeddah** (8th) in the Top 10 for Real Estate Momentum owes much to the hospitality sector, which is set to enjoy sustained growth off the back of increased tourism and further investments in the entertainment sector.

Singapore (10th) slots into the Top 10 due to a combination of healthy office rental growth and heightened real estate investment. Surging tourism levels are boosting the hotel sector.

The *Changing* Geography of Momentum

JLL's City Momentum Index has now been running for seven years, allowing us to track the changing geography of momentum:

• **Shanghai** stands alone as the only city to feature consistently in the Top 20 throughout the past seven years. Its economy and real estate market are maturing rapidly, and it is on track to join the top tier of the world's most competitive cities alongside Tokyo, New York, London, Paris, Hong Kong and Singapore within the next five years.

• Over the 2014 to 2016 period, **China** dominated the Top 20 with its cities transforming on the back of massive infrastructure investment and real estate development. However, China's dominance of the top ranking has waned as economic growth has slowed to more sustainable levels as its focus shifts to innovation-driven higher-value activities.

• By contrast, **India** has come to dominate the top ranking in recent years, as its cities benefit from economic reforms, business growth and infrastructure investment. Today, all seven Tier 1 and Tier 2 cities in India feature in the Top 20.

JLL City Momentum Index, Top 20, 2014 – 2020

	2014	2015	2016	2017	2018	2019	2020
1	Wuhan	Ho Chi Minh City	Nairobi	Ho Chi Minh City	Hyderabad	Bengaluru	Hyderabad
2	Jakarta	Chongqing	Bengaluru	Bengaluru	Bengaluru	Hyderabad	Bengaluru
3	Lima	Beijing	Dublin	Hyderabad	Ho Chi Minh City	Hanoi	Ho Chi Minh City
4	Shenzhen	Wuhan	Shanghai	Hanoi	Pune	Delhi	Nairobi
5	Dubai	Nairobi	Hyderabad	Nairobi	Kolkata	Pune	Chennai
6	Tianjin	Shenzhen	London	Delhi	Hanoi	Nairobi	Delhi
7	Chengdu	Bengaluru	Nanjing	Shanghai	Nanjing	Chennai	Hanoi
8	Guangzhou	Dubai	Delhi	Pune	Delhi	Ho Chi Minh City	Manila
9	Shanghai	Shanghai	Hanoi	Dubai	Hangzhou	Xi'an	Silicon Valley
10	Bogota	Tianjin	Beijing	Kolkata	Xi'an	Guangzhou	Shenzhen
11	Kolkata	Shenyang	Chennai	Hangzhou	Nairobi	Nanjing	Chongqing
12	Singapore	Nanjing	Shenzhen	Manila	Chongqing	Manila	Pune
13	Beijing	Jakarta	Kolkata	Nanjing	Chennai	Beijing	Wuhan
14	Mumbai	Chengdu	Ho Chi Minh City	Beijing	Wuhan	Shanghai	Dubai
15	Delhi	London	Wuhan	Xi'an	Shanghai	Kolkata	Hangzhou
16	Chennai	Xi'an	Xi'an	Chennai	Guangzhou	Chongqing	Kolkata
17	Bangkok	Guangzhou	Tianjin	Mumbai	Tianjin	Hangzhou	Shanghai
18	Dublin	Lagos	Chongqing	Wuhan	Manila	Bangkok	Riyadh
19	Jeddah	Lima	Guangzhou	Chongqing	Shenzhen	Shenzhen	Austin
20	Manila	Hyderabad	Mumbai	Guangzhou	Mumbai	Chengdu	Mumbai

For comparability, the CMI ranks for the period 2014-2018 represent the short-term momentum indices.
Source: JLL, 2020

India

China

Meeting the Challenges of Rapid Momentum

Momentum can have both positive and negative aspects. While fast-growth cities are magnets for people, business and investment, they are also facing significant challenges associated with rapid urban growth such as environmental degradation, congestion, overcrowding, social inequalities, security and affordability.

These cities are under massive pressure to transform their urban environments in pursuit of the ultimate goal of a low-carbon sustainable future.

Building resilience to climate change

Several of the cities in the Index Top 20, including **Ho Chi Minh City**, **Manila**, **Shanghai** and **Mumbai**, are particularly susceptible to rising sea levels. Climate change is also leading to an increase in the frequency and severity of extreme weather events such as heatwaves, flooding and drought, with which many fast-growing cities are ill-equipped to deal. Poor urban planning and unchecked real estate construction are compounding the problems, making cities more vulnerable to weather extremes.

What sustainable solutions are the high-momentum cities putting in place to meet these challenges?

Dubai takes the lead in sustainability initiatives

Of the Top 20 cities, **Dubai** has among the most ambitious sustainability goals. Under the UAE Sustainability Initiative, the city aims to achieve 30% energy and water use reduction by 2030 and 75% clean energy by 2050. The Dubai Electricity and Water Authority's 'Green Dubai' initiative is also promoting more sustainable energy use.

Indian cities tackle heat island effects

Indian cities have increasingly suffered from extreme heat in recent years. In 2019, **Delhi** broke its all-time high temperature record, reaching 48 degrees Celsius. In response, cities across India have been implementing Heat Action Plans (HAP).

Meanwhile, the national government has launched the India Cooling Action Plan (ICAP) to reduce long-term demand for air conditioning, with cool roofs identified as a major solution. Cool roofs (white-coloured roofs) reflect sunlight and absorb less heat, reducing the urban heat island effect. This has been implemented on a large scale in **Hyderabad**, where the state government has introduced the Telangana Cool Roof programme.

China's 'Sponge City' initiative

Wuhan (13th) is especially prone to river flooding, compounded by over-building and unchecked property development. Recognising the risk posed by climate change to future growth, the Wuhan government has undertaken a climate change vulnerability assessment to understand the impacts and to support climate-resilient construction. It has intensified efforts to cultivate permeable surfaces and green infrastructure under China's 'Sponge City' initiative. Launched in 2015, the initiative seeks to reduce the intensity of rainwater runoff by enhancing absorption capacities, while at the same time improving water supply security.

Reducing air pollution in Indian cities

Many of the cities that rank most highly for momentum have also become the most polluted, due to a combination of high construction activity, growth in heavy industry, exponential growth in private vehicle ownership and, in some cases, neighbouring crop burning or wildfires. Deteriorating air quality in cities and its impact on health is an area of growing concern for city authorities.
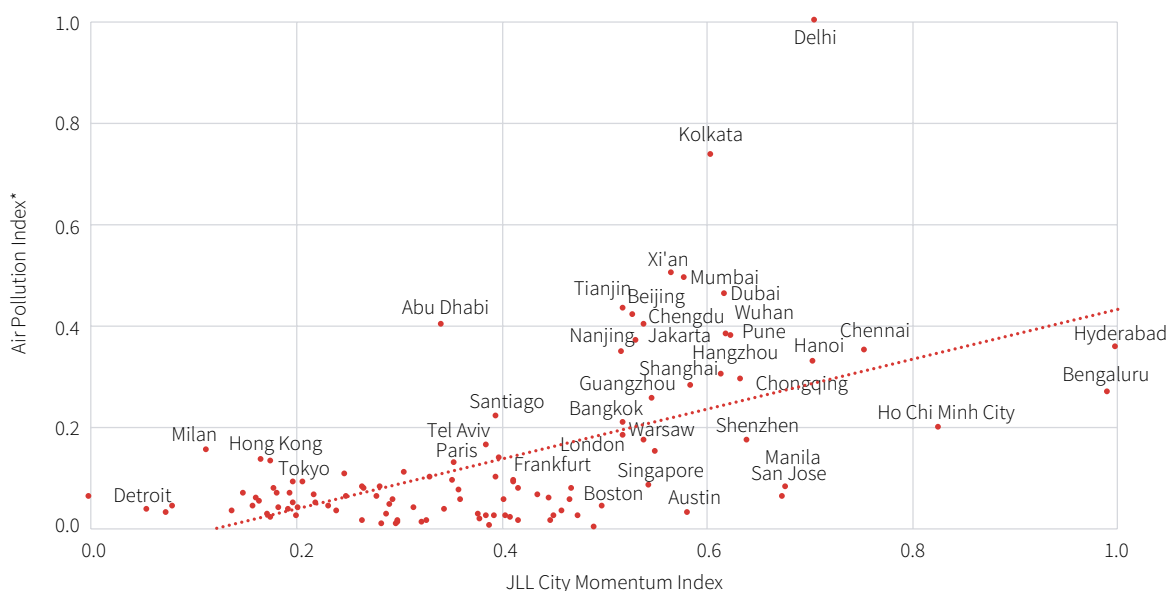
Many of the world's most polluted cities are in India. The national government has taken major steps in adopting stricter vehicle emissions standards, boosting solar power and closing down some urban coal-fired power stations. It has launched the National Clean Air Programme (NCAP), a five-year action plan to curb air pollution by building a pan-India air-quality monitoring network and improving citizen awareness.

Bengaluru and **Delhi** are among 35 cities globally that have committed to ambitious pollution reduction targets through the C40 Clean Air Cities Declaration. The Delhi government is taking radical short-term action to control pollution (such as car rationing and suspending civic construction), but it is recognising the need for long-term solutions by extending its public transport network and through plans to introduce electric buses and the green-scaping of roads.

Shenzhen's journey to a sustainable future

Chinese cities have made a concerted effort in recent years to deal with poor air quality, most notably in taking the lead globally in the adoption of electric vehicles. **Shenzhen** is the first megacity in the world to run an entirely electric bus fleet and aims to convert its taxis to electric by 2020. It is also home to the world's largest waste-to-energy plant and has set the goal of reducing carbon emission intensity by 23% in five years.

City momentum and pollution

* IQAir AirVisual World Most Polluted Cities 2018 (PM2.5)
Source: JLL, 2020

Addressing the infrastructure deficit

Rapid urbanisation and strong economic growth are putting huge pressure on existing infrastructure. Many of the Top 20 cities are failing to keep pace with the growing demands for high-quality transport and utilities, and consequently they have become among the world's most congested cities. Many cities in the Index are addressing their infrastructure deficits, with some further advanced than others:

- Broadly, the Chinese cities continue to benefit from significant investment in infrastructure, including extensions to metro lines, high-speed rail (such as that linking **Guangzhou**, **Shenzhen** and **Hong Kong**) and greater airport capacity, represented most strikingly by the new Daxing International Airport in **Beijing**.

- Likewise, in the Middle East, **Dubai** and **Riyadh** have ambitious infrastructure plans. Dubai's infrastructure impetus is in part being driven by Expo 2020, while the scheduled opening of the Riyadh metro network in 2020-2021 is expected to transform the city's mobility.

- Both **Ho Chi Minh City** and **Hanoi** are also responding to congestion by investing heavily in new metro networks, following the Chinese cities' approach of creating large, commuter-intensive public transport systems. A second international airport is also being constructed for Ho Chi Minh City.

- Indian cities were slow off the mark but are catching up fast with an extensive urban infrastructure programme including new metro lines (e.g. **Delhi**, **Mumbai**, **Hyderabad** and **Bengaluru**), new airports (e.g. **Delhi** and **Mumbai**) and expanded airport capacity (e.g. **Bengaluru** and **Chennai**).

- Metro **Manila** is undergoing a major infrastructure push to alleviate chronic congestion and unbalanced development by building out its metro and rail networks.

- Several cities are also recognising the need to enhance micro-mobility and 'last mile' connectivity. **Hyderabad**, for example, is introducing smart bikes and e-autos. **Bengaluru**'s TenderSURE initiative aims to create pedestrian-friendly, walkable roads to encourage walking within a kilometre of metro stations.

Finding smart solutions

To meet the challenges of growth and improve the lives of their citizens, cities are turning to 'smart city' solutions, propelled by technology such as sensors and IoT connected devices as well as the ever-increasing capability to capture and analyse large volumes of data.

With the goal of improving a city's efficiency, liveability and sustainability, smart-city technologies are typically targeted at reducing energy consumption, optimising traffic flows, monitoring air quality, automating waste management and digitising government functions for improved transparency.

Many cities in the Index Top 20 are still only at the beginning of their journey to becoming 'smart', and limited scalability and a lack of resources are common challenges.

Dubai is seen as a global leader in the development of smart-city technologies. Its 'Smart Dubai 2021' strategy sets out its digital transformation goals in areas including Smart Mobility, Smart Living and Smart Governance.

In Vietnam, **Ho Chi Minh City** and **Hanoi** are pushing smart-city initiatives and districts in order to promote sustainable development. Their initiatives have attracted foreign investors such as Sumitomo, Lotte Group and ABB Group.

In **Nairobi**, a satellite 'smart city' – Konza Technopolis – is being developed. An integrated ICT network is planned to support delivery of connected urban services, while sensors embedded across the development will gather data on traffic, pedestrian movements and utility consumption.

In 2015, the government of **India** launched its Smart Cities Mission, an urban renewal and retrofitting programme to develop 100 smart cities across the country. Each city is given federal support and funding towards 'area-based development' and 'pan-city development'.

China is emerging as the world's largest smart-city testing ground, with **Shanghai**, **Shenzhen** and **Hangzhou** at the forefront. Many of its smart-city initiatives are being driven by domestic tech giants. For example, Hangzhou's 'City Brain' project by Alibaba sees real-time data collected from cameras and sensors on roads across the city, fed into an AI hub to manage traffic flow. Meanwhile, Shenzhen has built a unified public information resource database and introduced health e-cards, and Shanghai has streamlined government services through a one-stop platform – 'Citizen Cloud'. Shanghai is also on the leading edge of China's 5G network construction and rollout.
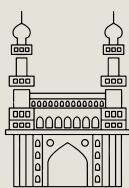
Real estate will play a more and more important role in smart-city futures. Smart building technologies can drive greater energy efficiency, helping to deliver 'green' and net zero carbon buildings, forming a key part of a city's overall efforts to reduce energy consumption. There is increasing momentum in this area; for example, China's government has set a goal for 50% of all new urban buildings to be certified green by 2020.

Creating more balanced development

Poor urban planning and unchecked construction have led to haphazard and uneven development in many of the Top 20 cities. Several are now looking to rebalance their spatial inequalities through ambitious plans to build new districts and create mechanisms to refocus development.

A few examples among the Index Top 20 cities include:

Hyderabad

Hyderabad has seen most development concentrated on the western side of the city, resulting in severe congestion and bottlenecks. The Telangana state government is formulating a 'Look East Policy' (LEAP) as a way of alleviating congestion by encouraging development on the city's east side. Mechanisms include developer and occupier subsidies, and a relaxation of development approvals. As part of LEAP, the Hyderabad Metropolitan Development Authority (HMDA) has started exploring land management techniques such as land pooling.

Ho Chi Minh City

Ho Chi Minh City is seeking to develop a new urban centre on the Thu Thiem peninsula (District 2) – which has drawn comparisons to Pudong in Shanghai – in order to reduce pressure on the city centre and preserve historical buildings from demolition and redevelopment. To boost infrastructure works and improve accessibility to Thu Thiem, the city has implemented a Build Transfer (BT) programme in which developers obtain land in exchange for building infrastructure.

Nairobi

Tatu City is a rapidly growing development outside **Nairobi**, intended to help decongest the urban core by providing a new 'live, work and play environment'. The Kenyan government has designated Tatu City as a Special Planning Area in order to cut red tape around planning and construction and fast-track the development process.

Unlike developed cities, much of the real estate and infrastructure in high-growth emerging cities have yet to be built. This offers a significant opportunity for these cities to combine urban planning, placemaking and digitalisation to create new sustainable transport-oriented locations that are new engines of economic growth and community engagement.

Transitioning to a *'Future – fit'* City

Cities are being forced to adapt at a pace and scale never experienced before, with huge pressures to move to a low-carbon future and to respond to climate change, rapid economic transition and shifting quality-of-life expectations.

Many of these pressures are most intense in those high-momentum cities in emerging economies where the challenges of absorbing rapid demographic, social and economic change are most acute. Nonetheless, several cities that are performing well in JLL's City Momentum Index are showing that it is possible to break through and to compete more effectively by:

- Continually investing and reinvesting in infrastructure to unlock and upgrade new locations;

- Adopting urban tech and scalable smart-city solutions to improve quality of life, business efficiency and city management;

- Pivoting to the innovation economy, and leveraging innovation and technology to improve inclusion and to transition to a low-carbon environment;

- Taking active steps to build efficiency and long-run sustainability, by embracing the circular economy and focusing on micro-mobility;

- Ensuring buildings and cities are resilient to the effects of climate change, through implementing design principles that reduce the effects of flooding, extreme heat and weather events;

- Improving transparency to create a more favourable business operating environment and to help compete more effectively for much-needed capital;

- Focusing on their physical real estate assets, urban transformation and the 'art' of placemaking, so that they can incorporate new living and working patterns, growth in high-experience locations, transport-oriented densification and sustainable development.

How do cities succeed at these? One common ingredient is the role of governance and leadership, which is sometimes overlooked when assessing cities' future potential. The ever more complex nature of city transformation relating to the innovation economy, climate mitigation and geopolitical agility, all point to a city's governance system being increasingly elemental to a city being 'future fit' for the coming decades.

City Momentum Index:
Technical Note

The City Momentum Index presents a weighted overall score for the sub-scores of 18 variables. For each variable the model calculates a score based on the city's performance relative to the distribution of all 130 city regions, scaled from zero to one. Thus, the top-scoring city for each variable has a value of one, while the lowest-scoring city receives a value of zero. The variables used in the model are summarised in the chart below, combining variables of short-term socio-economic and commercial real estate momentum.

Short-Term Momentum

Socio-economic momentum (accounting for 50% of the model) includes variables relating to the recent and projected percentage changes in city GDP; 'engine room' population; air connectivity; corporate headquarters presence; retail sales; and foreign direct investment (as a proportion of a city's economy).
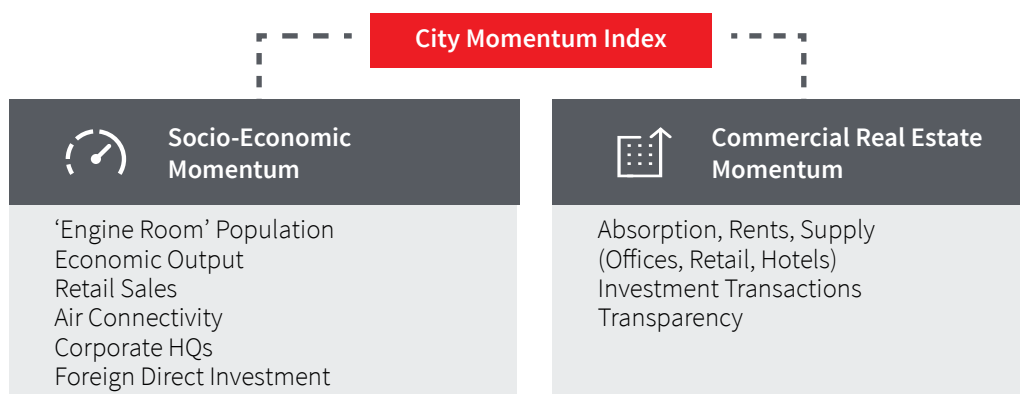
Commercial real estate momentum (accounting for 50% of the model) includes variables relating to recent and projected percentage changes in office net absorption, office rents and hotel rooms. This sub-index also includes international retailer presence, and recent changes in direct commercial real estate investment volumes and real estate transparency.

Data sources: All real estate data for the City Momentum Index is sourced to JLL. The non-real estate data is drawn from a wide range of sources that includes Oxford Economics, United Nations, ACI, GaWC and fDi Markets. The Index also sources data from many national statistical offices.

Data comparability and accuracy: The CMI model is based upon data which we believe to be reliable. While every effort has been made to ensure the accuracy and completeness of the data used, we cannot offer any warranty that factual errors may not have occurred.

How is the City Momentum Index constructed?
18 variables are combined to assess short-term economic and real estate market momentum

City Momentum Index	
Socio-Economic Momentum	**Commercial Real Estate Momentum**
'Engine Room' Population Economic Output Retail Sales Air Connectivity Corporate HQs Foreign Direct Investment	Absorption, Rents, Supply (Offices, Retail, Hotels) Investment Transactions Transparency

Source: JLL, 2020

Coverage

The 130 cities covered by the City Momentum Index have been shortlisted from a combination of a weighted index of population, GDP, corporate presence, air connectivity, real estate investment activity and commercial real estate stock. Each city is defined as its metropolitan region as delineated by national statistical offices or by international organisations (e.g. United Nations).

North America

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Atlanta
Austin
Baltimore
Boston
Calgary
Charlotte
Chicago
Columbus
Dallas
Denver
Detroit
Houston
Kansas City
Las Vegas
Los Angeles
Miami
Minneapolis
Montreal
New York
Orlando
Philadelphia
Phoenix
Pittsburgh
Portland
St Louis
Salt Lake City
San Diego
San Francisco
Seattle
Silicon Valley
Tampa
Toronto
Vancouver
Washington DC

Latin America

8

Bogota
Buenos Aires
Lima
Mexico City
Monterrey
Rio de Janeiro
Santiago
Sao Paulo

EMEA

50

Abu Dhabi
Amsterdam
Antwerp
Athens
Barcelona
Berlin
Birmingham
Brussels
Bucharest
Budapest
Cairo
Cape Town
Casablanca
Cologne
Copenhagen
Dubai
Dublin
Dusseldorf
Edinburgh
Frankfurt
Geneva
Glasgow
Hamburg
Helsinki
Istanbul
Jeddah
Johannesburg
Kiev
Lagos
Lisbon
London
Lyon
Madrid
Manchester
Milan
Moscow
Munich
Nairobi
Oslo
Paris
Prague
Riyadh
Rome
St Petersburg
Stockholm
Stuttgart
Tel Aviv
Vienna
Warsaw
Zurich

Asia Pacific

38

Adelaide
Auckland
Bangkok
Beijing
Bengaluru
Brisbane
Chengdu
Chennai
Chongqing
Delhi
Fukuoka
Guangzhou
Hangzhou
Hanoi
Ho Chi Minh City
Hong Kong
Hyderabad
Jakarta
Kolkata
Kuala Lumpur
Manila
Melbourne
Mumbai
Nagoya
Nanjing
Osaka
Perth
Pune
Seoul
Shanghai
Shenzhen
Singapore
Sydney
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